Ref. Ares(2023)1758364 - 10/03/2023

Call: HORIZON-INFRA-2023-SERV-01

(Research infrastructure services to support health research, accelerate the green and digital transformation, and advance frontier knowledge (2023))

Topic: HORIZON-INFRA-2023-SERV-01-01

Type of Action: HORIZON-RIA

Proposal number: 101131793

Proposal acronym: RISEnergy

Type of Model Grant Agreement: HORIZON Action Grant Budget-Based

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This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

1 - General information

Fields marked * are mandatory to fill.

Topic	HORIZON-INFRA-2023-SERV-01-01	Type of Action	HORIZON-RIA
Call	HORIZON-INFRA-2023-SERV-01	Type of Model Grant Agreement	HORIZON-AG

Acronym RISEnergy

Proposal title Research Infrastructure Services for Renewable Energy

Note that for technical reasons, the following characters are not accepted in the Proposal Title and will be removed: < > " &

Duration in months 54

Free keywords *renewable energy technologies, research infrastructures, ecosystem, energy efficiency, cost reduction, innovation chain, materials to devices, ICT enabling, meta-data, training, evidence-based policy*

Abstract *

The European Green Deal aims to transform the EU into a modern, resource-efficient and competitive economy with zero net greenhouse gas emissions by 2050. To achieve more efficient, competitive and cost-effective energy systems and devices, RISEnergy fosters a European ecosystem of industry, research organizations and funding agencies aimed at developing novel energy technologies and concepts. RISEnergy brings together a consortium of 69 beneficiaries from 23 countries: ERIC institutions, technology institutes, universities and industrial partners, to jointly improve the economic performance of technologies. Members of the European Energy Research Alliance are establishing the core European ecosystem. The main objectives of RISEnergy are: 1.) enable research and innovation to increase energy efficiency and reduce the cost of energy technologies to foster wider use of renewables into energy systems through proactive innovation management having single entry point with tailor-made access roads for academics, industry, and SMEs, and advising RI providers, all acces Users, and policy makers on LCA, ICT development and networking issues; 2.) provide efficient transnational access (TNA) to facilities to support renewable energy technologies and systems: Provide more than 2,500 days of access to major European and international world-leading analytical facilities; 3.) reach out to all stakeholders performing research along the value chain, from materials and technology development to applications in the eight most relevant fields of PV, CSP/STE , hydrogen, biofuels, offshore wind, ocean energy, integrated grids, and energy storage, research infrastructure providers and policy makers; 4.) provide comprehensive services of unprecedented quality: new cross-RI services, a single entry point, tailor-made access roads for academia industry, and SMEs with a particular focus on scientists from research fields in which the use of research infrastructures is not yet established.

Remaining characters 3

Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under any EU programme, including the current call? ○ Yes ◉ No

Please give the proposal reference or contract number.

Previously submitted proposals should be with either 6 or 9 digits.

Administrative forms

Proposal ID **101131793**

Acronym **RISEnergy**

Declarations

Field(s) marked * are mandatory to fill.

1) We declare to have the explicit consent of all applicants on their participation and on the content of this proposal. * ☒

2) We confirm that the information contained in this proposal is correct and complete and that none of the project activities have started before the proposal was submitted (unless explicitly authorised in the call conditions). * ☒

3) We declare:
- to be fully compliant with the eligibility criteria set out in the call
- not to be subject to any exclusion grounds under the EU Financial Regulation 2018/1046
- to have the financial and operational capacity to carry out the proposed project. * ☒

4) We acknowledge that all communication will be made through the Funding & Tenders Portal electronic exchange system and that access and use of this system is subject to the Funding & Tenders Portal Terms and Conditions. * ☒

5) We have read, understood and accepted the Funding & Tenders Portal Terms & Conditions and Privacy Statement that set out the conditions of use of the Portal and the scope, purposes, retention periods, etc. for the processing of personal data of all data subjects whose data we communicate for the purpose of the application, evaluation, award and subsequent management of our grant, prizes and contracts (including financial transactions and audits). * ☒

6) We declare that the proposal complies with ethical principles (including the highest standards of research integrity as set out in the ALLEA European Code of Conduct for Research Integrity, as well as applicable international and national law, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols. Appropriate procedures, policies and structures are in place to foster responsible research practices, to prevent questionable research practices and research misconduct, and to handle allegations of breaches of the principles and standards in the Code of Conduct. * ☒

7) We declare that the proposal has an exclusive focus on civil applications (activities intended to be used in military application or aiming to serve military purposes cannot be funded). If the project involves dual-use items in the sense of Regulation 2021/821, or other items for which authorisation is required, we confirm that we will comply with the applicable regulatory framework (e.g. obtain export/import licences before these items are used). * ☒

8) We confirm that the activities proposed do not
- aim at human cloning for reproductive purposes;
- intend to modify the genetic heritage of human beings which could make such changes heritable (with the exception of research relating to cancer treatment of the gonads, which may be financed), or
- intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer.
- lead to the destruction of human embryos (for example, for obtaining stem cells)

These activities are excluded from funding. * ☒

9) We confirm that for activities carried out outside the Union, the same activities would have been allowed in at least one EU Member State. * ☒

The coordinator is only responsible for the information relating to their own organisation. Each applicant remains responsible for the information declared for their organisation. If the proposal is retained for EU funding, they will all be required to sign a declaration of honour.

False statements or incorrect information may lead to administrative sanctions under the EU Financial Regulation.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

2 - Participants

List of participating organisations

#	Participating Organisation Legal Name	Country	Role	Action
1	KARLSRUHER INSTITUT FUER TECHNOLOGIE	DE	Coordinator	
2	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH	AT	Partner	
3	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES	FR	Partner	
4	CENTRO DE INVESTIGACIONES ENERGETICAS, MEDIOAMB	ES	Partner	
5	CONSIGLIO NAZIONALE DELLE RICERCHE	IT	Partner	
6	EUROPEAN DISTRIBUTED ENERGY RESOURCES LABORATO	DE	Partner	
7	EREVNITIKO PANEPISTIMIAKO INSTITOUTO SYSTIMATON E	EL	Affiliated	
8	RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE A	DE	Affiliated	
9	TECHNICAL UNIVERSITY OF SOFIA	BG	Affiliated	
10	UNIVERSITATEA POLITEHNICA DIN BUCURESTI	RO	Affiliated	
11	DANMARKS TEKNISKE UNIVERSITET	DK	Partner	
12	ECCSEL EUROPEAN RESEARCH INFRASTRUCTURE CONSOF	NO	Partner	
13	BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES	FR	Affiliated	
14	UNITED KINGDOM RESEARCH AND INNOVATION	UK	Affiliated	
15	SOTACARBO - SOCIETA TECNOLOGIE AVANZATE LOW CAF	IT	Affiliated	
16	ALLIANCE EUROPEENNE DE RECHERCHE DANS LE DOMAIN	BE	Partner	
17	ENBW ENERGIE BADEN-WURTTEMBERG AG	DE	Partner	
18	AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENEF	IT	Partner	
19	EPL TECHNOLOGY FRONTIERS LIMITED	CY	Partner	
20	European Solar Research Infrastructure for Concentrated S	ES	Partner	
21	FORSCHUNGSZENTRUM JULICH GMBH	DE	Partner	

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#	Participating Organisation Legal Name	Country	Role	Action
22	INTERUNIVERSITAIR MICRO-ELECTRONICA CENTRUM	BE	Partner	
23	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUUR	NL	Partner	
24	UNIVERSITY COLLEGE CORK - NATIONAL UNIVERSITY OF I	IE	Partner	
25	UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA	IT	Affiliated	
26	UNIVERZITA TOMASE BATI VE ZLINE	CZ	Affiliated	
27	THE CYPRUS INSTITUTE	CY	Affiliated	
28	UNIVERSITY OF CYPRUS	CY	Affiliated	
29	FUNDACIO INSTITUT DE RECERCA DE L'ENERGIA DE CATA	ES	Affiliated	
30	OFFIS EV	DE	Affiliated	
31	RICERCA SUL SISTEMA ENERGETICO - RSE SPA	IT	Affiliated	
32	ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA	IT	Affiliated	
33	UNIVERSITA DEGLI STUDI DI PERUGIA	IT	Affiliated	
34	INSTITUTE OF ELECTROCHEMISTRY AND ENERGY SYSTEMS	BG	Affiliated	
35	CENTRE FOR RENEWABLE ENERGY SOURCES AND SAVING	EL	Affiliated	
36	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET N	NO	Affiliated	
37	CONSORCIO PARA EL DISENO, CONSTRUCCION, EQUIPAM	ES	Affiliated	
38	CHALMERS TEKNISKA HOGSKOLA AB	SE	Affiliated	
39	FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANG	DE	Affiliated	
40	FUNDACION TECNALIA RESEARCH & INNOVATION	ES	Affiliated	
41	DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV	DE	Affiliated	
42	Fundacion IMDEA Energia	ES	Affiliated	
43	STICHTING NEDERLANDSE WETENSCHAPPELIJK ONDERZC	NL	Affiliated	
44	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR	Affiliated	
45	FUNDACION CENER	ES	Affiliated	

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#	Participating Organisation Legal Name	Country	Role	Action
46	Laboratorio Nacional de Energia e Geologia I.P.	PT	Affiliated	
47	SINTEF ENERGI AS	NO	Affiliated	
48	UNIVERSIDADE DE EVORA	PT	Affiliated	
49	UNIVERSITA DEGLI STUDI DI PADOVA	IT	Affiliated	
50	UNIVERSITY OF STRATHCLYDE	UK	Affiliated	
51	THE UNIVERSITY OF EDINBURGH	UK	Affiliated	
52	FUNDACION CENTRO TECNOLOGICO DE COMPONENTES	ES	Affiliated	
53	TURKIYE BILIMSEL VE TEKNOLOJIK ARASTIRMA KURUMU	TR	Affiliated	
54	HELMHOLTZ-ZENTRUM BERLIN FUR MATERIALIEN UND EN	DE	Affiliated	

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Organisation data

PIC	Legal name
990797674	*KARLSRUHER INSTITUT FUER TECHNOLOGIE*

Short name: KIT

Address

Street	KAISERSTRASSE 12
Town	KARLSRUHE
Postcode	76131
Country	Germany
Webpage	www.kit.edu

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	14/01/2022 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Institute for Micro Process Engineering (IMVT)	☐ not applicable
	☒ Same as proposing organisation's address	
Street	KAISERSTRASSE 12	
Town	KARLSRUHE	
Postcode	76131	
Country	Germany	

Department 2

Department name	Helmholtz Institute Ulm (HIU)	☐ not applicable
	☒ Same as proposing organisation's address	
Street	KAISERSTRASSE 12	
Town	KARLSRUHE	
Postcode	76131	
Country	Germany	

Department 3

Department name	ITAS	☐ not applicable
	☒ Same as proposing organisation's address	
Street	KAISERSTRASSE 12	
Town	KARLSRUHE	
Postcode	76131	
Country	Germany	

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Links with other participants

Type of link	Participant

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Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title: Dr

Gender: (•) Woman ( ) Man ( ) Non Binary

First name*: **Myriam Elisa**

Last name*: **GIL BARDAJI**

E-Mail*: **elisa.gil@kit.edu**

Position in org.: Team member

Department: Helmholtz Institute Ulm (HIU)

☐ Same as organisation name

☒ Same as proposing organisation's address

Street: KAISERSTRASSE 12

Town: KARLSRUHE

Post code: 76131

Country: Germany

Website: www.kit.edu

Phone: +49 721 608 26995

Phone 2: *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Holger	Ihssen	holger.ihssen@helmholtz.de	+xxx xxxxxxxxx
Olga	Suminska-Ebersoldt	olga.suminska-ebersoldt@kit.edu	+xxx xxxxxxxxx
Alexandra	Lex-Balducci	alexandra.lex-balducci@kit.edu	+xxx xxxxxxxxx
Peter	Holtappels	peter.holtappels@kit.edu	+xxx xxxxxxxxx
Sabine	Müller	forscience@for.kit.edu	+xxx xxxxxxxxx
Wolfgang	Reik	eu@for.kit.edu	+xxx xxxxxxxxx

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Peter	Holtappels	Man	Germany	Peter.holtappels@kit.edu	Category B Senior resea	Leading	0000-0002-3667-8134	Orcid ID
Dr	Olga	Suminska-Ebersoldt	Woman	Poland	Olga.suminska-ebersoldt@kit.edu	Category B Senior resea	Team member		
Dr	Elisa	Gil Bardají	Woman	Spain	elisa.gil@kit.edu	Category A Top grade re	Team member		
Dr	Manuel	Baumann	Man	Austria	Manuel.baumann@kit.edu	Category B Senior resea	Team member	0000-0002-8374-4624	Orcid ID
Dr	Martina	Haase	Woman	Germany	martina.haase@kit.edu	Category B Senior resea	Team member	0000-0002-9098-3930	Orcid ID
Dr	Tim	Müller	Man	Germany	tim.mueller@kit.edu	Category B Senior resea	Team member		
Mr	Patrick	Stuhm	Man	Germany	Patrick.stuhm@kit.edu	Category C Recognised	Team member	0000-0002-1611-4606	Orcid ID

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Role of participating organisation in the project

Project management	☒
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☒
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☒
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Baumann, M.; Weil, M.; Peters, J. F.; Chibeles-Martins, N.; Moniz, A. B. A review of multi-criteria decision making approaches for evaluating energy storage systems for grid applications. 2019. Renewable & sustainable energy reviews, 107, 516–534. doi:10.1016/j.rser.2019.02.016*
Publication	*Haase, M.; Wulf, C.; Baumann, M.; Rösch, C.; Weil, M.; Zapp, P.; Naegler, T. Prospective assessment of energy technologies: a comprehensive approach for sustainability assessment 2022. Energy, Sustainability and Society, 12 (20), Article no: 20. doi:10.1186/s13705-022-00344-6*
Publication	*Wulf, C.; Haase, M.; Baumann, M.; Zapp, P. Weighting factor elicitation for sustainability assessment of energy technologies 2023. Sustainable energy & fuels. doi:10.1039/d2se01170k*
Publication	*R. Dittmeyer, M. Klumpp, P. Kant, G Ozin, Crowd oil not crude oil, NATURE COMMUNICATIONS (2019) 10:1818 (https://doi.org/10.1038/s41467-019-09685-x*
Publication	*H. Kirsch, U. Sommer, P. Pfeifer, R. Dittmeyer, Power-to-fuel conversion based on reverse watergas-shift, Fischer-Tropsch Synthesis and Hydrocracking: Mathematical modeling and simulation in Matlab/Simulink, Chemical Engineering Science Volume 227, 14 December 2020, 115930*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
StoRIES project - EU H2020	*Storage Research Infrastructures Eco-system Project coordinator and WPs leader 2021-2025 H2020-LC-GD-2020 101036910*
SmILES project - EU H2020	*Smart Integration of Energy Storages in Local Multi Energy Systems for maximising the Share of Renewables in Europe's Energy Mix (SmILES) Project coordinator and WPs leader 2016-2019 H2020-LCE-2016-2017 Project: 730936*
TwinVECTOR -EU H2020 (https://twinvector.eu/)	*HORIZON.4.1 - Widening participation and spreading excellence, Grant agreement ID: 101078935 2022 - 2025 HORIZON-WIDERA-2021-ACCESS-03*
KEROGREEN EU H2020 https://www.kerogreen.eu/index	*The KeroGreen project addresses the synthesis of kerosene from plasma reduced CO2 and the related downstream Fischer-Tropsch (FT) processes. This includes the modelling and experimental invetsigation of the overall FT process (IMVT) as well as the sustainability analysis based on LCA (ITAS) (2018-2022) Grant agreement No 763909.*
H2FC EU - FP7 https://h2fc.eu/portal.html	*Research Infrastructure project on hydrogen and fuel cell technologies, sharing and improving existing research infrastructures in this area and providing transnational access to industries and SMEs. (2011-2015) Grant agreement No. FP7-284522*

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Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
HIU	*HIU is a highly integrated research unit that provides excellent experience in the battery research, including battery active and inactive materials, cell components, and the assembly of coin cells and pouch cells.*
Energy Lab	*Energy Lab is the research platform on TRL 5-6 to support the energy transition and the technologies for the "net zero economy". It allows the scale-up of promising technologies to semi-industrial scale (Lab to Fab) and for validation of system models and technology recommendations.*
KALLA	*Different liquid metal test loops are available:(1)for hydrogen production from methane or biogas (at > 1000°C), (2) for testing thermal energy storage materials and measuring devices in contact with liquid metal (up to 400°C), (3) for component testing in liquid metal flows (up to 700°C), from 2024*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
999584128	*AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH*

Short name: AIT

Address

Street	GIEFINGGASSE 4
Town	WIEN
Postcode	1210
Country	Austria
Webpage	http://www.ait.ac.at/

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	13/10/2022	- no
SME self-assessment	31/12/2021	- no
SME validation	14/01/2009	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Center for Energy	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Giefinggasse 6	
Town	Vienna	
Postcode	1210	
Country	Austria	

Links with other participants

Type of link	Participant

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Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Dr

Gender ○ Woman ◉ Man ○ Non Binary

First name* **Thomas**

Last name* **Strasser**

E-Mail* **thomas.strasser@ait.ac.at**

Position in org. Senior Scientist

Department Center for Energy

☐ Same as organisation name

☐ Same as proposing organisation's address

Street Giefinggasse 2

Town Vienna

Post code 1210

Country Austria

Website www.ait.ac.at

Phone +43 50550 6279

Phone 2 *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Yannick	Wimmer	yannick.wimmer@ait.ac.at	+43 50550 6067
Mihai	Calin	mihai.calin@ait.ac.at	+43 50550 6212
Veronica	Vana	veronica.vana@ait.ac.at	+43 50550 6678
Stephan	Abermann	stephan.abermann@ait.ac.at	+43 50550 6384
Daniel	Lager	daniel.lager@ait.ac.at	+43 50550 6394
Annemarie	Schneeberger	annemarie.schneeberger@ait.ac.at	+43 50550 6349
Emina	Mujic-Duro	emina.mujic-duro@ait.ac.at	+43 50550 6268

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Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Thomas	Strasser	Man	Austria	thomas.strasser@ait.ac.at	Category A Top grade re	Leading	0000-0002-6415-766X	Orcid ID
Dr	Mihai	Calin	Man	Romania	mihai.calin@ait.ac.at	Category B Senior resea	Team member	0000-0002-6283-8621	Orcid ID
Dr	Yannick	Wimmer	Man	Austria	yannick.wimmer@ait.ac.at	Category B Senior resea	Team member	0000-0002-9531-6459	Orcid ID
Dr	Edmund	Widl	Man	Austria	edmund.widl@ait.ac.at	Category A Top grade re	Team member	0000-0002-2834-306X	Orcid ID
Dr	Stephan	Abermann	Man	Austria	stephan.abermann@ait.ac.at	Category A Top grade re	Team member	0000-0003-2410-8190	Orcid ID
Dr	Daniel	Lager	Man	Austria	daniel.lager@ait.ac.at	Category B Senior resea	Team member	0000-0002-9909-9041	Orcid ID

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Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☒
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☒
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☒
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*T. Strasser, E. de Jong, M. Sosnina (ed.): "European Guide to Power System Testing: The ERIGrid Holistic Approach for Evaluating Complex Smart Grid Configurations"; Springer Nature, Cham, Switzerland, 2020, ISBN: 978-3-030-42274-5; 141 pages. doi:10.1007/978-3-030-42274-5*
Publication	*T. Strasser, S. Rohjans, G. Burt (ed.): "Methods and Concepts for Designing and Validating Smart Grid Systems"; MDPI, Basel, Beijing, Wuhan Barcelona Belgrade, 2019, ISBN: 978-3-03921-649-9. doi:10.3390/books978-3-03921-649-9*
Publication	*T. Strasser, E. Jong, M. Sosnina, J. Rodríguez-Seco, P. Kotsampopoulos, D. Babazadeh, K. Mäki, R. Bhandia, R. Brandl, C Sandroni, K. Heussen, F. Coffele: "Achievements, experiences, and lessons learned from the European research infrastructure ERIGrid related to the validation of power and energy systems"; Elektronik & Informationstechnik (e&i), Springer Nature, vol. 137, no. 8, 2020. doi:10.1007/s00502-020-00843-4*
Publication	*D. Lager, E. Haslinger, R. Friedrich: "Thermophysical Properties of a Subsoil Drill Core for Geothermal Energy Applications"; Processes, MDPI, vol. 10, no. 3; 496, 2022. doi:10.3390/pr10030496*
Publication	*E. Widl, D. Cronbach, P. Sorknæs, J. Fitó, D. Muschik, M. Repetto, J. Ramousse, A. Inanakiev: "Expert survey and classification of tools for modeling and simulating hybrid energy networks"; Sustainable Energy, Grids and Networks, Elsevier, vol. 32, 2022. doi:10.1016/j.segan.2022.100913*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
H2020 ERIGrid 2.0 (GA 870620)	*Research infrastructure supporting smart energy systems, smart grid, and distributed energy resource topics; provision and access to smart energy systems and smart grid research infrastructure; development of validation and testing approaches for smart energy systems (incl. interoperability); this project is coordinated by AIT.*
H2020 ERIGrid (GA 654113)	*Research infrastructure supporting smart grid and distributed energy resource topics; provision and access to smart grid research infrastructure; development of validation and testing approaches for smart energy systems (incl. interoperability); this project is coordinated by AIT.*
H2020 StoRIES (GA 101036910)	*Research infrastructure supporting energy storage systems; provision and access to energy storage systems and technologies research infrastructure; promotion of a European ecosystem of industry and research organization to develop innovative concepts and competitive and less costly energy storage technologies; AIT is a project member.*
H2020 VIPERLAB (GA 101006715)	*Research infrastructure supporting perovskite photovoltaics developments; provision and access to perovskite photovoltaics research infrastructures; AIT is a project member.*
IEA ISGAN/SIRFN (https://www.iea-isgan.org/)	*Network on an international level that focuses on investigating the use of local flexibilities to relieve distribution grid constraints; exploration of new solutions to foster the development of distributed energy resources and preparing the electric system for new services, including e-mobility. AIT provides the secretariat and the operating agent for the network.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
AIT SmartEST Laboratory (https://ait.ac.at)	*Multifunctional research, validation, and testing infrastructure for smart grids; the infrastructure comprises three configurable laboratory networks that can be operated with a constant output of up to 1 MW (incl. network simulators, PV simulators, a facility for building island systems, PHIL).*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

AIT ThermStore Lab (https://ait.ac.at)	*Multifunctional research, validation, and testing infrastructure for thermal energy or heat storage technologies from material to system scale.*
AIT H2LAB (https://ait.ac.at)	*Multifunctional research, validation, and testing infrastructure for the development and validation of components and systems from the fields of electrolysis, fuel cells, battery storage, and power electronics. The infrastructure will start its operation in Q1/2024.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
999992401	*COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES*

Short name: CEA

Address

Street	RUE LEBLANC 25
Town	PARIS 15
Postcode	75015
Country	France
Webpage	www.cea.fr

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	17/05/2019	- no
SME self-assessment	unknown	
SME validation	01/10/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Institute Rayonnement Matière de Saclay	☐ not applicable
	☒ Same as proposing organisation's address	
Street	RUE LEBLANC 25	
Town	PARIS 15	
Postcode	75015	
Country	France	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Dr

Gender ◉ Woman ○ Man ○ Non Binary

First name* **Sawako**

Last name* **Nakamae**

E-Mail* **sawako.nakamae@cea.fr**

Position in org. Researcher

Department Institute Rayonnement Matière de Saclay

☐ Same as organisation name

☒ Same as proposing organisation's address

Street RUE LEBLANC 25

Town PARIS 15

Post code 75015

Country France

Website http://IRAMIS.cea.fr/SPEC

Phone +33 1 6908 7538

Phone 2 *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Marie-Astrid	Cavrois-Desmier	marie-astrid.cavrois-desmier@cea.fr	+xxx xxxxxxxxx
Mathilde	Suret	suret.mathilde@cea.fr	+xxx xxxxxxxxx
Catherine	Gilles-Pascaud	catherine.gilles-pascaud@cea.fr	+xxx xxxxxxxxx
Fabienne	Le Mandat	fabienne.lemandat@cea.fr	+xxx xxxxxxxxx

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	sawako	nakamae	Woman	Japan	sawako.nakamae@cea.fr	Category B Senior resea	Leading	0000-0001-9174-3165	Orcid ID
Dr	yann	LECONTE	Man	France	yann.leconte@cea.fr	Category B Senior resea	Team member	0000-0002-1553-633X	Orcid ID
Dr	hicham	khodja	Man	France	hicham.khodja@cea.fr	Category A Top grade re	Team member	0000-0001-8374-4539	Orcid ID
Dr	olivier	Sublemontier	Man	France	olivier.sublemontier@cea.fr	Category B Senior resea	Team member	0000-0002-6574-9309	Orcid ID
Ms	Émeline	Cournède	Woman	France	emeline.cournede@cea.fr	Category D First stage r	Team member		
Dr	thibault	charpentier	Man	France	thibault.charpentier@cea.fr	Category B Senior resea	Team member	0000-0002-3034-1389	Orcid ID
Dr	alan	wong	Man	Canada	alan.wong@cea.fr	Category B Senior resea	Team member	0000-0002-0917-3165	Orcid ID
Dr	patrick	berthault	Man	France	patrick.berthault@cea.fr	Category A Top grade re	Team member	0000-0003-4008-2912	Orcid ID
Dr	marc	briant	Man	France	marc.briant@cea.fr	Category B Senior resea	Team member	0000-0003-3745-9061	Orcid ID
Dr	mark	levenstein	Man	France	mark.levenstein@cea.fr	Category B Senior resea	Team member	0000-0002-2309-3743	Orcid ID
Dr	olivier	tache	Man	France	olivier.tache@cea.fr	Category B Senior resea	Team member	0000-0001-6912-2610	Orcid ID
Dr	Antoine	THILL	Man	France	antoine.thill@cea.fr	Category B Senior resea	Team member		

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Automated total micro-IBA using Advanced Image Processing and Machine Learning, J. Phys.: Conf. Ser. 2326 (2022) 012006. https://doi.org/10.1088/1742-6596/2326/1/012006.*
Publication	*Nanoobjects: Synthesis, Integration and Application to Energy and Transportation, Magali Gauthier, Yann Leconte, Henri Perez and Olivier Sublemontier, in AMETIS (Advanced Manufacturing for Energy and Transportation International School) Ed. N. Chaâbane and F. Schuster, CHAPTER 2. https://doi.org/10.1051/978-2-7598-2588-2*
Publication	*MOMAC: a SAXS/WAXS laboratory instrument dedicated to nanomaterials, J. Appl. Cryst., 2016, 49, 1624-1631. https://onlinelibrary.wiley.com/iucr/doi/10.1107/S1600576716012127*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
DIADEM	*DIscovery Acceleration for the Deployment of Emerging Materials The objective of DIADEM is the accelerated discovery of new materials. I participate in the targeted project FastNano, specialized in the development of new nano-materials. ANR-22-PEXD-0006, 2022-2026*
COSY	*COnfined molecular SYstems: from a new generation of materials to the stars. (COST-Action) COSY aims to provide a computationally and experimentally sound foundation for the fundamental understanding and control of confined molecular systems. I am a member of the working groups "Confined Metal and Metal-Oxide Nanoparticles and Clusters Down to the Subnanometer Scale".*
HYMALAYAN	*Hybridization of laser pyrolysis and magnetron sputtering for deposition of advanced nanocomposites. Production by a single step process of nanocomposite layers controlled in situ. The nanocomposites are in the form of nanoparticles (NP) of 4 to 100 nm distributed homogeneously in a matrix, without limitation in the respective chemical compositions of the nanoparticles and the matrix. ANR-14-CE07-0036 (2015-2019) Coordinator.*
AMPEA	*Joint programme "Advanced Materials and Processes for Energy Applications" of EERA (European Energy Research Alliance https://www.eera-set.eu/). Coordinator since 2020.*
Nanouptake	*COST Action (CA15119) – Overcoming Barriers to Nanofluids Market Uptake. The network aims to create a Europe-wide network of leading R+D+i institutions, and of key industries, to develop and foster the use of nanofluids as advanced heat transfer/thermal storage materials to increase the efficiency of heat exchange and storage systems.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Flame spray pyrolysis + co-deposition reactor	*Gas phase synthesis reactor for a wide variety of dry nanopowders (e.g. SiO2, core-shell, composites, etc.). Co-deposition tool enables the simultaneous deposition of particles via an aerodynamic lens and a matrix by PVD to obtain a homogeneous composite layer/multilayers (1 inch surface area).*
Liquid-phase reactor	*Synthesis of a wide range of nanomaterials using standard chemistry glassware (up to 250 °C and atm. pressure). Reactions are modified or fed using syringe pumps for reagent injection and their progress is monitored using a custom small-angle X-ray scattering (SAXS) platform (see below).*
SAXS	*A unique platform providing real-time metrological data (e.g., particle size, polydispersity, and concentration) in absolute scattering units throughout the synthesis process. Examples materials: SiO2 nanoparticles, metal-organic framework (MOF) nanocrystals, and aluminosilicate nanotubes.*

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Nuclear microbe	*Non-destructive chemical analysis in solids at the micrometric (lateral) and nanometric (depth) scale. Automated data analysis enables high throughput screening experiments. An open facility within the French EMIR&A network, but also open to international access.*
Electron linear accelerator (ALIENOR)	*Accelerating aging induced by irradiation and analysis through gas production measurements (micro gas chromatography…), various spectroscopic techniques, electrochemistry. An open facility of the EMIR&A network.*
Solid and Liquid & Gas State NMR spectrometers	*Solid: (11.7T, 500WB; 7T, 300WB, Broadband Variable-Temperature) spectrometers with high-resolution MAS NMR probe-heads. Super-wide bore imager (7T, 65 mm id). Liquid & Gas: (11.7 T, 500NB) spectrometers with homebuilt flow-devices. A 3D printed insert enables in-operando flow monitoring.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999614877	*CENTRO DE INVESTIGACIONES ENERGETICAS, MEDIOAMBIENTALES Y TECNOLOGICAS-CIEMAT*

Short name: CIEMAT

Address

Street	Avenida Complutense 40
Town	MADRID
Postcode	28040
Country	Spain
Webpage	http://www.ciemat.es

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	30/12/2019 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Energy	☐ not applicable
	☒ Same as proposing organisation's address	
Street	Avenida Complutense 40	
Town	MADRID	
Postcode	28040	
Country	Spain	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title: Dr

Gender: ○ Woman ◉ Man ○ Non Binary

First name*: **Ricardo**

Last name*: **Sanchez**

E-Mail*: **ricardo.sanchez@psa.es**

Position in org.: EU Project Coordinator

Department: Plataforma Solar de Almeria

☐ Same as organisation name

☐ Same as proposing organisation's address

Street: Ctra. de Senés km 4.5

Town: Tabernas

Post code: 04200

Country: Spain

Website: www.psa.es

Phone: +34 950 387 900

Phone 2: *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Julian	Blanco	julian.blanco@psa.es	+34 950 387 900
Rafael	Mayo-Garcia	rafael.mayo@ciemat.es	+34 950 387 900
Sylvia	Nuñez	ope@ciemat.es	+xxx xxxxxxxxx

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Julian	Blanco	Man	Spain	julian.blanco@psa.es	Category A Top grade re	Team member	0000-0001-7329-380X	Orcid ID
Dr	Ricardo	Sanchez	Man	Spain	ricardo.sanchez@psa.es	Category B Senior resea	Team member	0000-0001-5037-1385	Orcid ID
Dr	Rafael	Mayo-García	Man	Spain	rafael.mayo@ciemat.es	Category A Top grade re	Leading	0000-0002-0151-3954	Orcid ID
Dr	Hernán	Asorey	Man	Spain	hernan.asorey@ciemat.es	Category B Senior resea	Team member	0000-0002-4559-8785	Orcid ID
Dr	Angelines	Alberto	Woman	Spain	angelines.alberto@ciemat.es	Category B Senior resea	Team member	0000-0003-4316-0103	Orcid ID
Dr	José Antonio	Moríñigo	Man	Spain	josea.morinigo@ciemat.es	Category B Senior resea	Team member	0000-0003-2528-7485	Orcid ID
Dr	Antonio Juan	Rubio-Montero	Man	Spain	antonio.rubio@ciemat.es	Category B Senior resea	Team member	0000-0001-6497-753X	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☒
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Service	*LAGO thematic service (https://learn.eosc-synergy.eu/lago-thematic-service/), in which CIEMAT has developed a complete data-driven workflow of simulation, analysis, and FAIRification of data in one of the most used virtual organizations of EGI and EOSC*
Publication	*Wierling, A. et al.FAIR Metadata Standards for Low Carbon Energy Research—A Review of Practices and How to Advance. Energies 2021, 14, 6692. (https://doi.org/10.3390/en14206692)*
Publication	*R. Mayo-García, E. Audit. Exascale, a great opportunity for Clean Energy Transition in Europe. Joint EERA and EoCoE position paper on HPC for Energy.*
Other achievement	*EU-SOLARIS ERIC achievement as ESFRI Landmark (2021). Leader country: Spain. Additional involved countries: Germany, France, Cyprus. Initial observer country: Portugal. Central node: CIEMAT-PSA. The organization will improve the coordination of existing and future CST research infrastructures also fostering access to the industry.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
Coordination of the EERA transversal Joint Program	*Coordination of the EERA transversal Joint Programme 'Digitalisation for energy' (https://www.eera-set.eu/component/projects/projects.html?id=183), in which CIEMAT is coordinating digital activities related to FAIR principles, data curation, simulation, data analysis, etc.*
Storage Research Infrastructure Eco-System	*Storage Research Infrastructure Eco-System (StoRIES, Grant agreement ID: 101036910). The EU-funded StoRIES project will promote a European ecosystem of industry and research organisations to develop innovative concepts and competitive and less costly energy storage technologies.*
Energy Oriented Center of Excellence	*Energy Oriented Center of Excellence: toward exascale for energy (EoCoE-II, Gant agreement ID: 824158). The Energy-oriented Centre of Excellence (EoCoE) in computing applications develops and applies cutting-edge computational methods in its mission to accelerate the transition to the production, storage and management of clean, decarbonised energy.*
SFERA-III	*The EU-funded project SFERA-III that CIEMAT is coordinating, includes networking activities to further develop the cooperation between the SFERA-III RIs, the scientific community, industries and other external stakeholders; transnational access activities to provide access to European and non-European researchers from both academia and industry to world-class scientific and technological concentrated solar RIs; and joint research activities to improve the integrated services provided by the RIs.*
Coordination of the EERA Joint programme on CSP	*CIEMAT is coordinating the EERA Joint Programme on Concentrated Solar Power (https://www.eera-csp.eu/) which aims to integrate and coordinate the scientific collaboration among the leading European research institutions in CSP in order to contribute to the achievement of the targets set by the SET-Plan.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Xula cluster	*190 nodes - 8096 cores - IB HDR 200 - 192 GB RAM/core*
Turgalium cluster	*36 nodes - 1440 cores - IB HDR 100 - 192 GB RAM/core - 20 NVIDIA Volta*
Plataforma Soalr de Almería	*The Plataforma Solar de Almeria (PSA) is recognised as a Major European Scientific Facility by the European Commission and is also the largest and most complete R&D centre in the world dedicated to Solar Thermal Concentrating Systems, Solar Desalination and Photochemistry.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
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- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999979500	*CONSIGLIO NAZIONALE DELLE RICERCHE*

Short name: CNR

Address

Street	PIAZZALE ALDO MORO 7
Town	ROMA
Postcode	00185
Country	Italy
Webpage	www.cnr.it

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	05/09/2022	- no
SME self-assessment	unknown	
SME validation	05/12/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Dipartimento di Ingegneria, ICT e Tecnologie per l'Energia e i Tr	☐ not applicable
	☒ Same as proposing organisation's address	
Street	PIAZZALE ALDO MORO 7	
Town	ROMA	
Postcode	00185	
Country	Italy	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Dr

Gender ◉ Woman ○ Man ○ Non Binary

First name* **Monica**

Last name* **Fabrizio**

E-Mail* **monica.fabrizio@cnr.it**

Position in org. dirigente di ricerca

Department Dipartimento di Ingegneria, ICT e Tecnologie per l'Energia e i Trasporti

☐ Same as organisation name

☒ Same as proposing organisation's address

Street PIAZZALE ALDO MORO 7

Town ROMA

Post code 00185

Country Italy

Website *Please enter website*

Phone +39 3887606819

Phone 2 *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Carla	Mazziotti Gomez de Teran	carla.mazziotti@cnr.it	+39 0649932008
Silvia	Presello	silvia.presello@cnr.it	+39 0649933849
Massimo	Falchi	massimo.falchi@cnr.it	+xxx xxxxxxxxx
Lorenzo	Spadaro	spadaro@itae.cnr.it	+xxx xxxxxxxxx
Salvatore	Vasta	salvatore.vasta@itae.cnr.it	+xxx xxxxxxxxx
Lorenzo	Belussi	belussi@itc.cnr.it	+xxx xxxxxxxxx
Pino	Sabia	pino.sabia@cnr.it	+xxx xxxxxxxxx
Elisa	Sani	elisa.sani@ino.cnr.it	+xxx xxxxxxxxx
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Luca	Greco	luca.greco@cnr.it	+xxx xxxxxxxxx

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Monica	Fabrizio	Woman	Italy	monica.fabrizio@cnr.it	Category A Top grade re	Leading	0000-0003-2257-8375	Orcid ID
Dr	Salvatore	Vasta	Man	Italy	salvatore.vasta@itae.cnr.it	Category C Recognised	Team member	0000-0002-3340-0022	Orcid ID
Dr	Lorenzo	Belussi	Man	Italy	belussi@itc.cnr.it	Category C Recognised	Team member	0000-0002-1341-0602	Orcid ID
Dr	Elisa	Sani	Woman	Italy	elisa.sani@ino.cnr.it	Category C Recognised	Leading	0000-0001-9854-2892	Orcid ID
Dr	Lorenzo	Spadaro	Man	Italy	spadaro@itae.cnr.it	Category B Senior resea	Team member	0000-0002-5754-9358	Orcid ID
Dr	Pino	Sabia	Man	Italy	pino.sabia@cnr.it	Category C Recognised	Team member	0000-0001-6731-6104	Orcid ID
Dr	Luca	Greco	Man	Italy	luca.greco@cnr.it	Category C Recognised	Team member	0000-0003-4421-488X	Researcher ID
Dr	Massimo	Falchi	Man	Italy	massimo.falchi@cnr.it	Category C Recognised	Team member	0000-0001-5396-1743	Orcid ID

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Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Brocchini, M., Marini, F., Falchi, M., Postacchini, M., Zitti, G. (2023)"Particle dynamics due to interaction between a breaking-induced vortex and a nearbed vortex" Physics of Fluids, 2023, 35(1), 015161*
Publication	*Danza, L., Barozzi, B., Bellazzi, A., Belussi, L., Devitofrancesco, A., Ghellere, M., Salamone, F., Scamoni, F., Scrosati, C. (2020). A weighting procedure to analyse the Indoor Environmental Quality of a Zero-Energy Building. Building and Environment, 183, 107155.*
Publication	*Privitera, E., Caponetto, R., Matera, F., Vasta, S. (2022). Impact of geometry on a thermal-energy storage finned tube during the discharging process. Energies, 15(21) doi:10.3390/en15217950*
Publication	*E. Sani, D. Sciti, L. Silvestroni, A. Bellucci, S. Orlando, D. M. Trucchi, Tailoring optical properties of surfaces in wide spectral ranges by multi-scale femtosecond-laser texturing: a case-study for TaB2 ceramics, Optical Materials, vol. 109 (2020) paper number: 110347. DOI: 10.1016/j.optmat.2020.110347*
Publication	*Elena Colombini, Magdalena Lassinantti Gualtieri, Cecilia Mortalò, Silvia Maria Deambrosis, Francesco Montagner, Valentina Zin, Enrico Miorin, Giorgio Valsecchi, Monica Fabrizio, Paolo Veronesi (2022) Powder Metallurgy Route for the Synthesis of Multiprincipal Element Alloys Sputtering Targets, Adv. Eng. Mater. 2022, 2101518*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
MARINET2	*Marine Renewable Infrastructure for Enhancing Technologies 2 – Horizon 2020 - 01/01/2017-21/12/2021 – grant ID: 731084*
I-ZEB	*Towards Intelligent Zero Energy Buildings for the growth of the smartcity. (01/12/2016 – 30/06/2019 Agreement CNR-Lombardy Region 2016-2019)*
C3HARME	*Next generation Ceramic Composites for combustion harsh environments and space (H2020, Grant Agreement 685594 ,CNR Coordinator) 2016-2020*
E2PHEST2US	*Enhanced Energy Production of Heat and Electricity by a combined Solar Thermionic-Thermoelectric Unit System. (FP7, GA 241270, 2010-2012). Development of thermionic-thermoelectric converters for concentrating solar energy.*
ADVANCEPEM	*Development of low temperature water electrolysers for highly pressurised hydrogen production, HORIZON-JTI-CLEANH2-2022-01-03 Grant ID 101101318*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
e-fuels Test Center	*STEMS CNR Experimental lab- to pilot-scale test-rigs for the characterization of oxidation of gaseous or pre-vaporized liquid fuels under conditions relevant for a wide range of operating conditions spanning from the lean and ultra-lean to the MILD and Oxy-fuel oxidation.*
Experimental Test Buildings	*ITC CNR The Experimental test buildings are two buildings located at ITC-CNR headquarter area where it is possible to test prototypes and system for energy production in real operating conditions and under real weather and environmental conditions.*
Italy Materials Alliance	*INO etc. CNR Several complementary installations located in different laboratories in Italy, guarantees, as a whole, a complex and multi-disciplinary approach to materials science. It covers, with its unique instrumental facilities and scientific knowhow, the whole materials' development*

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Seakeeping Tank	*INM CNR It is among the largest EU infrastructure of this type routinely used for testing Offshore Renewable Energy devices for research as well as commercial work. The wave tank is 220 m long, 9.0 m wide, 3.5 m deep.*
Towing Tank	*INM CNR Calm water Towing Tank (TT) is the largest EU towing tank infrastructure used for testing Marine Renewable Energy (MRE) devices for research as well as commercial work. It is 470 m long, 13.5 m wide, 6.5 m deep.*
Test Center for thermal energy storage and convers	*ITAE CNR It provides a full chain of characterization (equipments and testing rigs) from materials up to system level,*
Test Centre for H2 (FC and ELY testing)	*ITAE CNR The Centre provides stations and laboratories to test prototypes and systems for hydrogen technologies: H2 production by electrolyser at low temperature; Fuel cells; Facilities for systemic experimental design*
Laboratory of Structural Dynamics and Diagnostics	*INM CNR The infrastructure perform structural tests related to the characterization of static and dynamical mechanical properties of material samples and more complex structures related to marine engineering and renewable energy devices*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
995966028	*EUROPEAN DISTRIBUTED ENERGY RESOURCES LABORATORIES (DERLAB) EV*

Short name: DERlab

Address

Street	WILHELMSSTRASSE 5
Town	KASSEL
Postcode	34117
Country	Germany
Webpage	www.der-lab.net

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	22/12/2008 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

No department involved

Department name	*Name of the department/institute carrying out the work.*	☒ not applicable
	☐ Same as proposing organisation's address	
Street	*Please enter street name and number.*	
Town	*Please enter the name of the town.*	
Postcode	*Area code.*	
Country	*Please select a country*	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title: Dr

Gender: (•) Woman ( ) Man ( ) Non Binary

First name*: **Diana**

Last name*: **Strauss**

E-Mail*: **diana.strauss-mincu@der-lab.net**

Position in org.: General Manager

Department: EUROPEAN DISTRIBUTED ENERGY RESOURCES LABORATORIES (DERLAB) EV

☒ Same as organisation name

☒ Same as proposing organisation's address

Street: WILHELMSSTRASSE 5

Town: KASSEL

Post code: 34117

Country: Germany

Website: https://der-lab.net/

Phone: +49 561 78808316

Phone 2: *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Leonard Enrique	Ramos Perez	leonard.ramos@der-lab.net	+49 561 78808312
Irene	Knaub	irene.knaub@der-lab.net	+49 561 78808311

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Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Mr	Leonard Enrique	Ramos Perez	Man	Colombia	leonard.ramos@der-lab.net	Category C Recognised	Leading	0000-0001-7912-453X	Orcid ID
Mr	Yaksh	Kumar	Man	India	yaksh.kumar@der-lab.net	Category C Recognised	Team member	0000-0002-6064-1083	Orcid ID
Dr	Diana	Strauss-Mincu	Woman	Germany	diana.strauss-mincu@der-lab.net	Category A Top grade re	Team member	0000-0001-6413-6247	Orcid ID

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Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Dataset	*Standards and Grid Code Database: provides information on Smart Grid standards and related documents, such as standards and specifications, both published and in the draft status, as well as roadmaps and guidelines. For more information: https://standards.derlab.net/*
Dataset	*The Database of DER and Smart Grid Research Infrastructure contains systematic information on research infrastructure and related assets, testing capabilities and services of research institutes and organisations worldwide focusing on Distributed Energy Resources (DER) and Smart Grids. For more information: https://infrastructure.der-lab.net/*
Publication	*Publication Advanced Laboratory Testing Methods Using Real-Time Simulation and Hardware-in-the-Loop Techniques: A Survey of Smart Grid International Research Facility Network Activities (https://der-lab.net/advanced-laboratory-testing-methods-using-real-time-simulation-and-hardware-in-the-loop-techniques-a-survey-of-smart-grid-international-research-facility-network-activities/)*
Publication	*DERlab Activity Report 2018/2020 (https://der-lab.net/wp-content/uploads/2020/06/Activity-Report-2018_2020-EXTENDED_17062020_lowquality-komprimiert.pdf)*
Service	*DERlab members community service: joint research, information exchange, networking activities, visibility, testing services, and technical support (https://der-lab.net/services/)*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
PANTERA	*PAN European Technology Energy Research Approach (www.pantera-platform.eu) (PANTERA) project will identify and implement initiatives, aimed at levelling the participation of EU countries to a common energy market for the benefit of all EU citizens. The importance of PANTERA project lies, in particular, in bridging the gaps in Research & Innovation in the energy field that currently exist in Europe between Member States.*
EIRIE platform	*The European Interconnection for Research Innovation & Entrepreneurship (EIRIE) Platform is an interactive multi-functional platform that acts as the meeting point for all actors active in the field of energy research and innovation from all Europe. It is constricted by the PANTERA consortium with support from subcontractor and it's hosted by JRC.*
ERIGrid 2.0	*The Networking European Smart Grid Research Infrastructures (ERIGrid) 2.0 project widened and advanced the provided lab access in order to fulfil the challenging goals of the EU towards a clean, secure, and efficient energy transition to face climate and energy challenges. ERIGrid 2.0 is a single-entry point for researchers active in smart grids, smart energy systems, and integration of renewables, as it offers free-of-charge lab access, as well as other advanced services. (https://erigrid2.eu/)*
eNeuron	*The Optimising the Design and Operation of Local Energy Communities (eNeuron) project will deliver a set of tools for optimising Local Energy Communities which draw on pioneering technology and business models that will be tested in real conditions at four pilot sites across Europe. (More information on https://eneuron.eu/)*
INTERPLAN	*INTERPLAN is a project that aims to provide an INTEgrated opeRation PLANning tool towards the pan-European network, to support the EU in reaching the expected low-carbon targets, while maintaining network security. INTERPLAN will provide a methodology for a proper representation of a "clustered" model of the pan-European network, with the aim to generate grid equivalents as a growing library able to cover all relevant system connectivity possibilities occurring in the real grid.*

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Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
999654356	*EREVNITIKO PANEPISTIMIAKO INSTITOUTO SYSTIMATON EPIKOINONION KAI YPOLGISTON-EMP*

Short name: NTUA

Address

Street	PATISION 42
Town	ATHINA
Postcode	106 82
Country	Greece
Webpage	www.iccs.gr

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	13/01/2022	- no
SME self-assessment	unknown	
SME validation	07/10/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	School of Electrical and Computer Engineering	☐ not applicable
	☐ Same as proposing organisation's address	
Street	9, Iroon Polytechniou Str	
Town	Zografou, Attica	
Postcode	15773	
Country	Greece	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Nikos	Hatziargyriou	Man	Greece	nh@power.ece.ntua.gr	Category A Top grade re	Leading	0000-0001-5296-191X	Orcid ID
Dr	Panos	Kotsampopoulos	Man	Greece	kotsa@power.ece.ntua.gr	Category B Senior resea	Leading	0000-0002-7927-3516	Orcid ID
Dr	Alexandros	Paspatis	Man	Greece	agpaspatis@gmail.com	Category B Senior resea	Team member	0000-0002-3479-019X	Orcid ID
Ms	Alkistis	Kontou	Woman	Greece	alkistiskont@gmail.com	Category D First stage r	Team member	0000-0002-4314-0623	Orcid ID

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Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*M. Syed, Tran The Hoang, A. Kontou, A. Paspatis, G. Burt, Quoc Tuan Tran, E. Guillo-Sansano, S. Vogel, Ha Thi Nguyen, N. Hatziargyriou, "Applicability of Geographically Distributed Simulations," in IEEE Transactions on Power Systems, 2022, doi: 10.1109/TPWRS.2022.3197635.*
Publication	*G. Lauss , Z. Feng, M. H. Syed, A. Kontou, A. De Paola, A. Paspatis, P. Kotsampopoulos, "A Framework for Sensitivity Analysis of Real-Time Power Hardware-in-the-Loop (PHIL) Systems," in IEEE Access, vol. 10, pp. 101305-101318, 2022, doi: 10.1109/ACCESS.2022.3206780.*
Publication	*P. C. Kotsampopoulos, F. Lehfuss, G. F. Lauss, B. Bletterie and N. D. Hatziargyriou, "The Limitations of Digital Simulation and the Advantages of PHIL Testing in Studying Distributed Generation Provision of Ancillary Services," in IEEE Transactions on Industrial Electronics, vol. 62, no. 9, pp. 5502-5515, Sept. 2015, doi: 10.1109/TIE.2015.2414899*
Publication	*Maniatopoulos, M., Lagos, D., Kotsampopoulos, P. and Hatziargyriou, N. (2017), "Combined control and power hardware in-the-loop simulation for testing smart grid control algorithms". IET Gener. Transm. Distrib., 11: 3009-3018. https://doi.org/10.1049/iet-gtd.2016.1341*
Publication	*T.I. Strasser, E.C.W. de Jong, M. Sosnina, J.E. Rodriguez-Seco, P. Kotsampopoulos, D. Babazadeh, K. Mäki, R. Bhandia, R. Brandl, C. Sandroni, K. Heussen, F. Coffele,. "Achievements, experiences, and lessons learned from the European research infrastructure ERIGrid related to the validation of power and energy systems". Elektrotech. Inftech. 137, 502–508 (2020). https://doi.org/10.1007/s00502-020-00843-4*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
ERIGrid 2.0, H2020 GA 870620 (2020-2024)	*ERIGrid 2.0 expands the research services & tools of European RI for validating smart energy networks with the electric power grid as the main backbone. Committed to the holistic and cyber-physical systems-based validation approach, ERIGrid 2.0 will foster system-level support and education for industrial and academic researchers in power and energy systems research and technology development. ICCS leads WP4 (training and education of power systems and ICT professionals, researchers, etc.)*
ERIGrid, H2020 GA 654113 (2015-2020)	*The main goal of the ERIGrid integrating activity was to support the technology development as well as the roll out of Smart Grid approaches, solutions and concepts in Europe taking a holistic, cyber-physical systems approach into account. ICCS was leadind WP4 (training and education of power systems and ICT professionals, researchers, etc.)*
DERri, FP7 GA 228449 (2009-2013)	*DERri was aimed at enhancing the access capability of the consorted facilities, developing new features and improving their operating conditions through the sharing of best practices and the implementation of common procedures, standards and interfaces.* *ICCS developed a PHIL facility for distributed energy resources and provided 130 days of access*
RE-EMPOWERED, H2020 GA 101018420 (2021-2024)	*"RE-EMPOWERED" aims to develop and demonstrate novel tools to provide a complete solution for all stages of a Microgrid / Energy Island and Multi-Microgrid applications. The tools include energy planning ranging from the design of Microgrids from scratch to the upgrade of existing installation to high-RES systems. The tools and solutions will be demonstrated in four demo sites with weak or non-existing grid, two in Europe, (Denmark and Greece), and two in India. ICCS is the coordinator.*
Smart4RES, H2020 GA 864337 (2019-2023)	*Smart4RES aims to bring substantial performance improvements to the whole model and value chain in renewable energy (RES) forecasting, with particular emphasis placed on optimizing synergies with storage and to support power system operation and participation in electricity markets. ICCS is participating with laboratory test beds and experimental validation of power systems with near 100% RES.*

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Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Real-Time Digital Simulator and its peripherals	*A rack of the commercially available Real Time Digital Simulator RTDS® is operated together with peripheral digital and analog communication cards. The RTDS is used for HIL validation and testing. The combination of CHIL and PHIL simulation is applied for testing smart grid controllers.*
Spitzenberger linear power amplifier	*A grid simulator and linear power amplifier by Spitzenberger & Spies (PAS 500) with very fast and efficient response, is used as power interface between RTDS and physical equipment to perform PHIL simulation.*
Triphase switched-mode power amplifier/flexible po	*The Triphase's Distributed Power Modules realize a scalable, flexible and open platform for rapid prototyping of power conversion and power system applications*
Low voltage single-phase microgrid	*The microgridcomprises a PV generator, a small Wind Turbine, battery energy storage, controllable loads and a controlled interconnection to the local LV grid. The microgrid can be used for testing of centralized and distributed control schemes*
Meltemi living test-bed	*The Meltemi site has a number of Distributed Generators (DGs) installed, including a 40kVA diesel generator, 4.5 kW photovoltaic panels and small residential wind turbines that can partially support the Meltemi camping load in islanded Microgrid operation.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

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- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999983962	*RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN*

Short name: RWTH

Address

Street	TEMPLERGRABEN 55
Town	AACHEN
Postcode	52062
Country	Germany
Webpage	www.rwth-aachen.de

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	17/01/2022	- no
SME self-assessment	17/01/2022	- no
SME validation	01/01/1900	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Institute for Automation of Complex Power Systems	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Mathieustr. 10	
Town	Aachen	
Postcode	52074	
Country	Germany	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Antonello	Monti	Man	Italy	amonti@eonerc.rwth-aachen.de	Category A Top grade re	Leading	0000-0003-1914-9801	Orcid ID
Mrs	Bettina	Schäfer	Woman	Germany	bschaefer@eonerc.rwth-aachen.de	Category D First stage r	Team member	0000-0002-9398-3434	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Software	*VILLASframework is a toolset for local and geographically distributed real-time co-simulation. https://fein-aachen.org/en/projects/villas-framework/*
Software	*Linux Foundation Energy Project SOGNO The project Service-based Open-source Grid automation platform for Network Operation of the future (SOGNO) is creating plug-and-play, cloud-native, micro-services to implement our next generation of data-driven monitoring and control systems. https://www.lfenergy.org/projects/sogno/*
Software	*DPsim is a real-time capable power system simulator that supports dynamic phasor and electromagnetic transient simulation as well as continuous powerflow. It primarily targets large-scale scenarios on commercial off-the-sheld hardware that require deterministic time steps in the range of micro- to milliseconds. https://fein-aachen.org/en/projects/dpsim/*
Publication	*M. Pau, M. Mirz, J. Dinkelbach, P. Mckeever, F. Ponci and A. Monti, "A Service Oriented Architecture for the Digitalization and Automation of Distribution Grids," in IEEE Access, vol. 10, pp. 37050-37063, 2022, doi: 10.1109/ACCESS.2022.3164393.*
Publication	*M. H. Syed et al., "Real-Time Coupling of Geographically Distributed Research Infrastructures: Taxonomy, Overview, and Real-World Smart Grid Applications," in IEEE Transactions on Smart Grid, vol. 12, no. 2, pp. 1747-1760, March 2021, doi: 10.1109/TSG.2020.3033070.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
RESERVE, H2020 GA 762013 (2016-2019)	*RESERVE focused on performing and field-testing newly developed techniques that will enable a stable supply with 100% renewable resources. The RWTH research contributions were on Linearized Swing Dynamics, Virtual Output Impedance and Distributed Real Time Simulation. The RWTH development VILLAS for interconnection of laboratories facilitated the creation of a pan-european real time simulation scenario. Prof. Monti, RWTH Aachen, was Technical Manager of the action.*
HYPERRIDE, H2020 GA 957788 (2020-2024)	*HYPERRIDE contributes to the field implementation of DC and hybrid AC-DC grids. RWTH institute ACS concentrates its work in the development of automation services for the hybrid AC/DC grid, as the optimal power flow and the fault management, and the realization of a metering device specifically dedicated to DC technology: the DC Measurement Unit. In addition, thanks to VILLAS ICT platform, different demo sites will be interconnected by RWTH.*
PLATONE, H2020 GA 864300 (2019-2023)	*PlatOne proposes a blockchain based open market platform linking the local system with the DSO and TSO needs to enhance the overall system cost efficiency and integrity maintenance. This platform aims at unlocking grid flexibility and at realizing an open and non-discriminatory market, linking users, aggregators, and operators. Prof. Monti, RWTH Aachen, is Coordinator of the action.*
SOGNO, H2020 GA 774613 (2018-2020)	*SOGNO aimed at developing a new concept of distribution grid management, based on the use of 5G communication, advanced deep learning techniques and cloud virtualization to provide the intelligence needed to control future smart grids as a service for distribution system operators. The results are now being further developed within the Linux Foundation for Energy. Prof. Monti, RWTH Aachen, was Technical Manager of the action.*

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EDGEFLEX, H2020 GA 883710 (2020-2023)	*EdgeFlex aims at further developing the concept of Virtual Power Plants to manage a wide range of generation and storage assets in a new way, by offering a set of fast and dynamic services to provide grid supportive flexibility within day-head and intra-day markets as well as real-time ancillary services. In this context, EdgeFlex also proposes new architectures to unlock new markets for ancillary services extended to local energy communities. Prof. Monti, is Technical Manager of the action.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	**Short description (Max 300 characters)**
Real-time simulation equipment for electrical grid	*Large installations of commercial real-time simulators for electrical grids are available for the research in this project. The real time laboratory is equipped with both RTDS and OPAL-RT systems along with self-developed open source real-time simulator DPsim.*
Substation Automation Setup	*A real substation automation equipment from ABB and Phasor-Measurement Units (PMUs) from Alstom is available. In addition, an own development of PMU units is available, specifically targeting distribution grid requirements in terms of accuracy and (low) cost.*
High Performance Computing (HPC) Cluster	*The ACS HPC-Cluster consists of multiple servers which are equipped with GPUs, that can be used as acceleration units, and are connected via Infiniband for high-performance distributed computations.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
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    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999868532	*TECHNICAL UNIVERSITY OF SOFIA*

Short name: TUS

Address

Street	Kliment Ohridsky Bd 8
Town	SOFIA
Postcode	1000
Country	Bulgaria
Webpage	http://www.tu-sofia.bg

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	no

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	12/11/1976 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Electrical Power Engineering Department	☐ not applicable
	☒ Same as proposing organisation's address	
Street	Kliment Ohridsky Bd 8	
Town	SOFIA	
Postcode	1000	
Country	Bulgaria	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Rad	Stanev	Man	Bulgaria	rstanev@tu-sofia.bg	Category A Top grade re	Leading	0000-0001-6094-9566	Orcid ID
Dr	Kostadin	Viglov	Man	Bulgaria	kviglov@tu-sofia.bg	Category C Recognised	Team member	0000-0003-1297-1077	Orcid ID
Mr	Tsvetomir	Asenov	Man	Bulgaria	tsv.asenov@tu-sofia.bg	Category D First stage r	Team member		Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Nouri, Alireza & Khadem, Md. Shafiuzzaman Khan & Mutule, Anna & Papadimitriou, Christina & Stanev, Rad & Cabiati, Mattia & Keane, Andrew & Carroll, Paula. (2022). Identification of Gaps and Barriers in Regulations, Standards, and Network Codes to Energy Citizen Participation in the Energy Transition. Energies. 15. 10.3390/en15030856.*
Publication	*Stanev, Rad & Viglov, Kostadin & Nakov, Kamen & Asenov, Tsvetomir. (2020). A Real Time Power Hardware in the Loop Test Bed for Power System Stability Studies. 1-5. 10.1109/BulEF51036.2020.9326020.*
Publication	*Stanev, Rad & Dzhumaliyski, Pavlin & Stoychev, Nikola & Viglov, Kostadin & Nikolov, Nikola & Polihronov, Nikolay. (2022). Voltage Control Strategies for Distribution Networks with Distributed Energy Resources. 1-8. 10.1109/BulEF56479.2022.10021191*
Publication	*Siderov, Dimo & Stanev, Rad & Viglov, Kostadin & Efthymiou, Venizelos & Charalambous, Chrysanthos & Khadem, Md. Shafiuzzaman Khan & Patra, Sandipan. (2022). A Review of State of the Art Low Voltage Direct Current Networks Development. 1-8. 10.1109/BulEF56479.2022.10021199.*
Publication	*Heussen, Kai & Obusevs, Artjoms & Stanev, Rad & Vázquez Pombo, Daniel & Gehrke, Oliver & O'Donnell, T. & Strasser, Thomas & Johnson, Jay. (2022). SIRFN Power System Testing: A Cyber-Physical Power System Testing Framework for Power System Transformation. 10.13140/RG.2.2.23413.04324.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
PANTERA, H2020 GA 824389	*PAN European Technology Energy Research Approach (PANTERA) is a EU H2020 project aimed at setting up a European forum composed of Research & Innovation stakeholders active in the fields of smart grids, storage and local energy systems, including policy makers, standardisation bodies and experts in both research and academia, representing the EU energy system.*
DERri, FP7 GA 2284499 2010-2013	*DERri had as its primary objective the further integration of the European Distributed Energy Resources research community through: Provision of to a unique portfolio of important European laboratories in the field of Distributed Energy Resources, focusing mainly system and architectural aspects. These laboratories cover the most relevant themes: integration of different types of DG equipment's and their control, storage technologies, Demand Side Management etc*
ENIRDG net, FP5 GA 20528 2002-2004	*ENIRDGnet was included in the European Research Cluster which consists of a set of projects funded by the EC representing the major European efforts on this matter. ENIRDG net was been designed to co-ordinate and streamline policies to increase the European added value of DG*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
TU Sofia Power System Stability Laboratory	*The TU Sofia Power System Stability Laboratory consists of "Pure lab" and "Real life lab" focusing on research in modeling, analysis and management of Electrical Power Systems.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
999842342	*UNIVERSITATEA POLITEHNICA DIN BUCURESTI*

Short name: UPB

Address

Street	SPLAIUL INDEPENDENTEI 313 SECT 6
Town	BUCHAREST
Postcode	060042
Country	Romania
Webpage	http://www.upb.ro

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	31/07/1961 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	MicroDERLab Group	☐ not applicable
	☒ Same as proposing organisation's address	
Street	SPLAIUL INDEPENDENTEI 313 SECT 6	
Town	BUCHAREST	
Postcode	060042	
Country	Romania	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Ana-Maria	Dumitrescu	Woman	Romania	Anamaria.dumitrescu@upb.ro	Category B Senior resea	Leading	0000-0002-1096-7878	Orcid ID
Prof	Mihaela	Albu	Woman	Romania	albu@ieee.org	Category A Top grade re	Team member	0000-0002-0019-0321	Orcid ID
Mr	Radu	Plamanescu	Man	Romania	Radu.plamanescu@upb.ro	Category D First stage r	Team member	0000-0002-1458-8445	Orcid ID
Prof	Mihai	Sanduleac	Man	Romania	Mihai.sanduleac@upb.ro	Category A Top grade re	Team member	0000-0003-0740-3964	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Dataset	*Residential Smart Meter Energy Time Series: Active Power Measurements with 1s Reporting Rate", IEEE Dataport, DOI: 10.21227/3YEA-XM39*
Publication	*Radu Plamanescu; Ana-Maria Dumitrescu; Mihaela Albu; Siddharth Suryanarayanan, 2021, A Hybrid Hilbert-Huang Method for Monitoring Distorted Time-Varying Waveforms, Energies 2021, 14(7), 1864; https://doi.org/10.3390/en14071864*
Publication	*Anna Mutule, Marcos Domingues, Fernando Ulloa-Vasquez, Dante Carrizo, Luis Garcia-Santander, Ana-Maria Dumitrescu, Diego Issicaba, 2021, Implementing Smart City Technologies to Inspire Change in Consumer Energy Behaviour, ENERGIES, Vol: 14, Issue 14, Art. No. 4310, DOI: 10.3390/en14144310, JUL 2021*
Publication	*Mihai Sănduleac, Irina Ciornei, Lucian Toma, Radu Plămănescu, Ana-Maria Dumitrescu, Mihaela Albu, High Reporting Rate Smart Metering Data for Enhanced Grid Monitoring and Services for Energy Communities, IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS, Vol: 18, Issue 6, Page 4039-4048, DOI10.1109/TII.2021.3095101, JUN 2022,*
Publication	*Mihail Popa, Mihai Calin, Ana Maria Dumitrescu, Sebastian Ciornei; 2014, Flexible and Mobile Deployment of Synchronized Measurement Systems for Active Distribution Grids, Proc. of IEEE Applied Measurements for Power Systems AMPS2014, Aachen, 24-26, Sept. 2014*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
EMERGE (funded by UEFISCDI)	*The project aims to define and validate a new measurement framework for emerging power systems and its validation for selected measurands: frequency, rate of change of frequency, voltage and current phasors, active power in at least two scenarios defined by the phenomena dynamics (and reflected in the selected reporting rate if the measurements and associated steady state flagging concept).*
ITCity (funded by UEFISCDI)	*Project which aims to build an intelligent ICT platform for smarter, inclusive and sustainable city needs, as energy components of ecosystem, to improve city services and quality of life by the means of high share of renewable energy sources (RES) and distributed energy resources (DER) integration and citizen involvement.*
NobelGrid (H2020 GA 646184) 2014-2018	*Aim of the project was to develop, deploy and evaluate advanced tools and ICT services for energy DSOs cooperatives and medium-size retailers, enabling active consumers involvement –i.e. new demand response schemas – and flexibility of the market – i.e. new business models for aggregators and ESCOs.*
Flexmeter (H2020 GA646568) 2015-2017	*The project focused on the development and demonstration of a flexible smart metering architecture, based on cheap and already available components, that can be implemented in a plug and play way, combining metering of different services (electricity, water, gas, district heating), providing advanced services to the users, to the DSOs and to the other utilities, and enhancing the possibilities of the retail market. UPB team leader: dr. Ana Maria Dumitrescu.*
FISMEP (ERA Net Smart Grids Plus) 2017-2020	*Coordinated by RWTH Aachen University, Germany, the project aims to unlock Smart Grid Technologies and Services by means of a standardized software platform that can support interoperability. Based on the results of the FINESCE EU Project, performed towards a cloud-based, service-oriented, open-source middleware platform, the Smart Energy Platform is capable of supporting business models of different Smart Energy actors*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

MicroDERLab	*Mobile Synchronized Measurement lab. composed of 6 mobile PMU racks and a datacenter, a DC ring operational at 230V, a Typhoon HIL402 with all the tools for testing power electronics controllers, multiple high-performance hardware servers, an Energy Router, a DC flexible Microgrid etc.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
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- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
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    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999990655	*DANMARKS TEKNISKE UNIVERSITET*

Short name: DTU

Address

Street	ANKER ENGELUNDS VEJ 101
Town	KONGENS LYNGBY
Postcode	2800
Country	Denmark
Webpage	www.dtu.dk

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	13/01/2022 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	DTU Wind and Energy Systems	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Frederiksborgvej 399	
Town	Roskilde	
Postcode	4000	
Country	Denmark	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Mr

Gender ○ Woman ◉ Man ○ Non Binary

First name* **Kai**

Last name* **Heussen**

E-Mail* **kheu@dtu.dk**

Position in org. Senior Researcher

Department DTU Wind and Energy Systems

☐ Same as organisation name

☐ Same as proposing organisation's address

Street Elektrovej 325

Town Kgs. Lyngby

Post code 2800

Country Denmark

Website https://wind.dtu.dk/

Phone +4561396263

Phone 2 *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Project Support	DTU Wind	projectsupport@windenergy.dtu.dk	+xxx xxxxxxxxx
Gregor	Giebel	grgi@dtu.dk	+xxx xxxxxxxxx
Patrick	Driscoll	padris@dtu.dk	+xxx xxxxxxxxx
Gitte	Søholm Clausen	givi@adm.dtu.dk	+xxx xxxxxxxxx

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Kai	Heussen	Man	Germany	kheu@dtu.dk	Category B Senior resea	Leading	0000-0003-3623-1372	Orcid ID
Dr	Gregor	Giebel	Man	Germany	grgi@dtu.dk	Category A Top grade re	Team member	0000-0002-4453-8756	Orcid ID
Mr	Anthony	Fraisse	Man	France	antf@dtu.dk	Category A Top grade re	Team member	0000-0003-1492-1145	Orcid ID
Mr	Ignacio	Martí Perez	Man	Spain	imarti@dtu.dk	Category A Top grade re	Team member	0000-0002-3910-3643	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☒
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Service	*CorRES* *Correlations in renewable energy sources (CorRES) is a tool to simulate wind and solar generation time series, developed at DTU Wind Energy. Its main use is in wind and solar system integration studies.* *https://corres.windenergy.dtu.dk/open-data*
Publication	*Proposes and validated a holistic approach for test description and planning in complex energy systems setting:* *Heussen, K., Steinbrink, C., Abdulhadi, I. F., Van Hoa, N., Degefa, M. Z., Merino, J., Jensen, T. V., Guo, H., Gehrke, O., Bondy, D. E. M., Babazadeh, D., Andrén, F. P., & Strasser, T. I. (2019). Erigrid holistic test description for validating cyber-physical energy systems. Energies, 12(14), [2722]. https://doi.org/10.3390/en12142722*
Service	*Energy Data DK https://energydata.dk/en/* *accelerating the development of a Danish position of strength as one of the leading nations in data-driven solutions in the energy field. The EnergyDataDK platform collects a wide range of energy data.*
Publication	*Shows with concrete results the impact of increasing the fiber volume fraction:* *U. A. Mortensen, S. Rasmussen, L. P. Mikkelsen*, A. Fraisse, T. L. Andersen: The impact of the fiber volume fraction on the fatigue performance of glass fiber composites. Composites - Part A: Applied Science and Manufacturing, 2023*
Publication	*An example of remote real-time coupling of virtual and physical laboratories:* *Vogel, S., Nguyen, H. T., Stevic, M., Jensen, T. V., Heussen, K., Rajkumar, V. S., & Monti, A. (2020). Distributed Power Hardware-in-the-Loop Testing Using a Grid-Forming Converter as Power Interface. Energies, 13, [3770]. https://doi.org/10.3390/en13153770*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
ERIGrid 2.0	*ERIGrid 2.0 will expand the research services and tools of European research infrastructures for validating smart energy networks with the electric power grid as the main backbone. Committed to the holistic and cyber-physical systems-based validation approach, ERIGrid 2.0 will foster system-level support and education for industrial and academic researchers in power and energy systems research and technology development.*
StoRIES	*The StoRIES objectives of are linked to the energy storage development by providing access to world-class research infrastructures and services, with a focus on improving materials for devices and optimizing hybrid energy systems with a view to make energy technologies more competitive and reducing costs. In addition, StoRIES focuses on the analysis of socio-technical and environmental aspects of new developments and systems, in order to provide training and education on these issues.*
MadeBlades	*The MADEBLADES project targets further development and prototype demonstration of a disruptive design and manufacturing solution for large (>90m) offshore wind turbine blades. Overall project objective and success criterion is to enable a 30% reduction in the cost of produced blades. This will be achieved through further development of a manufacturing platform, based on fiber preforms, partly developed by key project partners; LM Wind Power, Aalborg University and DTU.*

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HYBRIDize	*HYBRIDize was an Indo-Danish project (2019-2022) aiming toward design and operation of large grid-connected HPP consisting of wind turbines (WT), solar photovoltaic (PV) and battery energy storage systems (BESS).* *HYBRIDize worked towards:* *i) minimize levelized cost of energy (LCOE) and levelized cost of storage (LCOS);* *ii) maximize profit for HPP.* *HYBRIDize was funded by Innovation Fund Denmark (IFT) and the Indian Department of Science and Technology (DST).*
DecomBlades	*DecomBlades aims at establishing a functional value chain to handle end of life WTBs from decommissioning, to re-processing and reuse in new applications. DecomBlades partners see three promising recycling technologies: cement kiln, pyrolysis and mechanical shredding. DecomBlades takes a crucial next step to mature these processes and to establish each of the necessary steps in the value chain, such as data specification, logistics, process mapping and optimization, and demonstration.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	**Short description (Max 300 characters)**
3D printing universal robot	*The 3D Printing Lab is a freshly established facility where DTU Wind is creating a state-of-the-art infrastructure to carry out research and development work related to 3D printing. The main ambition is to be able to use the 3D printing technology in repair of wind turbine blades.*
16 Hydraulic machines and SEM microscopes	*The TestLab is equipped with 16 hydraulic machines (Instron and MTS) as well as a Resonance machine from Rumul. These machines allow a versatile capability of tests to the lab both for research and commissioned projects in a range from 50kN to 500kN. The machines are controlled by in-house developed*
SYSLAB	*SYSLAB consists of highly configurable parallel electrical and district heating distribution grids (up to ~4km length) with >40 energy resources in 5-150kW scale (incl. storage, buildings, EVs, grid emulator), featuring extreme laboratory automation for accelerated testing and remote operation.*
RisøHPP	*The Risø HPP facility (Hybrid Power Plant at Risø) is a new 1000kVA installation (fully operational in 2024), incl. wind, PV, hybrid storage, P2X, and grid and load emulators. RisøHPP targets HPP concept validation and commercial-grade plant controller validation.*
CasMaT	*CASMaT, Villum Center for Advanced Structural and Material Testing services experimental research in mechanics of materials and structures. The Large Scale Facility provides users possibilities to perform tests under complex loading at very large scale.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
909899092	*ECCSEL EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM*

Short name: ECCSEL

Address

Street	KOLBJORN HEJES VEI 1A
Town	TRONDHEIM
Postcode	7491
Country	Norway
Webpage	www.eccsel.org

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is unknown (small- and medium-sized enterprise) for the call.

SME self-declared status	unknown
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

No department involved

Department name	*Name of the department/institute carrying out the work.*	☒ not applicable
	☐ Same as proposing organisation's address	
Street	*Please enter street name and number.*	
Town	*Please enter the name of the town.*	
Postcode	*Area code.*	
Country	*Please select a country*	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Mr

Gender ○ Woman ◉ Man ○ Non Binary

First name* **Volker**

Last name* **Röhling**

E-Mail* **volker.rohling@ntnu.no**

Position in org. Manager of Operations and Administration

Department ECCSEL EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM

☒ Same as organisation name

☒ Same as proposing organisation's address

Street KOLBJORN HEJES VEI 1A

Town TRONDHEIM

Post code 7491

Country Norway

Website www.eccsel.org

Phone +47 73593752

Phone 2 +47 94223690

Other contact persons

First Name	Last Name	E-mail	Phone
Sverre	Quale	sverre.quale@ntnu.no	+47 73593745
Sina	Blix Prestmo	sina.prestmo@ntnu.no	+47 98424495

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Whitepaper: CCUS AS A SOLUTION TO INDUSTRIAL DECARBONISATION The need for common investments in European CCUS Research Infrastructure*
Publication	*Access through ECCSEL ERIC to a world-class research infrastructure in Europe for developing CCUS technologies*
Publication	*RIs and the European Green Deal - presentation at the 2nd ESFRI Open Session*
Publication	*EU Green Week 2021 partner event titled: "Industrial decarbonisation and the role of CCUS." held by ECCSEL ERIC in cooperation with NTNU Brussels Office. Towards 2050: Industrial decarbonisation and the role of CCUS.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
STORIES	*Storage Research Infrastructure Ecosystem, a European Green Deal project which brings a consortium of 30 beneficiaries from 15 countries to jointly improve the economic performance of storage technologies. Main objectives are linked to the energy storage development by providing access to world-class research infrastructures and services. StoRIES will establish an ecosystem with international partners from research and industry to foster open science and promote new energy technology standards.*
Geo-INQUIRE	*Geosphere INfrastructures for QUestions into Integrated REsearch), a Horizon Europe project. Modern scientific endeavours already have the capacity to call upon a vast variety of data, often in huge volumes. However, the challenge is not only how to make the most of such a resource, but also how to make it available to the wider scientific community, especially for encouraging curiosity-driven research. It gives access to facilities and new observables in the field of geohazards and georesources*
ECCSELERATE	*ECCSEL is leading this project: ECCSELERATE is an EU-funded Horizon 2020 project aimes at increasing the use and ensuring the long-term sustainable operation of the ECCSEL ERIC RI. ECCSEL, an ESFRI landmark, is currently in its early operational phase as an ERIC, and needs to ramp-up to an advanced stage of operation. Use of CO2 is being integrated into the range of activities of ECCSEL.*
CCUS ZEN	*ECCSEL is networking partner: As CCUS developments around the North Sea region are relatively mature, CCUS ZEN will leverage these developments as best practice for the development of new CCUS value chains in the currently underdeveloped Baltic and the Mediterranean Sea regions. While CCUS value chains (entire path from CO2 capture to transport to its storage or utilization) can today be realized, the industry is in its infancy and many issues must be addressed to achieve rapid deployment.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
ECCSEL ERIC Research Infrastructure (RI)	*The ECCSEL RI is a distributed European RI with over 90 research facilities in 5 countries from 23 facility owners. Focus is on research of CO2 capture, transport, storage and utilisation, the production of hydrogen (with CO2 capture), medium to long term underground storage of Hydrogen, and more.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
999993662	*BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES*

Short name: BRGM

Address

Street	3 AV CLAUDE GUILLEMIN
Town	ORLEANS
Postcode	45060
Country	France
Webpage	www.brgm.fr

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	12/01/2022	- no
SME self-assessment	unknown	
SME validation	19/06/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Water, Environment, Process Development and Analysis Division	☐ not applicable
	☒ Same as proposing organisation's address	
Street	3 AV CLAUDE GUILLEMIN	
Town	ORLEANS	
Postcode	45060	
Country	France	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Anne-Gaelle	Bader	Woman	France	ag.bader@brgm.fr	Category A Top grade re	Team member		
Dr	Sébastien	Dupraz	Man	France	s.dupraz@brgm.fr	Category A Top grade re	Team member	0000-0002-1105-3912	Orcid ID
Dr	Frederick	Gal	Man	France	f.gal@brgm.fr	Category B Senior resea	Leading	0000-0001-9543-9427	Orcid ID
Dr	Sylvain	Stephant	Man	France	s.stephant@brgm.fr	Category C Recognised	Team member	0000-0002-3213-2054	Orcid ID
Dr	Christophe	Kervevan	Man	France	c.kervevan@brgm.fr	Category A Top grade re	Team member	0000-0002-6703-7102	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☐
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*A NEW CONCEPT COMBINING CO2 GEOLOGICAL STORAGE AND GEOTHERMAL HEAT RECOVERY: RESULTS OF EXPERIMENTAL SIMULATIONS* *2021-08-31 | Conference paper* *HAL: hal-03455557* *CONTRIBUTORS: Aurelien Randi; Christophe Kervévan; Jacques Pironon; Jérôme Sterpenich; Vitaliy Privalov; Christophe Morlot*
Publication	*Modelling water-rock interactions due to long-term cooled-brine reinjection in the Dogger carbonate aquifer (Paris basin) based on in-situ geothermal well data* *Geothermics* *2020-11-30 | Journal article* *DOI: 10.1016/j.geothermics.2020.101899* *HAL: hal-03492425* *CONTRIBUTORS: Nicolas Marty; Virginie Hamm; Christelle Castillo; Dominique Thiéry; Christophe Kervévan*
Publication	*Kervévan C., Stead R., 2019. "CO2-DISSOLVED: combining CO2 geological storage with geothermal heat recovery". Carbon Capture Journal, Issue 69, pp. 2-6. May-June.*
Publication	*Lefeuvre, N., Truche, L., Donzé, F.-V., Gal, F., Tremosa, J., Fakoury, R.-A., Calassou, S., Gaucher, E.C., 2022. Natural hydrogen migration along thrust faults in foothill basins: The North Pyrenean Frontal Thrust case study. Applied Geochemistry 145, 105396. https://doi.org/10.1016/j.apgeochem.2022.105396.*
Publication	*Le Guénan T., Manceau J.-C., Smaï F., Gal F., 2021, Comparison of statistical methods for determining risk of leakage from soil gas monitoring, 15th International Conference on Greenhouse Gas Control Technologies GHGT-15, 15-28 March 2021, Abu Dhabi, UAE. SSRN paper, http://dx.doi.org/10.2139/ssrn.3819860*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
ECCSELERATE	*ECCSELERATE is an EU-funded Horizon 2020 project aimed at increasing the use and ensuring the long-term sustainable operation of the ECCSEL ERIC RI. ECCSEL is currently in its early operational phase as an ERIC, and needs to ramp-up to an advanced stage of operation.*
STORIES	*StoRIES (Storage Research Infrastructure Ecosystem) is a European Green Deal project which brings a consortium of 30 beneficiaries from 15 countries to jointly improve the economic performance of storage technologies. The main objectives of StoRIES are linked to the energy storage development by providing access to world-class research infrastructures and services.*
GEO-INQURE	*Geo-INQUIRE (Geosphere INfrastructures for QUestions into Integrated REsearch) is funded by Horizon Europe and will run from 2022-2026. To make data available.The Geo-INQUIRE project will do so by enhancing, giving access to, and making interoperable key datasets. Geo-INQUIRE will support access to new observables from emerging technologies, access to a new generation of models in the field of geohazards and georesources, as well as the training of researchers to exploit these new data, models.*
RITRAIN	*RItrainPlus (Research Infrastructure Training Plus) is an EU Horizon 2020 project which will design and deliver a training programme to fulfill the competency requirements for the current and future managers of European Research Infrastructures and Core Facilities.*

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STRATEGYCCUS	*STRATEGY CCUS is an ambitious three-year project funded by the European Union to support the development of low-carbon energy and industry in Southern and Eastern Europe. We are focusing on eight regions considered promising for carbon capture, utilisation and storage (CCUS). We aim to encourage and support initiatives within each region by producing local development plans and business models tailored to industry's needs.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
BIOREP	*high pressure facility testing reservoir conditions namely biogeochemical processes (part of the ECCSEL facility portfolio)*
MIMAROC	*high pressure facility testing and modelling geomechanical and geochemical interface (part of the ECCSEL facility portfolio)*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
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    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
906446474	*UNITED KINGDOM RESEARCH AND INNOVATION*

Short name: UKRI

Address

Street	POLARIS HOUSE NORTH STAR AVENUE
Town	SWINDON
Postcode	SN2 1FL
Country	United Kingdom
Webpage	https://www.ukri.org/

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is unknown (small- and medium-sized enterprise) for the call.

SME self-declared status	unknown
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	British Geological Survey	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Nicker Hill, Keyworth	
Town	Nottingham	
Postcode	NG12 5GG	
Country	United Kingdom	

Department 2

Department name	British Geological Survey	☐ not applicable
	☐ Same as proposing organisation's address	
Street	The Lyell Centre, Research Avenue South	
Town	Edinburgh	
Postcode	EH14 4AP	
Country	United Kingdom	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Alison	Monaghan	Woman	United Kingdom	als@bgs.ac.uk	Category B Senior resea	Leading		
Dr	Helen	Taylor-Curran	Woman	United Kingdom	htaylor@bgs.ac.uk	Category B Senior resea	Team member	0000-0003-4378-5672	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*SMITH, D, TAYLOR-CURRAN, H, BARKWITH, A, LISTER, T R, KIRK, K, HANNIS, S, SHORTER, K, AND WALKER-VERKUIL, K. 2021. Applying ground gas and gas flux monitoring techniques to low-enthalpy, shallow geothermal energy exploration. Geothermics, Vol. Volume 97, 102251.*
Publication	*Andrew Barkwith, Stan E. Beaubien, Thomas Barlow, Karen Kirk, Thomas R. Lister, Maria C. Tartarello, and Helen Taylor-Curran, 2020. Using near-surface atmospheric measurements as a proxy for quantifying field-scale soil gas flux. Geosci. Instrum. Method. Data Syst., 9, 483–490, https://doi.org/10.5194/gi-9-483-2020, 2020*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
ECCSELERATE	*ECCSELERATE is an EU-funded Horizon 2020 project aimed at increasing the use and ensuring the long-term sustainable operation of the ECCSEL ERIC RI. ECCSEL is currently in its early operational phase as an ERIC, and needs to ramp-up to an advanced stage of operation.*
ECCSEL Implementation Phase	*ECCSEL ERIC Implementation*
ECCSEL PP1 and PP2	*ECCSEL Preparatory Phases 1 and 2*
SECURe	*H2020 project assessing risk and knowledge sharing between subsurface sustainable geoenergy systems*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
BGS Gas Monitoring	*Near surface gas monitoring field capability, ECCSEL facility*
BGS TPRL	*Fluid transport properties in low permeability geological materials, ECCSEL facility*
BGS RMPL	*Rock mechanics and properties laboratory, ECCSEL facility*
BGS HTL	*Specialised hydrothermal facility, ECCSEL facility*
BGS GeoMicro	*Fully equipped Containment Level 2 geomicrobiology facility*
BGS GTB	*Geoenergy test bed dedicated to development of CO2 storage monitoring technologies, ECCSEL facility*
UKGEOS/BGS CS Facility	*High resolution core imaging and non-destructive analysis, ECCSEL facility*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
951308295	*SOTACARBO - SOCIETA TECNOLOGIE AVANZATE LOW CARBON -SOCIETA PER AZIONI*

Short name: SOTACARBO

Address

Street	EX MINIERA FRAZIONE SERBARIU
Town	CARBONIA
Postcode	09013
Country	Italy
Webpage	www.sotacarbo.it

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	no
International organisation	no
Secondary or Higher education establishment	no
Research organisation	no

SME Data

Based on the below details from the Participant Registry the organisation is an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	21/02/2022 - yes
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

No department involved

Department name *Name of the department/institute carrying out the work.*

☒ not applicable

☐ Same as proposing organisation's address

Street *Please enter street name and number.*

Town *Please enter the name of the town.*

Postcode *Area code.*

Country *Please select a country*

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Alberto	Pettinau	Man	Italy	alberto.pettinau@sotacarbo.it	Category A Top grade re	Team member	0000-0001-9655-6203	Orcid ID
Dr	Francesca	Ferrara	Woman	Italy	francesca.ferrara@sotacarbo.it	Category A Top grade re	Leading	0000-0002-3322-8015	Orcid ID
Dr	Mauro	Mureddu	Man	Italy	mauro.mureddu@sotacarbo.it	Category B Senior resea	Team member	0000-0001-9777-398X	Orcid ID
Dr	Federica	Dessi	Woman	Italy	federica.dessi@sotacarbo.it	Category B Senior resea	Team member	0000-0002-8492-7289	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Fausto Secci, Marco Sanna Angotzi, Valentina Mameli, Sarah Lai, Patrícia A. Russo, Nicola Pinna, Mauro Mureddu, Elisabetta Rombi, Carla Cannas. Mesostructured γ-Al2O3-based bifunctional catalysts for direct synthesis of dimethyl ether from CO2. Catalysts 2023;13:505. https://doi.org/10.3390/catal13030505*
Publication	*Stefano Sollai, Andrea Porcu, Vittorio Tola, Francesca Ferrara, Alberto Pettinau. Renewable methanol production from green hydrogen and captured CO2: A techno-economic assessment. Journal of CO2 Utilization 2023;68:102345. https://doi.org/10.1016/j.jcou.2022.102345*
Publication	*Giorgia Lombardelli, Mauro Mureddu, Sarah Lai, Francesca Ferrara, Alberto Pettinau, Luciano Attori, Antonio Conversano, Manuele Gatti. CO2 hydrogenation to methanol with an innovative Cu/Zn/Al/Zr catalyst: experimental tests and process modeling. Journal of CO2 Utilization 2022;65:102240. https://doi.org/10.1016/j.jcou.2022.102240*
Publication	*Claudio Cara, Fausto Secci, Sarah Lai, Valentina Mameli, Kai Skrodczky, Patricia A. Russo, Francesca Ferrara, Elisabetta Rombi, Nicola Pinna, Mauro Mureddu, Carla Cannas. On the design of mesostructured acidic catalysts for the one-pot dimethyl ether production from CO2. Journal of CO2 Utilization 2022;62:102066*
Publication	*Mauro Mureddu, Sarah Lai, Luciano Atzori, Elisabetta Rombi, Francesca Ferrara, Alberto Pettinau, Maria Giorgia Cutrufello. Ex-LDH-based catalysts for CO2 conversion to methanol and dimethyl ether. Catalysts 2021;11:615*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
ECCSELERATE	*EU-funded Horizon 2020 project aimed at increasing the use and ensuring the long-term sustainable operation of the ECCSEL ERIC research infrastructure (participation as partner)*
ASSET	*ASSET (Advanced Sustainable technologieS for Energy Transition) is a research and development project - funded by the Regional Government of Sardinia for EUR 7,500,000 - aimed at improving power-to-fuels and biomass-to-hydrogen technologies at medium at high TRL (participation as sole beneficiary)*
WAVE	*WAVE (WAste to Valuable Energy products) is a research and development project - funded by Sardegna Ricerche for EUR 925,000 - aimed ast studying at experimental level advanced technologies for the valorization of residues (plastic waste and CO2) (participation as sole beneficiary)*
Research on Electric System	*The project - funded by the Ministry of Environment and Energy Security - aims at developing at high TRL technologies for energy efficiency, power-to-fuels and plastic waste gasification (participation as co-beneficiary with a budget of EUR 2,200,000 per year)*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

X-to-Liquids	*Flexible bench-scale unit (TRL4) for the experimental characterization of catalysts for CO2 or syngas conversion into liquid and gaseous fuels (e.g. methanol, dymethyl ether, methane, etc.). The unit includes a bubbling fluidized-bed gasifier to provide syngas from biomass or plastic waste*
Power-to-Fuels pilot	*Pilot unit specifically developed to test power-to-fuels technologies (green hydrogen and CO2 conversion into methanol, methane, etc., up to 5 kg/h) at TRL5*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? ○ Yes ◉ No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
922059885	*ALLIANCE EUROPEENNE DE RECHERCHE DANS LE DOMAINE DE L'ENERGIE*

Short name: EERA

Address

Street	RUE DE NAMUR 72
Town	BRUXELLES
Postcode	1000
Country	Belgium
Webpage	http://www.eera-set.eu/

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	no

SME Data

Based on the below details from the Participant Registry the organisation is unknown (small- and medium-sized enterprise) for the call.

SME self-declared status	unknown
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

No department involved

Department name *Name of the department/institute carrying out the work.*

☒ not applicable

☐ Same as proposing organisation's address

Street *Please enter street name and number.*

Town *Please enter the name of the town.*

Postcode *Area code.*

Country *Please select a country*

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Mr

Gender ◯ Woman ◉ Man ◯ Non Binary

First name* **Ivan**

Last name* **Matejak**

E-Mail* **i.matejak@eera-set.eu**

Position in org. Operations Director

Department ALLIANCE EUROPEENNE DE RECHERCHE DANS LE DOMAINE DE L'ENERGIE

☒ Same as organisation name

☒ Same as proposing organisation's address

Street RUE DE NAMUR 72

Town BRUXELLES

Post code 1000

Country Belgium

Website *Please enter website*

Phone *+xxx xxxxxxxxx*

Phone 2 *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Spyridon	Pantelis	s.pantelis@eera-set.eu	+xxx xxxxxxxxx
Monica	de Juan Gonzalez	m.dejuan@eera-set.eu	+xxx xxxxxxxxx
Francesca	Genovesi	f.genovesi@eera-set.eu	+xxx xxxxxxxxx
Sabine	Müller	sabine.mueller@kit.edu	+xxx xxxxxxxxx

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☐
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☒

Coordination and engagement of the ecosystem

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*EERA Manifesto on REPowerEU is an analysis highlighting the critical gaps that might hinder the successful implementation of the REPowerEU plan and its corresponding recommendations from an R&I perspective*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
SUPEERA	*It supports the SET-Plan integrating it into the broader context of the Clean Energy Transition by Supporting the energy research organisations involved in the SET-Plan; Encouraging a stronger engagement of the EU-13 countries; Improving the exchange of information and making recommendations for joint actions; Helping accelerate the uptake of new technologies by industry; Examining the impact of EU policies in the view of bringing the SET-Plan forward in the context of the CET*
BEST	*Batteries Europe aims to accelerate and support the establishment of a globally competitive European battery industry and to strengthen the synergies and complementarities among EU initiatives. This will be done through different levels of engagement at European, national and international level. The Batteries Europe is coordinated by BEST*
SPRING	*ETIP SNET's mission is to set-out a vision for research and innovation for Smart Networks for Energy Transition and engage stakeholders in this vision. The work carried out by the ETIP SNET is supported by the SPRING project. The project also includes the management of the BRIDGE H2020 Initiative, which is a sister initiative to ETIP SNET that unites over 60 Horizon 2020 Smart Grid, Energy Storage, Islands, and Digitalisation Project.*
STORIES	*The main objectives of StoRIES are linked to the energy storage development by providing access to world-class research infrastructures and services, with a focus on improving materials for devices and optimizing hybrid energy systems to make energy technologies more competitive and reducing costs. In addition, StoRIES focuses on the analysis of socio-technical and environmental aspects of new developments and systems and provides training and education on these issues.*
SSH CENTRE	*SSH CENTRE will engage directly with stakeholders across research, policy, and business (including citizens) to strengthen social innovation, SSH-STEM collaboration, transdisciplinary policy advice, inclusive engagement, and SSH communities across Europe, accelerating the EU's transition to carbon neutrality.supporting cross-sectoral collaborations and empowerment of citizens and networks towards the development of socially innovative solutions for the EU's climate transition*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? ○ Yes ◉ No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
993419972	*ENBW ENERGIE BADEN-WURTTEMBERG AG*

Short name: EnBW

Address

Street	DURLACHER ALLEE 93
Town	KARLSRUHE
Postcode	76131
Country	Germany
Webpage	www.enbw.com

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	no
International organisation	no
Secondary or Higher education establishment	no
Research organisation	no

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	22/10/1997 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Research and Development	☐ not applicable
	☒ Same as proposing organisation's address	
Street	DURLACHER ALLEE 93	
Town	KARLSRUHE	
Postcode	76131	
Country	Germany	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title: Dr

Gender: (•) Woman ( ) Man ( ) Non Binary

First name*: **Magdalena**

Last name*: **Graczyk-Zajac**

E-Mail*: **m.graczyk-zajac@enbw.com**

Position in org.: Project Leader

Department: Research and Development

☐ Same as organisation name

☒ Same as proposing organisation's address

Street: DURLACHER ALLEE 93

Town: KARLSRUHE

Post code: 76131

Country: Germany

Website: https://www.enbw.com/unternehmen/konzern/forschung/

Phone: +49 1516 7162319

Phone 2: *+xxx xxxxxxxxx*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Magdalena	Graczyk-Zajac	Woman	Poland	m.graczyk-zajac@enbw.com	Category B Senior resea	Leading	0000-0002-4283-6549	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☐
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☒
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Tian, H.; Graczyk-Zajac, M.; De Carolis, D.; Tian, C.; Ricohermoso, E.; Yang, Z.; Li, W.; Wilamowska-Zawlocka, M.; Hofmann, J.P.; Weidenkaff, A.; Riedel, R. A facile strategy for reclaiming discarded graphite and harnessing the rate capabilities of graphite anodes, J. Hazard. Mat.445 (2023) 130607, https://doi.org/10.1016/j.jhazmat.2022.130607.*
Publication	*Hermann, L.; Ehrenberg, H.; Graczyk-Zajac, M.; Kaymakci, E.; Kölbel, T.; Kölbel, L.; Tübke, J. Lithium recovery from geothermal brine – an investigation into the desorption of lithium ions using manganese oxide adsorbents. Energy Advances (2022) https://doi.org/10.1039/D2YA00099G*
Publication	*Graczyk-Zajac, M.; Vrankovic, D.; Waleska, P.; Hess, C.; Sasikumar, P. V.; Lauterbach, S.; Kleebe, H.-J.; Soraru, G. D., The Li-storage capacity of SiOC glasses with and without mixed silicon oxycarbide bonds. Journal of Materials Chemistry A 2018, 6 (1), 93-103.*
Publication	*Cramer, C.L; Ionescu, E.; Graczyk-Zajac, M.; Nelson, A.T.; Katoh, Y.; Haslam, J.J.; Wondraczek, L.; Aguirre, T.G.; LeBlanc, S.; Wang, H.; Masoudi, M.; Tegeler, E.; Riedel, R.; Colombo, P.; Minary-Jolandan, M. Additive manufacturing of ceramic materials for energy applications: Road map and opportunities. Feature article, J Eur Cer Soc 42 (2022) 3049 https://doi.org/10.1016/j.jeurceramsoc.2022.01.058*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
SIMBA Grant Agreement no. 963542	*The SIMBA project aims at developing a highly cost-effective, safe, all-solid-state-battery with sodium as mobile ionic charge carrier for next generation stationary energy storage applications. Although in many ways Sodium-Ion batteries are like Lithium-ion batteries, there are still several persistent scientific and technical challenges to be addressed in understanding electrochemical processes and degradation mechanisms, electrode, solid-state electrolyte and cell manufacturing.*
ResHy, German Ministry for Economic and Climate	*The focus of this project is on the development, optimization and adaptation of a sustainable hybrid storage system based on a high-capacity sodium-sulfur and a high-performance 2nd-life lithium-ion battery to PV systems for stationary applications. This combination appears particularly useful since the lithium-ion battery is used for fast charging and discharging, while the sodium-sulfur battery provides a large capacity, but it reacts more slowly.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? ◯ Yes ◉ No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999988521	*AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE*

Short name: ENEA

Address

Street	LUNGOTEVERE GRANDE AMMIRAGLIO THAON D
Town	ROMA
Postcode	00196
Country	Italy
Webpage	http://www.enea.it

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	07/09/2021 - no
SME self-assessment	unknown
SME validation	03/09/2003 - no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Energy Technologies and Renewable Sources Department (TERIN)	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Via Anguillarese, 301	
Town	Roma	
Postcode	00123	
Country	Italy	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title: Dr

Gender: (•) Woman ( ) Man ( ) Non Binary

First name*: **Gabriella**

Last name*: **Ferruzzi**

E-Mail*: **gabriella.ferruzzi@enea.it**

Position in org.: Researcher of Smart Grid and Energy Nework Laboratory (SGRE)

Department: Energy Technologies and Renewable Sources Department

☐ Same as organisation name

☐ Same as proposing organisation's address

Street: Piazzale E. Fermi, 1

Town: Portici (NA)

Post code: 80055

Country: Italy

Website: www.enea.it

Phone: +390817723292

Phone 2: +393206336599

Other contact persons

First Name	Last Name	E-mail	Phone
Maria	Valenti	maria.valenti@enea.it	+390817723568
Francesco	Zimbardi	francesco.zimbardi@enea.it	+390835974486

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Maria	Valenti	Woman	Italy	maria.valenti@enea.it	Category B Senior resea	Team member	0000-0002-7197-0130	Orcid ID
Dr	Gabriella	Ferruzzi	Woman	Italy	gabriella.ferruzzi@enea.it	Category B Senior resea	Team member	0000-0002-0168-4681	Orcid ID
Dr	Roberto	Ciavarella	Man	Italy	roberto.ciavarella@enea.it	Category B Senior resea	Team member	0000-0003-2672-4069	Orcid ID
Dr	Francesco	Zimbardi	Man	Italy	francesco.zimbardi@enea.it	Category B Senior resea	Team member	0000-0002-1900-0241	Orcid ID
Dr	Nadia	Cerone	Woman	Italy	nadia.cerone@enea.it	Category B Senior resea	Team member	0000-0002-5337-5979	Orcid ID
Dr	Egidio	Viola	Man	Italy	egidio.viola@enea.it	Category B Senior resea	Team member	0000-0001-5050-1119	Orcid ID
	Massimo	Morgana	Man	Italy	massimo.morgana@enea.it	Category B Senior resea	Team member	0000-0003-4853-416X	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☐
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☒
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Adinolfi G., Ciavarella R., Valenti M. and G. Graditi, "MISSION Project: use cases definition for a Smart Energy Multi-vectors Microgrid," 2022 AEIT International Annual Conference (AEIT), Rome, Italy, 2022, pp. 1-4, doi: 10.23919/AEIT56783.2022.9951845*
Publication	*Sforza G., Adinolfi G., Atrigna M., Buonanno A., Ciavarella R., Merola A., Valenti M., Graditi G. "PowerLab: a flexible experimental architecture for smart microgrid testing," 2021 IEEE International Conference on Environment and Electrical Engineering and 2021 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe), Bari, Italy, 2021, pp. 1-6, doi: 10.1109/EEEIC/ICPSEurope51590.2021.9584644., Merola*
Publication	*MODELLING THE BIOMASS UPDRAFT GASIFICATION PROCESS USING THE COMBINATION OF A PYROLYSIS KINETIC MODEL AND A THERMODYNAMIC EQUILIBRIUM MODEL. Cerinski, D., Ferreiro, A. I., Baleta, J., Costa, M., Zimbardi, F., Cerone, N., & Wang, J. (2021). Energy Reports, 7, 8051-8061. https://doi.org/10.1016/j.egyr.2021.05.079*
Publication	*EXPERIMENTAL INVESTIGATION OF SYNGAS COMPOSITION VARIATION ALONG UPDRAFT FIXED BED GASIFIER. Cerone, N., Zimbardi, F., Contuzzi, L., Baleta, J., Cerinski, D., & Skvorčinskienė, R. (2020). Energy Conversion and Management, 221, https://doi.org/10.1016/j.enconman.2020.113116 .*
Publication	*BIOMASS PYROLYSIS TGA ASSESSMENT WITH AN INTERNATIONAL ROUND ROBIN. Anca-Cocce, A., Tsekos, C., Retschitzegger, S., Zimbardi, F., Funke, A., Banks, S., ... & Kienzl, N. (2020) Fuel, 276, 118002. https://doi.org/10.1016/j.fuel.2020.118002*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
AmBIENCe (H2020, 2019-2022)	*The AmBIENCe project aims to extend the concept of Energy Performance Contracting to Active Buildings. AmBIENCe will provide new concepts and business models in order to enhance the active role of end users, combining the savings of energy efficiency measures adopted, with additional savings and gains deriving from the active control of demand, for example by taking advantage of price-based incentive contracts (Implicit DR).*
eNeuron (H2020, 2020-2024)	*The eNeuron project aims to develop innovative tools for the optimal design and operation of local energy communities integrating distributed energy resources and multiple energy carriers at different scales. This goal is achieved by considering all the potential benefits achievable for all actors involved and by promoting the Energy Hub concept, as a conceptual model for controlling and managing multi-carrier and integrated energy systems in order to optimize their architecture and operation*
MISSION (National, 2021-2024)	*The project MISSION (Smart, multivector and integrated microgrids and systems, to accelerate the energy transition) aims at studying, exploring, and testing the potential and the role of multivector smart energy microgrids in support of the energy transition. Within the project, advanced conceptual models of operation of multi-vector (thermal-electrical) distributed energy systems are developed, implemented and validated in a Smart Grid perspective and in a real and relevant environment.*
BRISK2 (EU, H2020 (2017-2022)	*The project "Biofuels Research Infrastructure for Sharing Knowledge" t was based on the sharing infrastructures for transnational projects, in addition, network and normative activities were addressed. Website: https://brisk2.eu/*
AMBITION (EU, H2020, (2016-2019)	*The project "Advanced biofuel production with energy system integration" was carried out by a selection of the members of EERA - Joint program Bioenergy and addressed the most innovative technologies to produce biofuels, in addition, the national contexts were analysed and elaborated. Website: https://cordis.europa.eu/project/id/731263/it*

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Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
ENEA PowerLab	*The Living Lab consists of a LV grid constituted by AC, DC and hybrid microgrids able to emulate different energetic scenarios and validate topological solutions, control and protection strategies and devices (https://www.eranet-smartenergysystems.eu/II/142/ENEA_PowerLab.html)*
ENEA Research Infrastructure PRAGUP	*It comprises different rigs for the study of thermochemical conversion. The mains is the pilot Gasifier PRAGA (uPdRAft Gasifier) whose nominal input is 30-40 kg/h of feed .The produced gas is draft to feed one catalytic tar reforming ora a membrane Pd/Ag reactor.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
890639645	*EPL TECHNOLOGY FRONTIERS LIMITED*

Short name: EPL

Address

Street	THEODOSI PIERIDI 3
Town	NICOSIA
Postcode	2540
Country	Cyprus
Webpage	

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	no
International organisation	no
Secondary or Higher education establishment	no
Research organisation	no

SME Data

Based on the below details from the Participant Registry the organisation is an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	17/05/2021 - yes
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Research and Development	☐ not applicable
	☒ Same as proposing organisation's address	
Street	THEODOSI PIERIDI 3	
Town	NICOSIA	
Postcode	2540	
Country	Cyprus	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

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Title: Dr

Gender: ○ Woman ◉ Man ○ Non Binary

First name*: **Venizelos**

Last name*: **Efthymiou**

E-Mail*: **venizelos@epltechfront.com**

Position in org.: Director

Department: EPL TECHNOLOGY FRONTIERS LIMITED

☒ Same as organisation name

☒ Same as proposing organisation's address

Street: THEODOSI PIERIDI 3

Town: NICOSIA

Post code: 2540

Country: Cyprus

Website: *Please enter website*

Phone: *+xxx xxxxxxxxx*

Phone 2: *+xxx xxxxxxxxx*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Venizelos	Efthymiou	Man	Cyprus	venizelos@epltechfront.com	Category A Top grade re	Leading	0000-0002-6349-4541	Orcid ID
Mrs	Maria	Christodoulou	Woman	Cyprus	maria@epltechfront.com	Category D First stage r	Team member	0000-0001-9960-2850	Orcid ID
Dr	Minas	Patsalides	Man	Cyprus	mpatsalides@gmail.com	Category C Recognised	Team member	0000-0003-2438-5665	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☐
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☒
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Papadimitriou C., Efthymiou V. AN ANALYSIS ON THE GRID CODES AT THE EUROPEAN LEVEL UNDER THE PRISM OF EMERGING TECHNOLOGIES INTEGRATION The 12th Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion (MEDPOWER 2020), 2021*
Publication	*Patsalides, M.; Papadimitriou, C.N.; Efthymiou, V. Low Inertia Systems Frequency Variation Reduction with Fine-Tuned Smart Energy Controllers. Sustainability 2021, 13, 2979.*
Publication	*Anna Mutule, Irina Antoskova, Andrei Morch, Venizelos Efthymiou, Christina Papadimitriou "Research and Innovation Supporting Energy Transition: Challenges for Wider Participation of Lagging Countries",2021 IEEE Madrid PowerTech, June 28 – Friday, July 2*
Publication	*S. Christou, A. Stavrou and P. L. Lewin, "Online prognostic system for cable joints for Industry 4.0", CIGRE Session 48, 2021, B1-106*
Publication	*Xenios Economides, Markos Asprou and Andreas Stavrou, "Calculation of Transmission Line Parameters: A real Case Study", IEEE PES ISGT Sep 2021 (approved)*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
H2020 - PANTERA	*PAN European Technology Energy Research Approach project aims at setting up a European forum composed of R&I stakeholders active in the fields of smart grids, storage & local energy systems including policy makers, standardisation bodies experts in research & academia, representing the EU energy system. Experts of EPL are contributing to the development of the multi-functional platform to host data, information & knowledge accessible by all Europeans. Data harnessing is vital for PANTERA.*
HORIZON EUROPE	*DATA CELLAR is working to create a public energy dataspace that will support the creation, development and management of Local Energy Communities (LEC) in EU. Such dataspace will be easy to be populated (also via an innovative rewarded private metering approach) and easy to interact with, also guaranteeing a smooth integration with other EU energy dataspaces and providing to LEC stakeholders services and tools for developing their activities. EPL is a full partner to the consortium.*
ELSEVIER Book chapter contribution	*C.N. Papadimitriou, M. Patsalides, V. Venizelos, P. Therapontos, V. Efthymiou, - Assessing renewables uncertainties in the short-term (day-ahead) scheduling of DER, Distributed Energy Resources in Local Integrated Energy Systems, Elsevier, 2021,Pages 347-387*
Guest editorial: Selected papers from the 12th Med	*A Polycarpou, A Poullikkas, V Efthymiou IET RENEWABLE POWER GENERATION 16 (1), 1-2*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
None	

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? ○ Yes ◉ No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
883665733	*European Solar Research Infrastructure for Concentrated Solar Power (EU-SOLARIS ERIC)*

Short name: EU-SOLARIS

Address

Street	Carretera a Senés, km 4
Town	Tabernas
Postcode	04200
Country	Spain
Webpage	www.eu-solaris.eu

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	yes
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	23/01/2023 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Central Hub	☐ not applicable
	☒ Same as proposing organisation's address	
Street	Carretera a Senés, km 4	
Town	Tabernas	
Postcode	04200	
Country	Spain	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

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Title: Dr

Gender: ○ Woman ◉ Man ○ Non Binary

First name*: **Diego**

Last name*: **Martinez**

E-Mail*: **dmartinez@eu-solaris.eu**

Position in org.: Managing Director

Department: Central Hub

☐ Same as organisation name

☒ Same as proposing organisation's address

Street: Carretera a Senés, km 4

Town: Tabernas

Post code: 04200

Country: Spain

Website: eu-solaris.eu

Phone: +34695118221

Phone 2: +34950820812

Other contact persons

First Name	Last Name	E-mail	Phone
Julian	Blanco	jblanco@psa.es	+xxx xxxxxxxxx

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Diego	Martínez	Man	Spain	dmartinez@eu-solaris.eu	Category B Senior resea	Leading	0000-0003-1292-1539	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Other achievement	*Formal establishment of EU-SOLARIS as a European Research Infrastructure Consortium (ERIC). November 2022. Founding members are: Spain (statutory seat), France, Germany and Cyprus, with Portugal as an observer.*
Other achievement	*The EERA Joint Program on CSP technologies. The overall objective of this JP is to integrate and coordinate the scientific collaboration among the leading European research institutions in CSP in order to contribute to the achievement of the targets initially set by the "Solar Thermal Electricity - European Industrial Initiative" (STE-EII) and, later on, by the SET-Plan.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
SFERA III	*Solar Facilities for the European Research Area.* *SFERA III is a Horizon 2020 project funded under the Research Infrastructure Programme. The consortium is coordinated by CIEMAT-PSA and made by a total of 15 partners from 9 EU member countries. It concerns 'Transnational Access', 'Networking' and 'Joint Research' activities.*
INSHIP	*Integrating National Research Agendas on Solar Heat for Industrial Processes.* *INSHIP aims at the definition of a European Common Research and Innovation Agenda (ECRIA) engaging major European research institutes, with relevant and recognized activities on Solar Heat to Industrial Processes into an integrated structure.*
CSP-ERA Net	*Concentrated Solar Power – European Research Area Network.* *CSP ERANET is the result of a joint EU will for bridging the gap between research and commercial deployment in the Concentrated Solar Power (CSP) technology, so this technology can play a main role in the European renewable electricity generation in a medium term.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
PSA-CIEMAT	*PLATAFORMA SOLAR DE ALMERÍA (PSA)* *An ensemble of industrial-scale test facilities for R&D on concentrated solar power, spread over a 100 Ha piece of land located at the sunny South of Spain.* *PSA counts with over 30 years of experience in the operation, maintenance and evaluation of CSP systems.*
PROMES-CNRS	*Procédés, Materiaux et Energie Solaire (PROMES)* *It is a French CNRS Proprietary Unit (UPR 8521). The laboratory is located on three sites: Odeillo-Font Romeu (1 MW solar furnace of the CNRS), Targasonne (Thémis, 5 MW tower power plant) and Perpignan (Tecnosud).*
DLR-JUELICH	*The DLR Institute of Solar Research operates Germany's unique Solar Tower as experimental solar thermal power plant. The Solar Tower Jülich has been developed further to a solar research center through additional installations and test fields.*
CYI-PROTEAS	*The PROTEAS Facility is devoted to R&D and testing of Renewable Energy Sources with emphasis on Concentrating Solar Thermal (CST), Thermal Energy Storage (TES) and thermal Desalination of Sea Water (DSW) for bridging the gap between fundamental research and industrial needs.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
999980470	*FORSCHUNGSZENTRUM JULICH GMBH*

Short name: FZJ

Address

Street	WILHELM JOHNEN STRASSE
Town	JULICH
Postcode	52428
Country	Germany
Webpage	www.fz-juelich.de

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	27/01/2022	- no
SME self-assessment	unknown	
SME validation	05/12/1967	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Institute of Energy and Climate Research, IEK-13	☐ not applicable
	☒ Same as proposing organisation's address	
Street	WILHELM JOHNEN STRASSE	
Town	JULICH	
Postcode	52428	
Country	Germany	

Department 2

Department name	Central Institute for Engineering, Electronics & Analytics -ZEA-3	☐ not applicable
	☒ Same as proposing organisation's address	
Street	WILHELM JOHNEN STRASSE	
Town	JULICH	
Postcode	52428	
Country	Germany	

Department 3

Department name	TB-P	☐ not applicable
	☒ Same as proposing organisation's address	
Street	WILHELM JOHNEN STRASSE	
Town	JULICH	
Postcode	52428	
Country	Germany	

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Dr

Gender ○ Woman ◉ Man ○ Non Binary

First name* **Kourosh**

Last name* **Malek**

E-Mail* **k.malek@fz-juelich.de**

Position in org. Head of AI and Data analytics Department

Department Institute of Energy and Climate Research, IEK-13

☐ Same as organisation name

☒ Same as proposing organisation's address

Street WILHELM JOHNEN STRASSE

Town JULICH

Post code 52428

Country Germany

Website *Please enter website*

Phone *+xxx xxxxxxxxx*

Phone 2 *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Anne	Bosch	a.bosch@fz-juelich.de	+xxx xxxxxxxxx
Astrid	Besmehn	a.besmehn@fz-juelich.de	+xxx xxxxxxxxx

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Astrid	Besmehn	Woman	Germany	a.besmehn@fz-juelich.de	Category B Senior resea	Leading	0000-0001-8045-9118	Orcid ID
Dr	Kourosh	Malek	Man	Netherlands	k.malek@fz-juelich.de	Category B Senior resea	Leading		
Dr	Stefan	Kasselmann	Man	Germany	s.kasselmann@fz-juelich.de	Category B Senior resea	Leading		
Prof	Michael	Eikerling	Man	Germany	m.eikerling@fz-juelich.de	Category A Top grade re	Team member		
Mr	Max	Dreger	Man	Germany	m.dreger@fz-juelich.de	Category D First stage r	Team member		
Dr	Heinrich	Hartmann	Man	Germany	he.hartmann@fz-juelich.de	Category B Senior resea	Team member		

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☒
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☒
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☒
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*M. Dreger, M. J. Eslamibidgoli, M. H. Eikerling, K. Malek, Synergizing ontologies and graph databases for highly flexible materials-to-device workflow representations, Materials Informatics, 2023, in press.*
Publication	*Colliar-Granero et al, Deep learninig for the automation of particle analysis in catalyst layers for polymer electrolyte fuel cells, Nanoscale 14 (1), 10-18, 2022*
Software	*ViMi Labs: A cloud-enabled multi-lab model mangement and data analytics platform for energy materials* *METADOR: Meta data management* *SMART: Grid-scale Energy storage valuation tool* *TECAP: Energy materials cost assessment*
Dataset	*Large scale training datasets for fuel cell and electrolyzer materials and stacks and electrochemical energy storage technologies*
Service	*ZEA-3 is the analytical competence center of the Forschungszentrum. It's focus is on the determination and evaluation of processes and reaction mechanisms at the interface between biology, chemistry and physics. ZEA-3 provides state-of-the-art, high-end analytical tools as well as analytical expertise to researcher from FZJ, universities and industry.* *Living Lab Energy Campus (LLEC): a multi-purpose testing and demonstration facility for H2-integrated energy systems*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
German-Canadian Materials Acceleration Centre	*Using physical theory, multiscale modeling, high-performance computing, and intelligent data analytics to accelerate the discovery, design and development of energy materials in robot-controlled autonomous platforms*
STORIES (Horizon 2020)	*Shared infrastructure for development, testing and deployment of new energy storage technologies*
Helmholtz Imaging Platform (HGF, Germany)	*aUTonomous Image anaLysis for matErials (UTILE): develop and implement a holistic and seamless platform for data management and analytics, enabled by machine vision and deep learning, to advance and scale-up imaging data processing in the energy materials domain.*
HIGHLANDER (Horizon Europe)	*Highly durable ionomer materials for H2 technologies*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
XR and data visualization	*Energy materials analytics and virtual demonstration. Platform offering advanced data visualization capabilities, ad-hoc data tracking, analytics, interactive data discovery, and data augmentation in a customized virtual room using Virtual Reality (VR) and Augmenting Reality (AR) equipment*

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Open platform for fuel cell modeling	*Cloud-enabled open platform for fuel cell modeling*
ViMi Labs	*Cloud infrastructure for meta data and ontology management for energy materials*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
999981149	*INTERUNIVERSITAIR MICRO-ELECTRONICA CENTRUM*

Short name: IMEC

Address

Street	KAPELDREEF 75
Town	LEUVEN
Postcode	3001
Country	Belgium
Webpage	www.imec.be

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	22/05/2008	- no
SME self-assessment	unknown	
SME validation	22/05/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	IMOMEC / PVSYSTEMS	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Thor Park 8320	
Town	Genk	
Postcode	3600	
Country	Belgium	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Dr

Gender ○ Woman ◉ Man ○ Non Binary

First name* **Ivan**

Last name* **Gordon**

E-Mail* **ivan.gordon@imec.be**

Position in org. R&D Manager

Department IMOMEC / PVSYSTEMS

☐ Same as organisation name

☒ Same as proposing organisation's address

Street KAPELDREEF 75

Town LEUVEN

Post code 3001

Country Belgium

Website www.imec.be

Phone +32-16-288249

Phone 2 *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Christine	Van Houtven	christine.vanhoutven@imec.be	+32-16-281613
Hannelore	Marain	marainh@imec.be	+32-16-281839

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Ivan	Gordon	Man	Belgium	ivan.gordon@imec.be	Category A Top grade re	Leading	0000-0002-0713-8403	Orcid ID
Dr	Tom	Aernouts	Man	Belgium	tom.aernouts@imec.be	Category B Senior resea	Team member	0000-0002-3004-6080	Orcid ID
Dr	Hariharsudan	Sivaramakrishnan Radhakrishnan	Man	India	Hariharsudan.Sivaramakrishnan@imec.be	Category B Senior resea	Team member	0000-0003-1963-273X	Orcid ID
Dr	Aranzazu	Aguirre	Woman	Spain	aranzazu.aguirre@imec.be	Category B Senior resea	Team member	0000-0001-9262-9022	Orcid ID
Dr	Tamara	Merckx	Woman	Belgium	tamara.merckx@imec.be	Category B Senior resea	Team member	0000-0003-0747-5263	Orcid ID
Dr	Jessica	de Wild	Woman	Netherlands	jessica.dewild@imec.be	Category B Senior resea	Team member	0000-0003-2291-4674	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☒
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☒
IPR management incl. technology transfer	☒
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*"Minimizing Voltage Loss in Wide-Bandgap Perovskites for Tandem Solar Cells"* *Manoj Jaysankar, Benedito A. L. Raul, Joao Bastos, Claire Burgess, Christ Weijtens, Mariadriana Creatore, Tom Aernouts, Yinghuan Kuang, Robert Gehlhaar, Afshin Hadipour, and Jef Poortmans* *ACS Energy Letters 2019, 4 (1), 259-264- DOI: 10.1021/acsenergylett.8b02179* *Demonstration of a 4-terminal Pk/Si tandem cell with a PCE of 27.1% (world-record in 2018), with appropriate bandgap tuning of Pk absorber for tandem operation*
Publication	*"Toward Scalable Perovskite-Based Multijunction Solar Modules"Manoj Jaysankar, Stefan Paetel, Erik Ahlswede, Ulrich W. Paetzold, Tom Aernouts, Robert Gehlhaar, Jef Poortmans* *Progress in Photovoltaics: Research and Applications 2019, 27 (8), 733–738. -DOI: 10.1002/pip.3153* *High-efficiency and scalable perovskite-CIGS and perovskite-Si multijunction solar modules up to 16 cm2 in a four-terminal configuration. Various losses affecting PCE of large-area multijunction solar modules were investigated*
Publication	*"Advances in module interconnection technologies for crystalline silicon solar cells." (2018).* *Jan M. Kroon, Bonna R. Newman, Jonathan Govaerts, Eszter Voroshazi, and Tom Borgers* *PV International 2018, volume 41, 93-107.* *Overview of latest status of various advanced interconnection technologies for 2-side contacted and back-contacted solar cells including TWILL technology being developed by imec*
Publication	*Xin Zhang, Weiming Qiu, Wenya Song, Zafer Hawash, Yaxin Wang, Bapi Pradhan, Yiyue Zhang, Denys Naumenko, Heinz Amenitsch, Ellen Moons, Tamara Merckx, Aranzazu Aguirre, Yaser Abdulraheem, Tom Aernouts, Yiqiang Zhan, Yinghuan Kuang, Johan Hofkens, Jef Poortmans. An Integrated Bulk and Surface Modification Strategy for Gas-Quenched Inverted Perovskite Solar Cells with Efficiencies Exceeding 22%. Sol. RRL 2022, 6, 2200053.*
Publication	*Wenya Song, Xin Zhang, Stijn Lammar, Weiming Qiu, Yinghuan Kuang, Bart Ruttens, Jan D'Haen, Inge Vaesen, Thierry Conard, Yaser Abdulraheem, Tom Aernouts, Yiqiang Zhan, and Jef Poortmans. Critical Role of Perovskite Film Stoichiometry in Determining Solar Cell Operational Stability: a Study on the Effects of Volatile A-Cation Additives. ACS Appl. Mater. Interfaces 2022, 14, 27922–27931.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
TRIUMPH	*Triple junction solar modules based on perovskites and silicon for high performance, low-cost and small environmental footprint') is a 3.5 years project funded by the European Commission aiming at paving the way for a future PV cell technology, based on an advanced triple junction cell concept – HEU Grant agreement ID: 101075725 – 01.10.2022 – 31.03.2026*
Espresso	*Efficient Structures and Processes for Reliable Perovskite Solar Modules – H2020 Grant agreement ID: 764047 – 01.04.2018 – 30.09.2021*
PERCISTAND	*Development of all thin-film perovskite on chalcogenide tandem photovoltaics – H2020 Grant agreement ID: 850937 – 01.01.2020- 20.06.2023*
VIPERLAB	*The mission of VIPERLAB is to facilitate faster and reliable technology evaluation cycles to enable a swift market entry for Perovskite-based PV products, by fostering collaborations between academia and industry as well as facilitating and coordinating access to the best EUbased perovskite research infrastructures – European Union's Horizon 2020, grant no.:101006715 – Period: 01.06.2021–30.11.2024*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

SNRoof	*Solar multi-junction cells integrated in 3D curved car roof of electrical vehicles – imec.icon project funded by imec and Agentschap innoveren & ondernemen – Period: 01.10.2020–30.09.2022. https://www.imec-int.com/en/research-portfolio/SNRoof*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	**Short description (Max 300 characters)**
Key perovskite (Pk) device fabrication facilities	*Our Pk line allows to process modules up to 35x35cm² in controlled atmosphere gloveboxes. Blade coater, slot die coater, multi-source thermal evaporation and sputtering tools for Pk, charge transport layers, TCOs and metal deposition, and screen-printer for metallization are available.*
Key interconnection and module fabrication infras	*Equipment for interconnection of Si single junction and Pk/Si multijunction cells, including metallization screen-printer, drying/curing ovens-belt furnaces, multi-wire foil-making tool, large area pick-and-place tool (incl. dispense and laser cutting units), large area double membrane laminator.*
Key characterization infrastructure	*Steady-state A+A+A+ solar simulators for cells/modules, SEM, 3D confocal microscope, timeresolved PL, spectroscopic ellipsometry, Hall effect, EL imaging, spectral response, lifetime tester for Pk cells in inert ambient, climate chambers for modules for damp heat, thermal cycling and UV testing.*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
999988909	*NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO*

Short name: TNO

Address

Street	ANNA VAN BUERENPLEIN 1
Town	DEN HAAG
Postcode	2595 DA
Country	Netherlands
Webpage	www.tno.nl

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	30/09/2008 - no
SME self-assessment	unknown
SME validation	30/09/2008 - no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Biobased and Circular Technologies	☐ not applicable
	☒ Same as proposing organisation's address	
Street	ANNA VAN BUERENPLEIN 1	
Town	DEN HAAG	
Postcode	2595 DA	
Country	Netherlands	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Mr

Gender ○ Woman ◉ Man ○ Non Binary

First name* **Berend**

Last name* **Vreugdenhil**

E-Mail* **berend.vreugdenhil@tno.nl**

Position in org. -

Department Biobased and Circular Technologies

☐ Same as organisation name

☒ Same as proposing organisation's address

Street ANNA VAN BUERENPLEIN 1

Town DEN HAAG

Post code 2595 DA

Country Netherlands

Website *Please enter website*

Phone *+xxx xxxxxxxxx*

Phone 2 *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Carlos	Mourao Vilela	carlos.mouraovilela@tno.nl	+xxx xxxxxxxxx
Sandra	Wagenaar	sandra.wagenaar@tno.nl	+xxx xxxxxxxxx

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Carlos	Mourao Vilela	Man	Portugal	Carlos.mouraovilela@tno.nl	Category B Senior resea	Team member		
Mr	Berend	Vreugdenhil	Man	Netherlands	Berend.vreugdenhil@tno.nl	Category B Senior resea	Leading		
Mr	Max	Houwing	Man	Netherlands	max.houwing@tno.nl	Category B Senior resea	Team member		
Mr	Edwin	Wiggelinkhuizen	Man	Netherlands	edwin_jan.wiggelinkhuizen@tno.nl	Category B Senior resea	Team member		

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Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Boymans, E.H.; Liakakou, E.T.; Advanced liquid biofuels synthesis, ECN-E--17-057 2017 https://publications.ecn.nl/ECN-E--17-057*
Publication	*Boymans, E.H., Nijbacker, T., Slort, D., Grootjes, S., Vreugdenhil, B. (2022) Jet Fuel Synthesis from Syngas Using Bifunctional Cobalt-Based Catalysts. Catalysts 2022, 12(3), 288; https://doi.org/10.3390/catal12030288*
Publication	*Smit, A.T., Verges, M., Schulze, P., van Zomeren, A., Lorenz, H. (2022) Laboratory- to Pilot-Scale Fractionation of Lignocellulosic Biomass Using an Acetone Organosolv Process, ACS Sustainable Chem. Eng. 2022, 10, 32, 10503–10513*
Publication	*Houwing M., Cassamo N., Wiggelinkhuizen E. (2022) Energy Management System for combined renewable generation, storage and conversion (EMERGE model): Renewable Power Plant Optimization. 2022 R10402 TNO*
Publication	*M. Houwing, I. Dukovska and N. G. Paterakis, "A Reputation Management System for the Fair Utilization of Community Energy Storage Systems," in IEEE Transactions on Smart Grid, vol. 14, no. 1, pp. 582-592, Jan. 2023; https://doi.org/10.1109/TSG.2022.3197355*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
BRISK-II, H2020 GA 731101	*BRISK II established a centre of excellence in the field of 2nd & 3rd generation biofuels via the uniting of leading European research infrastructures. Joint Research activities will yield a manifold improvement in characterisation of feedstocks for thermochemical & biochemical conversion processes. Enhanced measurement techniques will lead to significant gains in process flexibility & reliability. The results are inputs to simulation tools for use in a broad spectrum of analyses. www.brisk2.eu*
HIGFLY, H2020 GA 101006618	*HIGFLY will develop the next generation of technologies for the production of advanced bio jet fuels from abundant and sustainable biomass feedstocks. HIGFLY will develop and demonstrate these technologies in a step-wise approach and under industrially relevant conditions (at TRL3-4). HIGFLY addresses EU priorities for decarbonizing the transport sector through the key actions of the EU SET Plan.*
BECOOL, H2020 GA 744821	*Development of highly efficient and sustainable value chains encompassing the whole range of activities from biomass production and diversification to logistics, conversion pathways and exploitation. TNO focus on gasification and fractionation for the production of Fischer Tropsch (SAF) www.becoolproject.eu*
GLAMOUR, H2020 GA 884197	*Design, scale-up and validation of an integrated process that converts waste bio-based feedstock such as crude glycerol into aviation and marine diesel fuels. The focus of the project is a combination of syngas production and integration of Fischer-Tropsch. TNO WP leader and focus on Fischer-Tropsch synthesis. www.glamour-project.eu/*
BRISK, FP7 GA 284498	*Brisk integrated networking activities to foster a culture of co-operation between project partners & the scientific communities benefiting from access to the RIs, with the pursuit of joint research activities, and facilitate transnational access by researchers to one or more infrastructures among those operated by partners in a coordinated way so as to improve the overall services available to the research communities with interests in these fields. www.briskeu.com*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

SBT Fischer-Tropsch (FT) support units	*5 kg/h bench-scale gasification-to-fuels/chemicals platform part of the sustainable biofuels technology lab, comprising MILENA gasifier, OLGA tar removal & units for BTX/ethylene co-production, further gas cleaning (such as sulphur removal), reforming & catalytic synthesis (alcohols, FT, SNG)*
Catalytic upgrading equipment	*- 4 x 10ml parallel Rx system for Fischer-Tropsch chemistry* *- 1 x 500ml fixed bed Rx for Fischer-Tropsch chemistry* *- 1 x 500ml wax upgrading reactor* *- 8 x 10ml parallel Rx system (Amtech SPIDER) for sorbent and catalyst development*
SWITCH scaled hybrid powerplant	*Used for validation of simulated scenarios for renewable energy systems. It consists of:* *-60kW from 6 Wind turbines & 40 kW from a PV system* *-50 kW battery system (LiFePO4 batteries) & 25kW single PEM stack electrolyser (5 Nm3/hr).* *-Energy Management System with an Experiment Control System.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
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    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999975717	*UNIVERSITY COLLEGE CORK - NATIONAL UNIVERSITY OF IRELAND, CORK*

Short name: UCC

Address

Street	WESTERN ROAD
Town	CORK
Postcode	T12 YN60
Country	Ireland
Webpage	www.ucc.ie

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	20/01/2022	- no
SME self-assessment	20/01/2022	- no
SME validation	unknown	

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Tyndall National Institute	☐ not applicable
	☒ Same as proposing organisation's address	
Street	Lee Maltings Complex	
Town	CORK	
Postcode	T12R5CP	
Country	Ireland	

Department 2

Department name	MaREI Centre UCC	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Beaufort Building	
Town	UCC, Ringaskiddy, Co. Cork	
Postcode	P43 C573	
Country	Ireland	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Main contact person

This will be the person the EU services will contact concerning this proposal (e.g. for additional information, invitation to hearings, sending of evaluation results, convocation to start grant preparation). The data in blue is read-only. Details (name, first name and e-mail) of Main Contact persons should be edited in the step "Participants" of the submission wizard.

Title Dr

Gender ◯ Woman ◉ Man ◯ Non Binary

First name* **Jimmy**

Last name* **Murphy**

E-Mail* **jimmy.murphy@ucc.ie**

Position in org. Senior Lecturer

Department MaREI Centre

☐ Same as organisation name

☐ Same as proposing organisation's address

Street Beaufort Building, Environmental Research Institute,

Town UCC, Ringaskiddy, Co. Cork

Post code P43 C573

Country Ireland

Website MaREI | UCC ERI

Phone +353 21 4864300

Phone 2 *+xxx xxxxxxxxx*

Other contact persons

First Name	Last Name	E-mail	Phone
Michael	Hayes	michael.hayes@tyndall.ie	0212346238
Maria	Von Rumohr	maria.vonrumohr@tyndall.ie	0212346834
Louise	Burgoyne	louise.burgoyne@tyndall.ie	0212346123
Patrick	Daly	patrick.daly@tyndall.ie	0212346265

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Jimmy	Murphy	Man	Ireland	jimmy.murphy@ucc.ie	Category A Top grade re	Leading		
Mr	Mike	Hayes	Man	Ireland	michael.hayes@ucc.ie	Category A Top grade re	Leading	0000-0002-9805-1193	Orcid ID
Dr	Prateek	Asthana	Man	India	prateek.asthan@tyndall.ie	Category B Senior resea	Team member	0000-0001-8840-7080	Orcid ID
Dr	Fiona	Devoy McAuliffe	Woman	Ireland	F.DevoyMcAuliffe@ucc.ie	Category B Senior resea	Team member	0000-0001-6602-9883	Researcher ID
Mrs	Emma	Knowles	Woman	Ireland	eknowles@ucc.ie	Category C Recognised	Team member		

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☒
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☒
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☒
IPR management incl. technology transfer	☒
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*EU EnABLES Research Infrastructure Position Paper (2021) https://www.enables-project.eu/wp-content/uploads/2021/02/EnABLES_ResearchInfrastructure_PositionPaper.pdf*
Publication	*Lead editor, PSMA Energy Harvesting White Paper, https://www.psma.com/technical-forums/energy-harvesting/whitepaper, ISBN:978-1-7337815-2-7*
Publication	*Hayes et al., EnABLES: European Infrastructure Powering the Internet of Things, Smart Systems Integration conference, Barcelona 4th April 2019. https://ieeexplore.ieee.org/document/8727812*
Publication	*A Heuristic Approach for Inter-Facility Comparison of Results from Round Robin Testing of a Floating Wind Turbine in Irregular Waves, J. Mar. Sci. Eng. 2021, 9(9), 1030; https://doi.org/10.3390/jmse9091030*
Other achievement	*Led the MaRINERGi application to ESFRI that achieved Roadmap status in 2021s*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
EnABLES (EU H2020)	*(Co-ordinator) EnABLES, H2020, research infrastructure project providing access to laboratories and expertise in 'power IoT' to academia and industry. 2018-2022.*
Energy ECS (EU ECSEL)	*(PMIC developer) Smart and secure energy solutions for future mobility*
COMPOSITION (EU H2020)	*(WP leader) COMPOSITION - Ecosystem for Collaborative Manufacturing Processes – Intra- and Inter-factory Integration and Automation, EU H2020, 2016-2019*
MaRINET2 (H2020)	*Coordinator - €10.5M project that included 39 partners and 54 infrastructures. The project included a transnational access program that had 300 applications*
MaRINERGi (H2020)	*Coordinator - €2M project with 13 partners that allowed for the preparation of the necessary information for use in the application to the ESFRI Roadmap*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
UCC TYN: PMIC & WSN testing laboratories	*Tyndall has ~ 8,000 m2 dedicated lab space including wafer fabrication facilities for silicon, compound semiconductors and MEMS. There is also a dedicated Training fab for students and external engineers. Specialist labs are allocated for Photonics, Microsystems and Micro/Nano-electronics.*
UCC TYN: PMIC & WSN testing laboratories	*For this project use of Tyndall labs, lab-based test beds & related equipment will be based on long battery life ICT enabling technologies for renewable energy technologies and systems such as PMICs, energy harvesting and storage materials and devices & WSN platforms.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Lir National Ocean Test Facility	*Lir NOTF houses Ireland's only infrastructure for small to medium scale laboratory testing of ocean and maritime systems, and has expert support personnel and a track record stretching back to 1977.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999987745	*UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA*

Short name: UNILaSapienza

Address

Street	Piazzale Aldo Moro 5
Town	ROMA
Postcode	00185
Country	Italy
Webpage	www.uniroma1.it

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	30/09/2022 - no
SME self-assessment	unknown
SME validation	09/12/2008 - no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Department of Chemistry	☐ not applicable
	☒ Same as proposing organisation's address	
Street	Piazzale Aldo Moro 5	
Town	ROMA	
Postcode	00185	
Country	Italy	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Stefano	Passerini	Man	Italy	stefano.passerini@uniroma1.it	Category A Top grade re	Leading	0000-0002-6606-5304	Orcid ID
Prof	Maria Assunta	Navarra	Woman	Italy	mariassunta.navarra@uniroma1.it	Category B Senior resea	Team member	0000-0002-9244-878X	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☐
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Manuel Baumann, Linda Barelli, Stefano Passerini. The Potential Role of Reactive Metals for a Clean Energy Transition. Adv. Energy Mater.2020, 10, 2001002, DOI: 10.1002/aenm.202001002*
Publication	*Linda Barelli, Lorenzo Trombetti, Alessandro Di Michele, Luca Gammaitoni, Jakob Asenbauer, Stefano Passerini. Aluminum Steam Oxidation in the Framework ofLong-Term Energy Storage: Experimental Analysis of theReaction Parameters Effect on Metal Conversion Rate. Energy Technol.2022,10, 2200441. DOI: 10.1002/ente.202200441*
Publication	*Hüseyin Ersoy, Manuel Baumann, Linda Barelli, Andrea Ottaviano, Lorenzo Trombetti, Marcel Weil, and Stefano Passerini. Hybrid Energy Storage and Hydrogen Supply Based on Aluminum —a Multiservice Case for Electric Mobility and Energy Storage Services. Adv.Mater. Technol.2022, 7, 2101400. DOI: 10.1002/admt.202101400*
Publication	*Yongil Kim, Matthias Kuenzel, Dominik Steinle, Xu Dong Guk-Tae Kim, Alberto Varzi and Stefano Passerini. Anode-less seawater batteries with a Na-ion conducting solid-polymer electrolyte for power to metal and metal to power energy storage. Energy Environ. Sci., 2022, 15, 2610–2618.* *DOI: 10.1039/d2ee00609j*
Publication	*Wenhua Zuo, Alessandro Innocenti, Maider Zarrabeitia, Dominic Bresser, Yong Yang, and Stefano Passerini. Layered Oxide Cathodes for Sodium-Ion Batteries: Storage Mechanism, Electrochemistry, and Techno-economics. Acc. Chem. Res. 2023, 56, 3, 284–296. DOI: 10.1021/ acs.accounts.2c00690*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
StoRIES, H2020 GA 101036910 (2021-2025)	*The Storage Research Infrastructure Eco-System project started in 2021 and is focused on the development of the energy industry with groundbreaking solutions for sustainable energy storage. It fosters a European ecosystem of industries and research organizations on energy storage technologies. Under the H2020 call LC-GD-9-1-2020, it has received funding from the European Union's Horizon 2020 Research and Innovation Programme - Grant Agreement N. 101036910. https://www.storiesproject.eu*
POLYSTORAGE, H2020 GA 860403 (2019-2023)	*Funded under the Marie Skłodowska-Curie programme, the POLYSTORAGE project aims to establish a Europe-wide network to train 16 early-stage researchers in the field of next-generation electrochemical energy devices, through doctoral programmes at local universities and in network-wide summer schools, workshops, conferences and research. exchanges. Call H2020-MSCA-ITN-2019. Grant agreement ID: 860403. Duration: Nov 2019 - Oct 2023. https:// cordis.europa.eu/project/id/860403*
MASSIF, H2020 GA 101029499 (2022-2024)	*Funded under the Marie Skłodowska-Curie programme, the MASSIF project aims to develop an artificial solid electrolyte interphase between the positive electrode and the electrolyte to reduce the interfacial resistance and optimise the solid-state lithium batteries (ssLBs), tailored to enhance the performance of energy storage. Call H2020-MSCA-IF-2020. Grant agreement ID: 101029499. Duration: Jan 2022 - Apr 2024. https://cordis.europa.eu/project/ id/101029499*
SBAM, MITE PTR 2019-2021 (2022 – 2025)	*Large Scale, Renewable Energy Storage by means of Sodium-Seawater Batteries. Funded by Ministero della Transizione Ecologica - Ricerca di Sistema Elettrico Nazionale, PTR 2019-2021.*
ACTeA, POR FESR LAZIO 2014 – 2020 (2021-2023)	*Ca-ion accumulators for electrochemical energy storage alternative to lithium-based systems. Funded under the call "Research Groups 2020" POR FESR LAZIO 2014 - 2020 (project code POR A0375E0019).*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999880172	*UNIVERZITA TOMASE BATI VE ZLINE*

Short name: UNITomasBata

Address

Street	Nam. T.G. Masaryka 5555
Town	ZLIN
Postcode	760 01
Country	Czechia
Webpage	www.utb.cz

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	unknown

SME Data

Based on the below details from the Participant Registry the organisation is unknown (small- and medium-sized enterprise) for the call.

SME self-declared status	unknown
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	University Institute of the Tomas Bata University in Zlín	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Nad Ovčírnou 3685	
Town	Zlín	
Postcode	76001	
Country	Czechia	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Petr	Sáha	Man	Czechia	saha@utb.cz	Category A Top grade re	Leading	0000-0002-1873-4163	Orcid ID
Dr	Viera	Pechancova	Woman	Slovakia	pechancova@utb.cz	Category C Recognised	Team member	0000-0002-9254-5600	Orcid ID
Dr	Haojie	Fei	Man	China (People's	haojie@utb.cz	Category C Recognised	Team member	0000-0002-2353-1088	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*H. Fei et al., 'Effect of calcination temperature on electrochemical performance of niobium oxides/carbon composites', JOURNAL OF MATERIALS SCIENCE, vol. 57, no. 18, pp. 8504–8515, May 2022, doi: 10.1007/s10853-022-06931-4*
Publication	*V. Pechancova, D. Pavelkova, and P. Saha, 'Community Renewable Energy in the Czech Republic: Value Proposition Perspective', FRONTIERS IN ENERGY RESEARCH, vol. 10, May 2022, doi: 10.3389/fenrg.2022.821706*
Publication	*C. Bubulinca, I. Sapurina, N. Kazantseva, V. Pechancova, and P. Saha, 'A Self-Standing Binder-Free Biomimetic Cathode Based on LMO/CNT Enhanced with Graphene and PANI for Aqueous Rechargeable Batteries', INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES, vol. 23, no. 3, Feb. 2022, doi: 10.3390/ijms23031457*
Publication	*L. Quoc Bao et al., 'Electrochemical performance of composites made of rGO with Zn-MOF and PANI as electrodes for supercapacitors', Electrochimica Acta, vol. 367, p. 137563, Jan. 2021, doi: 10.1016/j.electacta.2020.137563*
Publication	*C. Hu et al., 'Confining MoS2 nanocrystals in MOF-derived carbon for high performance lithium and potassium storage', Green Energy & Environment, vol. 6, no. 1, pp. 75–82, Feb. 2021, doi: 10.1016/j.gee.2020.02.001*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
TwinVECTOR Horizon Europe	*TwinNING FOR DEVELOPMENT OF WORLD-CLASS NEXT GENERATION BATTERIES, Coordinator, Grant agreement No 101078935 (2022 – 2025)*
SOLiD Horizon Europe	*SUSTAINABLE MANUFACTURING AND OPTIMIZED MATERIALS AND INTERFACES FOR LITHIUM METAL BATTERIES WITH DIGITAL QUALITY CONTROL, Beneficiary, Grant agreement No 101069505 (2022 – 2026)*
LiBASED M.ERA.NET	*LI-ION BATTERY-SUPERCAPACITOR HYBRID DEVICE" M-era.Net project Coordinator, cooperation with Slovak Academy of Sciences and Sabanci University in Turkey, grant number TH71020006 (2020- 2023)*
StoRIES Horizon 2020	*STORAGE RESEARCH INFRASTRUCTURE ECO-SYSTEM, Linked Third Party, Grant agreement No 101036910 (2021 – 2025)*
Next generation of solid-state batteries (CZ TACR)	*"NEXT GENERATION OF SOLID-STATE BATTERIES", Technology agency of Czech Republic project Théta The aim of the project is the development of a new generation of pouch-type Li-ion batteries, Grant number TK03030157 (2020-2025).*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Coin cell lab production line	*Solid-state electrolytes (on its own or with reference electrodes) are assembled in coin cells to study their electrochemical behaviours for the selection of candidates and optimization of their composition. This production line includes several equipment items such as Precision die cutter.*
Pouch cell lab production line	*Solid-state electrolytes (on its own or with reference electrodes) are also assembled in pouch cells to study the factors affecting their performance (large scale), providing thus information for other partners. The production line includes several equipment items such as Precision electrode cutter.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Battery test system	*The electrochemical behaviours of solid-state electrolyte in coin cells and pouch cells are tested by Metrohm Autolab PG STAT 128N and Biologic BCS-810 or BCS-815 with a temperature controlled Binder battery test chamber.*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
965934440	*THE CYPRUS INSTITUTE*

Short name: CYI

Address

Street	CONSTANTINOU KAVAFI 20
Town	NICOSIA
Postcode	2121
Country	Cyprus
Webpage	www.cyi.ac.cy

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	31/12/2021 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Energy Dpt of the Energy, Environment and Water Research Center	☐ not applicable
	☒ Same as proposing organisation's address	
Street	CONSTANTINOU KAVAFI 20	
Town	NICOSIA	
Postcode	2121	
Country	Cyprus	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Marios	Georgiou	Man	Cyprus	m.c.georgiou@cyi.ac.cy	Category B Senior resea	Leading	0000-0002-4612-1188	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Engineering aspects and thermal performance of molten salt transfer lines in solar power applications, In: Applied Thermal Engineering, vol. 154, pp. 294–301, 2019. Experiences from the PROTEAS facility, where heating tapes as opposed to heating cables are used. The thermal energy losses from the transfer lines are evaluated and compared to those predicted by a one-dimensional heat transfer analysis*
Publication	*Operational experience of hot air preheating at the PROTEAS facility Proceeding of American Institute of Physics Inc., vol. 2303, no. 1, 2020. hot air preheating has been tested at the PROTEAS Facility over the last few years as a proof of concept against the Electrical Heat Tracing due to several operational difficulties observed during electrical preheating*
Publication	*Optimal Sizing of Cylindrical Receivers for Surround Heliostat Fields Using fluxtracer - Journal of Solar Energy Engineering, vol. 143, no. 6, 2021, ISSN: 0199-6231*
Publication	*Experimental methodology to calculate thermal losses of a molten salt cavity receiver - American Institute of Physics Inc., vol. 2033, no. 1, 2018, ISSN: 15517616*
Publication	*CSP cogeneration of electricity and desalinated water at the Pentakomo field facility - American Institute of Physics Inc., vol. 1734, no. 1, 2016, ISSN: 15517616*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
EU-SOLARIS	*The EU-SOLARIS vision is to further assist the Concentrating Solar Thermal (CST) and Solar Chemistry technologies' deployment by enhancing the research infrastructures development and Research and Technology Development (R&D) coordination*
SFERA-III	*The SFERA-III project addresses advanced science challenges and integrated research activities in the field of Concentrating Solar Thermal (CST) by integrating key European research infrastructures into an ambitious wide project aiming at offering to the R&D community a new level of high-quality services (https://sfera3.sollab.eu/)*
Nano4CSP	*The overall objective of this project is to reduce the O&M costs and water consumption while increasing the efficiency of a CSP solar collector field (https://nano4csp.cyi.ac.cy/)*
CySTEM	*The CyI Solar Thermal Energy Chair for the Eastern Mediterranean (CySTEM – Chair) project aims at consolidating and upgrading the already substantial activity at the Cyprus Institute (CyI) in Solar Energy, principally solar-thermal and related activities*
STAGE-STE	*The Scientific and Technological Alliance for Guaranteeing the European Excellence in Concentrating Solar Thermal Energy (STAGE-STE) is the largest Solar Thermal related project under FP7. The project engages all major European research institutes with relevant and recognised activities on Solar Thermal Electricity (STE) and related technologies, in an integrated research structure. The partner list also includes relevant industrial and international organisations.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PROTEAS	*The PROTEAS Facility is the largest research infrastructure in Cyprus. It is devoted to research, development and testing of Renewable Energy Sources with emphasis on Concentrating Solar Thermal (CST), for bridging the gap between fundamental research and industrial needs.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999835843	*UNIVERSITY OF CYPRUS*

Short name: UNICyprus

Address

Street	AVENUE PANEPISTIMIOU 2109 AGLANTZI
Town	NICOSIA
Postcode	1678
Country	Cyprus
Webpage	www.ucy.ac.cy

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	18/02/2022 - no
SME self-assessment	unknown
SME validation	14/08/2008 - no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	FOSS Research Centre for Sustainable Energy	☐ not applicable
	☒ Same as proposing organisation's address	
Street	AVENUE PANEPISTIMIOU 2109 AGLANTZI	
Town	NICOSIA	
Postcode	1678	
Country	Cyprus	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	George E	Georghiou	Man	Cyprus	geg@ucy.ac.cy	Category A Top grade re	Leading	0000-0002-5872-5851	Orcid ID
Dr	George	Makrides	Man	Cyprus	makrides.georgios@ucy.ac.cy	Category B Senior resea	Team member	0000-0002-0327-0386	Orcid ID
Dr	Maria	Hadjipanayi	Woman	Cyprus	hadjipanayi.maria@ucy.ac.cy	Category B Senior resea	Team member	0000-0002-4163-4507	Orcid ID
Dr	Vasiliki	Paraskeva	Woman	Cyprus	paraskeva.vasiliki@ucy.ac.cy	Category C Recognised	Team member	0000-0001-8776-0667	Orcid ID
Dr	Spyros	Theocharides	Man	Cyprus	theocharidis.spyros@ucy.ac.cy	Category C Recognised	Team member	0000-0003-2164-6081	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☒
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☒
Technology developer	☐
Testing/validation of approaches and ideas	☒
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*A. Livera, M. Theristis, E. Koumpli, S. Theocharides, G. Makrides, J. Sutterlueti, J. Stein and G. E. Georghiou, "Data processing and quality verification for improved photovoltaic performance and reliability analytics" Progress in Photovoltaics: Research and Applications, vol. 1, pp. 1-16, Jan 2020.* *DOI: 10.1002/pip.3349*
Publication	*A. Arsalis, P. Papanastasiou, and G. E. Georghiou, "A comparative review of lithium-ion batteryand regenerative hydrogen fuel cell technologies for integration with photovoltaic applications," Renewable Energy, vol. 191, pp. 943–960, 2022.* *DOI: 10.1016/j.renene.2022.04.075*
Publication	*S. Theocharides, G. Makrides, A. Livera, M. Theristis, P. Kaimakis, and G. E. Georghiou, "Day-Ahead photovoltaic power production forecasting methodology based on machine learningand statistical post-processing," Applied Energy, vol. 268, p. 115023, 2020.* *DOI: 10.1016/j.apenergy.2020.115023*
Publication	*M. Hadjipanayi, I. Koumparou, N. Philippou, V. Paraskeva, A. Phinikarides, G. Makrides, V. Efthymiou, G. E. Georghiou, "Prospects of photovoltaics in Southern European regions" Renewable Energy, vol. 92, pp. 58-74, Jul 2016.* *DOI: 10.1016/j.renene.2016.01.096*
Publication	*A. Phinikarides, G. Makrides, M. Schubert, G. E. Georghiou, "Review of photovoltaic degradation rate methodologies" Renewable and Sustainable Energy Reviews, vol. 43, pp. 143-152, Dec 2014.* *DOI: 10.1016/j.rser.2014.07.155*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
RES infrastructure, Cy RRP[C2.1]-I[I6] (2021–2024)	*Upgrading renewable energy and smart grids testing infrastructure at the University of Cyprus.* *The project aims at establishing an advanced infrastructure for testing novel PV technologies, battery storage systems and enabling technologies for smart grids at UCY.* *UCY is coordinating the development of the infrastructure.* *This project is related to this proposal since it focuses on the development of renewable testing infrastructure and new technology validation services.*
ERIGrid 2.0 – H2020 GA 870620 (2020–2024)	*European Research Infrastructure supporting Smart Grid and Smart Energy Systems Research, Technology Development, Validation and Roll Out – Second Edition.* *The project aims at expanding the research services of European research infrastructures for validating smart energy networks.* *UCY is participating for the development of educational material and validation of procedures.* *This project is related to this proposal since it supports energy transition technology development and validation*

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TRUST-PV – H2020 GA N952957 (2020–2024)	*Increase friendly integration of reliable PV plants considering different market segments. The project aims to increase the performance and reliability of solar PV components and to develop advanced grid-supportive models. UCY is participating for the interoperability testing of PV power plants and the demonstration of novel PV system grid-supportive services. This project is related to this proposal since it investigates advanced solar performance and integration models.*
DegradationLab – Cyprus 1216/0043 (2018-2022)	*Advanced centre for testing degradation and failures in new and emerging solar cells. The project aims at developing a dedicated research hub in Cyprus focusing on the performance and characterization of novel solar cells. UCY is coordinating the implementation of the centre and the demonstration of PV technology reliability testing protocols. This project is related to this proposal since it focuses on the validation of advanced solar degradation and end-of-life management concepts.*
TwinPV – H2020 GA 692031 (2016–2018)	*Stimulating scientific excellence through twinning in the quest for sustainable energy. The project aims at enhancing the research capabilities of UCY in the research fields of solar and renewable grid integration through the strategic partnership with AIT and DTU. UCY is coordinating the enhancement of research activities in the field of renewable energy sources. This project is related to this proposal since it investigates new renewable energy source technologies and grid integration methods*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	**Short description (Max 300 characters)**
DER-GRID smart facility	*A flexible and scalable Research & Development (R&D) infrastructure that includes smart inverters, battery storage and energy IoT communication devices. The infrastructure is relevant to the proposal since it facilitates the demonstration of advanced renewable grid integration concepts.*
Smart nanogrid pilot	*The nanogrid at UCY-FOSS is a renewable-powered living lab that comprises of a solar-plus-storage system, supervised and controlled by a smart energy management system. The infrastructure is relevant to the proposal since it is used for the demonstration of renewable grid control concepts.*
Photovoltaic outdoor & indoor test infrastructure	*The PV outdoor and indoor test infrastructure, located at UCY-FOSS, is a test site that includes, solar characterisation equipment, solar simulators and environmental chambers. The infrastructure is relevant to the proposal since it enables novel PV research at the level of cells and systems.*
Real-time simulation test-bed (RTSTB)	*The RTSTB is a real-time simulation platform that includes a real-time simulation, signal conditioning and peripheral protection devices. The infrastructure is relevant to the proposal since it is designed for testing renewable technologies in a control and power hardware-in-the-loop approach.*
Residential solar-plus-storage pilot (RSPSP)	*A residential pilot of 10 prosumers at a feeder in Cyprus, operated by UCY-FOSS and DSO Cyprus, equipped with roof-top PV and battery storage. The infrastructure is relevant to the proposal since it is aimed at verifying solar-plus-storage synergies and energy management technologies.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
996435993	*FUNDACIO INSTITUT DE RECERCA DE L'ENERGIA DE CATALUNYA*

Short name: IREC

Address

Street	C/ JARDINS DE LES DONES DE NEGRE 1
Town	SANT ADRIA DE BESOS
Postcode	08930
Country	Spain
Webpage	www.irec.cat

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	07/04/2009 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Power Systems Group	☐ not applicable
	☒ Same as proposing organisation's address	
Street	C/ JARDINS DE LES DONES DE NEGRE 1	
Town	SANT ADRIA DE BESOS	
Postcode	08930	
Country	Spain	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Jose Luis	Domínguez-García	Man	Spain	jldominguez@irec.cat	Category B Senior resea	Leading	0000-0002-0483-995X	Orcid ID
Mrs	Alba	Cole	Woman	Spain	acolet@irec.cat	Category C Recognised	Team member	0000-0002-3208-6449	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Sensitivity analysis on the levelized cost of energy for floating offshore wind farms, Sustainable Energy Technologies and Assessments 30, 77-90, Elsevier (2018)*
Publication	*A non-centralized predictive control strategy for wind farm active power control: A wake-based partitioning approach, Renewable Energy, 150, 656-669, Elsevier (2020)*
Publication	*Digital tools for floating offshore wind turbines (FOWT): A state of the art, Energy Reports 8, 1207-1228, Elsevier (2022)*
Publication	*A novel method to valorize frequency support procurement by wind power plants, IEEE Transactions on Sustainable Energy 11 (1), 239-249, IEEE (2019)*
Software	*FOWAPP. It is an in-house LCOE tool software for floating wind. Registered at BOIP i-DEPOT number 132019*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
H2020 COREWIND (2019-2023)	*The project aims to reduce the LCOE of Floating Wind technologies by further developing and innovating on Digitalization, up-scaling and statin-keeping systems.*
H2020 LIFE50+ (2015-2019)	*The project focused on the optimization of different floater substructures aiming to reduce the cost of floating offshore wind*
H2020 SUPERPV (2018-2022)	*The project targets significant PV LCOE cost reduction by adopting a hybrid approach combining advancements on three cornerstone steps impacting PV system performance and, thus, LCOE: a) Module; b) Power electronics (PE); c) System integration/O&M*
H2020 INCITE (2015-2019)	*The project was focused on the development of novel controls for SMARTGRIDS, with special focus on wind farm control and MTHVDC systems*
FP7 IRPWIND (2014-2018).	*The project aimed to develop key innovations on the whole value.chain of wind power including, turbine, grid integration, control, HVDC, etc*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
IREC ENERGY SMARTLAB	*This lab provides unique emulation & testing facilities which operates a number of configurable units (to emulate, generation, storage or load). Real ESS, wind turbine emulators (SCIG, DFIG &PMSG). There is also a grid emulator allowing studying different grid perturbations a Line emulator & RTHIL*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999594313	*OFFIS EV*

Short name: OFFIS

Address

Street	ESCHERWEG 2
Town	OLDENBURG
Postcode	26121
Country	Germany
Webpage	WWW.OFFIS.DE

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	12/01/1991 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Energy division	☐ not applicable
	☒ Same as proposing organisation's address	
Street	ESCHERWEG 2	
Town	OLDENBURG	
Postcode	26121	
Country	Germany	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Jirapa	Kamsamrong	Woman	Thailand	jirapa.kamsamrong@offis.de	Category B Senior resea	Leading	0000-0001-7608-3349	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*The Use Case and Smart Grid Architecture Model Approach* *https://link.springer.com/book/10.1007/978-3-319-49229-2* *This book presents IEC 62559-2 Use Case Template and the SGAM which can be applied in various domains*
Publication	*How to Improve the Interoperability of Digital (ICT) Systems in the Energy Sector* *https://www.iea-isgan.org/how-to-improve-the-interoperability-of-digital-ict-systems-in-the-energy-sector/* *The paper presents and discusses various approaches for designing the system-of-systems, different approaches for enabling and verifying the ICT-interoperability in Smart Grids and motivates the need for interoperability improvements in energy sector*
Publication	*Real-time Test Platform for Enabling Grid Service Virtualisation in Cyber Physical Energy System* *DOI: 10.1109/ETFA46521.2020.9211939* *The challenge of reliable operation in Cyber-Physical Energy Systems (CPES) is constantly increasing due to more participating actors and associated disruptive events. This paper presents a multidisciplinary real-time test platform for integration of grid service management in CPES*
Publication	*Virtualization Management Concept for Flexible and Fault-tolerant Smart Grid Service Provision* *https://www.mdpi.com/1996-1073/13/9/2196* *This paper presents the concept of Grid Function Virtualization (GFV) as a potential approach to improve the operational flexibility of grid automation systems. GFV has been proposed to offer a new way to deploy and manage grid services by leveraging virtualization technology.*
Software	*Open-source Mosaik co-simulation framework* *Mosaik allows users to reuse and combine existing simulation models and simulators to create large-scale smart grid scenarios – and by large-scale implies to thousands of simulated entities distributed over multiple simulator processes. These scenarios can then serve as test bed for various types of control strategies (e.g., multi-agent systems (MAS) or centralized control).*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
ERIGrid H2020, GA 870620 (2020-2024)	*European Research Infrastructure supporting Smart Grid and Smart Energy Systems Research, Technology Development, Validation and Roll Out – Second Edition* *ERIGrid 2.0 project explores in-depth issues such as the addition of further domains for the study of smart grids, and new methods to assess multi-domain experiments. The ERIGrid 2.0 project follows an integrated approach and research services for analyzing, validating, and testing smart grid configurations that are improved.*
IDUNN H2020, GA 101021911, (2021-2024)	*A Coginitive Detection System for Cybersecure Operational Technologies* *IDUNN focuses on adding the trust ingredient to any business by making its ICT systems resilience to cyber-attacks. OFFIS Energy Labs provide infrastructure for simulating micro services related to interoperability and cyber security which could provide a similar platform to meet the user's requirements in RISEnergy project.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Redispatch 3.0, German BMWK, (2022-2024)	*Redispatch 3.0 Demonstration project and marketing of unused flexibilities of small systems behind intelligent measuring systems* *This project aims to improve congestion management process especially at low-voltage networks as well as the cooperation and exchange of information between DSOs and with TSOs. This project could provide a test case for congestion management in the laboratory for the users in RISEnergy project.*
i-Autonomous, German BMWK, (2019-2022)	*Standardization and integration of modular-autonomous automation components in substations* *i-Autonomous project aims to provide modular engineering process using virtualization technology i.e. Docker and Kubernetes for operation and maintenance processes to automate new functions of substations. This project can contribute lessons learned from field tests as well as a testing platform in OFFIS Energy Lab for users in RISEnergy project.*
Int2Grid, German BMWK, (2020-2023)	*Integration of intelligent district networks in interconnected networks* *Int2Grids investigates the interconnected of neighborhood networks in such a way that both optimization goals of the neighborhood network operators as well as higher-level goals such as the stability of the distribution networks are achieved. OFFIS Energy labs provide users in*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	**Short description (Max 300 characters)**
OFFIS Energy Labs	*Main features such as a real-time and an offline simulation, co-simulation Mosaik, smart meter gateway, SCADA systems, communication performance testing, industrial components, interoperability, open-source multi-agent software, big data analytics, interoperability, and cybersecurity.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999529420	*RICERCA SUL SISTEMA ENERGETICO - RSE SPA*

Short name: RSE

Address

Street	VIA RAFFAELE RUBATTINO 54
Town	MILANO
Postcode	20134
Country	Italy
Webpage	www.rse-web.it

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	14/01/2022 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Department of Materials and Generation Technologies (TGM)	☐ not applicable
	☒ Same as proposing organisation's address	
Street	VIA RAFFAELE RUBATTINO 54	
Town	MILANO	
Postcode	20134	
Country	Italy	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Mr	Carlo	Sandroni	Man	Italy	carlo.sandroni@rse-web.it	Category B Senior resea	Leading	0000-0003-1545-3531	Orcid ID
Mr	Riccardo	Lazzari	Man	Italy	riccardo.lazzari@rse-web.it	Category B Senior resea	Team member	0000-0002-3441-4784	Orcid ID
Mr	Maurizio	Verga	Man	Italy	maurizio.verga@rse-web.it	Category B Senior resea	Team member	0000-0002-9645-217X	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Pellegrino, Luigi, Carlo Sandroni, Enea Bionda, Daniele Pala, Dimitris T. Lagos, Nikos Hatziargyriou, and Nabil Akroud. 2020. "Remote Laboratory Testing Demonstration" Energies 13, no. 9: 2283. https://doi.org/10.3390/en13092283* *This paper introduces the Joint Test Facility for Smart Energy Networks with Distributed Energy Resources (JaNDER) that allows users to exchange data in real-time between two or more infrastructures.*
Publication	*Strasser, T.I. et al. (2017). An Integrated Research Infrastructure for Validating Cyber-Physical Energy Systems. In: Mařík, V., Wahlster, W., Strasser, T., Kadera, P. (eds) Industrial Applications of Holonic and Multi-Agent Systems. HoloMAS 2017. Lecture Notes in Computer Science(), vol 10444. Springer, Cham. https://doi.org/10.1007/978-3-319-64635-0_12. This paper introduces integrated RI providing methods & tools for validating smart grid systems in a holistic, cyber-physical manner.*
Publication	*C. Sandroni, M. Verga, R. Lazzari, M. Fantini, M. Sacchi and V. Prandoni, "RSE's microgrid: A facility for research, development and testing of future distributed generation and microgrid technologies," 2016 AEIT International Annual Conference (AEIT), Capri, Italy, 2016, pp. 1-6, doi: https://doi.org/10.23919/AEIT.2016.7892773.* *This paper presents the RSE Distributed Energy Resources Test Facility and some experimental activities carried on with industrial partners.*
Software	*JaNDER: Joint Test Facility for Smart Energy Networks with Distributed Energy Resources* *Tool for exchanging data in real-time between two or more infrastructures, enabling their interation*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
DERRI, FP7 GA 228449 (2009-2013)	*Distributed Energy Resources Research Infrastructure* *Coordinator* *Provide access to RSE Distributed Energy Resources Test Facility (DER-TF).*
ERIGrid, H2020 GA 654113 (2015-2020)	*European Research Infrastructure supporting Smart Grid Systems Technology Development, Validation and Roll Out* *Lead of WP "JRA4 - Implementation and Demonstration of Use Cases/Scenarios in the Integrated Re-search Infrastructure(s)".* *Provide access to RSE Distributed Energy Resources Test Facility (DER-TF).*
ERIGrid 2.0, H2020 GA 870620 (2020-2024)	*European Research Infrastructure supporting Smart Grid and Smart Energy Systems Research, Technology Development, Validation and Roll Out – Second Edition* *Lead of WP "JRA4 - Integration and Demonstration of Services in the Extended Research Infrastructure".* *Provide access to RSE Distributed Energy Resources Test Facility (DER-TF).* *Provide virtual access to RSE Distributed Energy Resources Test Facility Data-as-a-Service platform (DER-TF DaaS)*
STORIES, H2020 GA 101036910 (2021-2025)	*Storage Research Infrastructure Eco-System* *Provide access to RSE Battery Laboratories Research Infrastructure (RSE-BatLabs-RI).*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Distributed Energy Resources Test Facility	*Complete well-structured Low Voltage grid used to develop studies & experimentation on DER, including different generators typologies (PV fields, Solar Dish, internal combustion engine CHP), storage systems (Lead, Lithium, Zebra & Redox batteries), programmable loads (resistive,inductive,capacitive)*
Multi Energy Test Facility	*It focuses on the integration of different energy vectors: electricity, heat, natural gas & hydrogen. Composed of three main subsystems: the electrical smart-grid (DER-TF, described above), the heating/cooling network (available in 23H2) & the gas network (incl. natural gas & hydrogen blends - 24H2)*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999993953	*ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA*

Short name: UNIBologna

Address

Street	VIA ZAMBONI 33
Town	BOLOGNA
Postcode	40126
Country	Italy
Webpage	www.unibo.it

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	24/10/2022 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	CIRI-FRAME	☐ not applicable
	☒ Same as proposing organisation's address	
Street	VIA ZAMBONI 33	
Town	BOLOGNA	
Postcode	40126	
Country	Italy	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Francesca	Soavi	Woman	Italy	Francesca.soavi@unibo.it	Category B Senior resea	Leading	0000-0003-3415-6938	Orcid ID
Prof	Francesco	Melino	Man	Italy	francesco.melino@unibo.it	Category B Senior resea	Team member	0000-0002-1650-0363	Orcid ID
Prof	Andrea	Contin	Man	Italy	Andrea.contin@unibo.it	Category A Top grade re	Team member	0000-0002-2535-5700	Orcid ID
Prof	Valerio	Cozzani	Man	Italy	Valerio.cozzani@unibo.it	Category A Top grade re	Team member	0000-0003-4680-535X	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*A. Brilloni, F. Poli, G. E. Spina, C. Samorì, E. Guidi, C. Gualandi, M. Maisuradze, M. Giorgetti, F. Solvi, Easy recovery of Li-ion cathode powders by the use of water-processable binders, Electrochim. Acta, 418, 2022, 140376, https://doi.org/10.1016/j.electacta.2022.140376*
Publication	*G. Selleri, F. Poli, R. Neri, L. Gasperini, C. Gualandi, F. Soavi, D. Fabiani, Energy harvesting and storage with ceramic piezoelectric transducers coupled with an ionic liquid-based supercapacitor, Journal of Energy Storage, 60, 2023, 106660, https://doi.org/10.1016/j.est.2023.106660.*
Publication	*D. Marazza, S. Macrelli, M. D'Angeli, S. Righi, A. Hornung, A. Contin, Greenhouse gas savings and energy balance of sewage sludge treated through an enhanced intermediate pyrolysis screw reactor combined with a reforming process, Waste Management, 91, 2019, 42-53, https://doi.org/10.1016/j.wasman.2019.04.054.*
Publication	*A. Crivellari, V. Cozzani, Offshore Renewable Energy Exploitation Strategies in Remote Areas by Power-to-Gas and Power-to-Liquid Conversion, International Journal of Hydrogen Energy 45 (2020) 2936-2953, https://doi.org/10.1016/j.ijhydene.2019.11.215*
Publication	*M.A. Ancona, M. Bianchi, L. Branchini, F. Melino, A. Peretto, Numerical prediction of off-design performance for a Power-to-Gas system coupled with renewables, Energy Conversion and Management, 210 (2020) 112702, https://doi.org/10.1016/j.enconman.2020.112702*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
HyFlow, H2020 GA 963550 (2020-2023)	*Development of a sustainable hybrid storage system based on high power vanadium redox flow battery and supercapacitor. F. Soavi Local PI*
THOR-Nato NATO SPS G5772 (2020-2023)	*LighTweight self-cHarging piezO-supercapacitoR systems by nanotechnologies (Portable Chargers for Soldiers). UNIBO Coordinator, F. Soavi team member*
BattValue, EIT Raw Mat. KAVA8 GA 21048 (2022-2024)	*BattValue: Skilled learners for battery value chain in Europe. F. Soavi Local PI*
NET-Fuels, HE GA 101083780 (2022-2025)	*Increasing biomass conversion efficiency to carbon-negative sustainable biofuels by combination of thermal and bio-electrochemical processes, UNIBO Coordinator*
To-Syn-Fuel, H2020 GA 745749 (2017-2022)	*The Demonstration of Waste Biomass to Synthetic Fuels and Green Hydrogen. UNIBO partner.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Center for the Environment, Energy, and Sea	*ZERO-CARBON. Low-carbon foot print technologies for the production of advanced materials and the energy transition: Waste Valorisation and Future Energy Supply, Knowledge transfer in electrochemical energy storage/conversion technologies, Hydrogen and Carbon use from Renewables Energy*
FIP-WE@UNIBO	*TRL-4 pyrolizer and instrumentation for the chemical and physical characterisation of bio-fuels and carbons from py*
Enercube Lab	*main facilities for electrochemical studies of cells and components of batteries and supercapacitors, fuel cells, inert environments (Drybox, Dry room under setting)*
HC-hub-ER (under setting)	*rapid scale-up of processes addressing carbon capture and utilization*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999846319	*UNIVERSITA DEGLI STUDI DI PERUGIA*

Short name: UNIPerugia

Address

Street	PIAZZA DELL UNIVERSITA 1
Town	PERUGIA
Postcode	06123
Country	Italy
Webpage	www.unipg.it

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	12/01/2022 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Department of Engineering	☐ not applicable
	☒ Same as proposing organisation's address	
Street	PIAZZA DELL UNIVERSITA 1	
Town	PERUGIA	
Postcode	06123	
Country	Italy	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Linda	Barelli	Woman	Italy	linda.barelli@unipg.it	Category B Senior resea	Leading	0000-0002-0177-3289	Orcid ID
Dr	Arianna	Baldinelli	Woman	Italy	arianna.baldinelli@unipg.it	Category C Recognised	Team member	0000-0002-3867-3417	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*L. Barelli, M. Baumann, G. Bidini, P.A. Ottaviano, R.V. Schneider, S. Passerini, L. Trombetti, Reactive Metals as Energy Storage and Carrier Media: Use of Aluminum for Power Generation in Fuel Cell-Based Power Plants. Energy Technology 2020, 8/9, 2000233. https://doi.org/10.1002/ente.202000233. OPEN ACCESS*
Publication	*M. Baumann, L. Barelli, S. Passerini, The Potential Role of Reactive Metals for a Clean Energy Transition. Advanced Energy Materials 2020, 10/27, 2001002. https://doi.org/10.1002/aenm.202001002. FULL ACCESS*
Publication	*H. Ersoy, M. Baumann, L. Barelli, A.P. Ottaviano, L. Trombetti, M. Weil, S. Passerini, Hybrid Energy Storage and Hydrogen Supply Based on Aluminum—a Multiservice Case for Electric Mobility and Energy Storage Services. Adv. Mater. Technol. 2022, 7, 2101400. https://doi.org/10.1002/admt.202101400. OPEN ACCESS*
Publication	*L. Barelli, L. Trombetti, A. Di Michele, L. Gammaitoni, J. Asenbauer and S. Passerini, Aluminum Steam Oxidation in the Framework of Long-Term Energy Storage: Experimental Analysis of the Reaction Parameters Effect on Metal Conversion Rate. Energy Technol. 2022, 10: 2200441. https://doi.org/10.1002/ente.202200441. OPEN ACCESS*
Publication	*A. Staffolani, A. Baldinelli, G. Bidini, F. Nobili, L. Barelli. Operando Analysis of Losses in Commercial-Sized Solid Oxide Cells: Methodology Development and Validation. Energies 2022, 15, 4978. https://doi.org/10.3390/en15144978. OPEN ACCESS*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
HERMES, IT-Grant (MUR) GA 2017F4S2L3 (2019-2023)	*HERMES (High Efficiency Reversible technologies in fully renewable Multi-Energy System), dealing with reversible solid oxide technology. Being in the energy storage sector, HERMES project is related to RISEnergy.* *Role: partner* *Responsible for testing activity on solid oxide devise in reversible mode.*
StoRIES, H2020 GA 101036910 (2021-2025)	*StoRIES (Storage Research Infrastructure Eco-System) is strongly related to the project being an infrastructure project in the field of energy storage.* *Role: partner* *Responsible for the Training Programme for University Master's students within task 3.4*
H2FC, FP7-infrastructures GA 284522 (2011-2015)	*H2FC (Integrating European Infrastructure to support science and development of Hydrogen- and Fuel Cell Technologies towards European Strategy for Sustainable, Competitive and Secure Energy) is strongly related to the project being an infrastructure project in the field of hydrogen and fuel cell technologies.* *Role: partner; RI provider (RI old name: FCLab).*
SBAM, IT-Grant (MITE) CSEAB_00341 (2022-2025)	*SBAM (Energy Storage with Na-Seater battery) is related to the RISEnergy project since it deals with the development of an innovative Na-seawater battery technology, including small scale prototype design, realization and testing. Being in the energy storage sector, SBAM project is related to RISEnergy.* *Role: partner*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

TVB, IT-Grant (MISE) CCSEB_00201 (2016-2020)	*TVB object was the development of an innovative technology for a hybrid storage system based on flywheels and batteries for integration of renewable energies into the grid. It included the design, realization and test of a prototype of the hybrid energy storage system of about 10 kW max power. Being in the energy storage sector, SBAM project is related to RISEnergy.* *Role: partner*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Electrical energy Storage and Hydrogen Lab	*e-StorHy with 2 sections: 1-Energy Storage:test bench for reactive metals steam oxidation on small powder amount for H2 production tests via reactive metals;2-Fuel cells & electrolyzers: SOFC/SOE/rSOC square single-cell test rig; potentiostat/galvanostat equipment with EIS tool & related booster*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999482763	*INSTITUTE OF ELECTROCHEMISTRY AND ENERGY SYSTEMS*

Short name: IEES

Address

Street	ACAD G BONCHEV STREET BL 10
Town	SOFIA
Postcode	1113
Country	Bulgaria
Webpage	www.iees.bas.bg

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	20/01/2004	- no
SME self-assessment	unknown	
SME validation	20/01/2004	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Institute of Electrochemistry and Energy Systems	☐ not applicable
	☒ Same as proposing organisation's address	
Street	ACAD G BONCHEV STREET BL 10	
Town	SOFIA	
Postcode	1113	
Country	Bulgaria	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier	
Prof	Evelina	Slavcheva	Woman	Bulgaria	eslavcheva@iees.bas.bg	Category A Top grade re	Leading	0000-0001-8110-7368	Orcid ID	
Dr	Galin	Borisov	Man	Bulgaria	gal.rusev@iees.bas.bg	Category B Senior resea	Team member	0000-0002-4516-459X	Orcid ID	
Dr	Blagoy	Burdin	Man	Bulgaria	b.burdin@iees.bas.bg	Category B Senior resea	Team member	https://iees.bas.bg/bg/aboutUs-108/sciPersonnel-136	Other ID	IEES
Dr	Toma	Stankulov	Man	Bulgaria	tstankulov@iees.bas.bg	Category B Senior resea	Team member	https://iees.bas.bg/bg/aboutUs-108/sciPersonnel-136	Other ID	IEES
Dr	Elitsa	Petkucheva	Woman	Bulgaria	e.petkucheva@iees.bas.bg	Category B Senior resea	Team member	0000-0001-9370-6448	Orcid ID	

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Y.Hubenova, G. Borisov, E. Slavcheva, M. Mitov, Gram-positive bacteria covered bioanode in a membrane-electrode assembly for use in bioelectrochemical systems, Bioelectrochemistry 144, 2022, 108011, https://doi.org/10.1016/j.bioelechem.2021.108011*
Publication	*I Betova, M Bojinov, V Karastoyanov, E Slavcheva, Nano-porous TiO2 electrochemically doped with Mo oxide–Composition, electrochemical and photo-electrochemical properties, Materials Chemistry and Physics 285, 126139G.*
Publication	*Borisov, V. Bachvarov, H. Penchev, R. Rashkov, E. Slavcheva, Multi-metallic electrodeposited catalysts applicable for oxygen evolution reaction in AEM water electrolysis, Materials Letters 286 (2021) 129248*
Publication	*G. Borisov, H. Penchev, K. Maksimova-Dimitrova, F. Ublekov, E. Lefterova, V. Sinigersky, E. Slavcheva, Alkaline water electrolysis facilitated via non-precious monometallic catalysts combined with highly KOH doped polybenzimidazole membrane, Materials Letters 240 (2019) 144-146*
Publication	*E. Petkucheva, G. Borisov, E. Lefterova, J. Heiss, U. Schnakenberg, E. Slavcheva, Gold supported magnetron sputtered Ir thin films as OER catalysts for cost-efficient water electrolysis, International Journal of Hydrogen Energy 43 (2018) 16905-16912*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
GreenSkills4H2 - GA 101056448, ERASMUS-EDU-2021-PI	*The European Hydrogen Skills Alliance is providing workers and industry with the new skills that are required to meet the challenging targets of the Green Transition. It is focused on the upskilling and reskilling of students and members of the workforce all over Europe through VET programs that will enable them to access new employment opportunities within the Hydrogen sector. https://greenskillsforhydrogen.eu/*
Net Tools, GA No. FCH – 2 JU 736648	*The project NET-Tools aims the development of an e-infrastructure and provide digital tools and information service for educational issues and training within FCH technologies based on most recent IT tools. NET-Tools constitutes a technology platform, leveraging robust and effective open source/free learning management systems while offering a unique blend of novel digital tools encompassing the spheres of information, education and research. https://cordis.europa.eu/project/id/736648*
RI ESHER DO1-160/28.08.2018	*Funded by the National Ministry of Education and Science, is a infrastructure with focus on innovative technologies for energy storage and conversion from renewable energy sources. The main goal is to ensure the integration of the national scientific potential for the implementation of projects of an interdisciplinary nature, focused on the development, testing, monitoring and optimization of systems for accumulating energy from RES through batteries.https://niseve.iees.bas.bg/bg*
CoC HITMOBIL BG05M2OP001-1.002-0014	*The main objective of the Center is building a research infrastructure for development, testing, optimization and industrial deployment of modern systems for mobility and energy storage unique on national and regional level. CoC HITMOBIL conducts market-oriented research and develops technologies and systems in key areas covering the „green" energy cycle: RES (Solar/Wind/Biomass) – Storage (Batteries and Hydrogen) – Conversion and Consumption .https://hitmobil.iees.bas.bg/bg*
EPLUS Decree No. 577 of 2018, BG MC	*The National Research Program "Low-carbon Energy for the Transport and Domestic Use - EPLUS" is funded by the Ministry of Education and Science. The main objective of the program is to support R&D and demonstration activities for the introduction of new technologies related to renewable energy and the decarbonisation of the economy. https://eplus.bas.bg/en/aboutUs-103*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Synthesis of materials	*Autoclave, ball mill, furnaces, vacuum dryers, ultrasonic baths, microwave, sonificator, etc.apparatus needed to prepare catalysts applying various methods; soon a magnetron sputter machine*
Surface and bulk analysis	*SEM, Porometer, XRD, DSC, UV-spectrometer, Gas chromatograph*
Membranes preparation	*Motorized film applicator TQC Sheen AB 4400; Rotary vacuum evaporator Buchi RotavaporR100; Muffle oven Nabertherm L3/1200; Vacuum oven WOV20, Witeg Labortechnik, Universal centrifuge Sigma 2-7; Electromagnetic stirrers with heating mantles IKA RCT; Dynamic mechanic analysis machine Q 800*
Electrodes and MEA preparation	*Automatic film applicator with integrated Dr. Blade and matrix for electrodes up to 50cm2area, laboratory-designed devices for spray deposition, Viscometer with all accessories for ink preparation, semi industrial press up to 25 tons with extension up to 32 tons and temperature more then 300 C*
Electrochemical testing	*Mulii-channelled potentiostat/galvanostat Gamry 1010E with integrated frequency analyser, single unit potentiostat/galvanostat Gamry 3000 with booster up to 30A , bi-potentiostat with rotating disk electrode Bio Logic, Electrolyser test station Scribner, up to 1kW, Advanced Fuel Cell Test System.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999646014	*CENTRE FOR RENEWABLE ENERGY SOURCES AND SAVING FONDATION*

Short name: CRES

Address

Street	MARATHONOS 19TH KM
Town	PIKERMI
Postcode	19009
Country	Greece
Webpage	http://www.cres.gr

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	02/11/1988	- no
SME self-assessment	unknown	
SME validation	02/11/1988	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Wind Energy	☐ not applicable
	☒ Same as proposing organisation's address	
Street	MARATHONOS 19TH KM	
Town	PIKERMI	
Postcode	19009	
Country	Greece	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier	
Dr	Nikolaos	Stefanatos	Man	Greece	nstefan@cres.gr	Category B Senior resea	Leading	0000-0002-2736-2779	Orcid ID	
Dr	Kyriakos	Rossis	Man	Greece	kros@cres.gr	Category B Senior resea	Team member	0000-0001-8076-8180	Orcid ID	
Dr	Dimitris	Foussekis	Man	Greece	dfousek@cres.gr	Category B Senior resea	Team member	0000-0003-1829-7853	Orcid ID	
Mr	Fragiskos	Mouzakis	Man	Greece	mouzakis@cres.gr	Category B Senior resea	Team member	0000-0001-5977-7701	Orcid ID	
Mrs	Eftihia	Tzen	Woman	Greece	etzen@cres.gr	Category B Senior resea	Team member	0000-0002-4715-4264	Other ID	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*D. Foussekis, G. Sieros "CFD-based corrections of lidar measurements at several complex terrain sites", European Wind Energy Conference, Paris, November 2015*
Publication	*N. Stefanatos, D. Foussekis, F. Mouzakis "Comparisons of Rotor Equivalent Wind Speed (REWS) in complex terrain using a 100m Mast and several remote sensing devices", European Wind Energy Conference, Paris, November 2015.*
Publication	*Dimitri Foussekis "Investigating Wind Flow properties in Complex Terrain using 3 Lidars and a Meteorological Mast", European Wind Energy Conference, Marseille, March 2009*
Publication	*F. Bingol, J. Mann, D. Foussekis "Conically scanning lidar error in complex terrain", Meteorologische Zeitschrift, Vol. 18 No. 2 (2009), p. 189 - 195, 2009 https://doi.org/10.1127/0941-2948/2009/0368*
Publication	*F. Bingol, J. Mann, D. Foussekis "LiDAR error estimation with WAsP engineering" IOP Conf. Ser.: Earth Environ. Sci. 1 012058, 2008 http://dx.doi.org/10.1088/1755-1315/1/1/012058*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
AIOLIKOS, EU/ERDF and Greek State, (2018-2022)	*Development of a novel Wind Lidar to measure wind potential for the Installation and performance monitoring of Offshore Wind Farms The primary objective of is to develop and characterize a fully operational wind Lidar system that can measure over long distances (> 10km). The system developed was installed in the CRES Wind Farm and its operation was verified. CRES was responsible for the design, assembly and operation of the met-mast systems and participated in the field testing of the system.*
FloatMastBlue, H2020, grant ID 784040 (2017-2021)	*Offshore Wind Energy Cost Reduction by an Innovative Floating Met Mast Platform. CRES participated as a subcontractor for wind regime measurements which, aiming at reducing the risk of the wind resource for offshore wind applications, combines the two current industry solutions by integrating a met mast and a Lidar remote sensing device in a stable floating foundation. The innovative design of the platform allows the collectioof best wind resource in a floating foundation.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
100m mast with Lidar at complex terrain (Lid100ct)	*Tall met mast, with web-enabled technologies for on-demand data, operating in complex terrain and near shore. Aims to become a test-bench platform for comparing forecast predictions, against online data available with web technologies. Additionally, serves to verify and optimize CFD solver.*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999977851	*NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU*

Short name: NTNU

Address

Street	HOGSKOLERINGEN 1
Town	TRONDHEIM
Postcode	7491
Country	Norway
Webpage	www.ntnu.no

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	13/01/2022	- no
SME self-assessment	13/09/1995	- no
SME validation	unknown	

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Department of Materials Science and Engineering	☐ not applicable
	☒ Same as proposing organisation's address	
Street	HOGSKOLERINGEN 1	
Town	TRONDHEIM	
Postcode	7491	
Country	Norway	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier	
Prof	Marisa	Di Sabatino	Woman	Italy	Marisa.di.sabatino@ntnu.no	Category A Top grade re	Leading		Other ID	

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Di Sabatino, M., Dons, A.L., Hinrichs, J., Arnberg, L. Determination of relative sensitivity factors for trace element analysis of solar cell Si by fast-flow glow discharge mass spectrometry (2011) Spectrochimica Acta - Part B Atomic Spectroscopy, 66 (2), pp. 144-148.*
Publication	*Di Sabatino, M., Binetti, S., Libal, J., Acciarri, M., Nordmark, H., Øvrelid, E.J. Oxygen distribution on a multicrystalline Si ingot grown from upgraded metallurgical silicon (2011) Solar Energy Materials and Solar Cells, 95 (2), pp. 529-533.*
Publication	*Ekstrøm, K.E., Undheim, E., Stokkan, G., Arnberg, L., Di Sabatino, M. Beta-Si3N4 particles as nucleation sites in multicrystalline silicon (2016) Acta Materialia, 109, pp. 267-274.*
Publication	*Gaspar, G., Modanse, C., Bernardis, S., Arnberg, L., Dubois, S., Di Sabatino, M. Copper in compensated p- and n-type Czochralski silicon: Diffusivity, influence on the majority charge carrier density and mobility (2022) Solar Energy Materials and Solar cells, 248, 112024.*
Publication	*Hendawi, R., Arnberg, L., Di Sabatino, M. Effect of gas atmospheres on the interactions between liquid silicon and coated graphite substrates (2022) Solar Energy Materials and Solar Cells, 235, 111452.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
GDMS	*Mass spectrometry for trace elements analysis (ppb levels), including analysis of powder*
GDOES	*Optical emission spectroscopy for chemical analysis (ppm level), including analysis of non-conductive samples*
FURNACES	*For crystallization experiments and ingot-making*
SEM	*Scanning electron microscope for macrostructural characterization*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

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PIC	Legal name
974644458	*CONSORCIO PARA EL DISENO, CONSTRUCCION, EQUIPAMIENTO Y EXPLOTACION DE LA PLATAFORMA OCEANICA DE CANARIAS*

Short name: PLOCAN

Address

Street	CARRETERA DE TALIARTE
Town	TELDE
Postcode	35200
Country	Spain
Webpage	www.plocan.eu

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	no

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	14/01/2008 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Scientific-Technical	☐ not applicable
	☒ Same as proposing organisation's address	
Street	CARRETERA DE TALIARTE	
Town	TELDE	
Postcode	35200	
Country	Spain	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	JOSE JOAQUIN	HERNANDEZ BRITO	Man	Spain	joaquin.brito@plocan.eu	Category A Top grade re	Leading		
Mrs	Marimar	Villagarcia	Woman	Spain	marimar.villagarcia@plocan.eu	Category B Senior resea	Team member		

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Service	*The competitive access seasonal calls to the test site (latest call, https://www.plocan.eu/en/plocan-summer-access-call-2021/) is managed through the MARHIS aggregated infrastructure (https://www.ictsmarhis.com/en). Also transnational competitive calls (TNA) through projects, e.g. FixO3, MaRINET2, JERICO-S3.*
Dataset	*Final Stakeholder Database in marine renewable energies produced as part of the execution of H2020 MARINERG-i CSA (deliverable D7.9). It includes 330 references.*
Other achievement	*PLOCAN participates the ESFRI infrastructure MARINERG-i and has experience in the related legal aspects to become an ERIC.*
Publication	*22 authors including Eric Delory from PLOCAN: "EMSO, a Large-scale European Research Infrastructure Delivering Harmonized Environmental Marine Data through a Distributed Ocean Observation System", December 2019, DOI: 10.13140/RG.2.2.25030.91204*
Publication	*Martinez, E. et al., including Eric Delory from PLOCAN: "Metadata-Driven Universal Real-Time Ocean Sound Measurement Architecture" February 2021, DOI: 10.1109/ACCESS.2021.3058744*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
MARINERG-i, H2020 (WP7 lead, 2017-2019)	*Marine Renewable Energy Research Infrastructure* *The objective was to become the leading internationally distributed infrastructure in the Marine Renewable Energy (MRE) sector. Its integrated nature and co-ordinated approach accelerated the research development and deployment of offshore wind, wave, tidal and combined energy technologies and help maintain Europe as a global leader in this industry.*
MaRINET2, H2020 (TA provider, 2017 – 2021)	*Marine Renewable Infrastructure Network for Enhancing Technologies 2* *Integrating activities planned under MaRINET 2 ensured the continued integration and enhancement of all leading European research infrastructure and facilities specialising in research, development and testing of offshore renewable energy systems including electrical sub systems and grid integration through a range of TRLs (1-7).*
FLOTANT, H2020 (Coordinator, 2019 – 2022)	*Innovative, low cost, low weight and safe floating wind technology optimized for deep water wind sites* *The project aims to build and demonstrate a scale model of an offshore floating platform to support a wind turbine in deep waters. The newly designed components will include a hybrid concrete-plastic platform, optimised mooring and anchoring systems, high-performance lightweight power cables, and a high-tech monitoring system for operation and maintenance.*
OCEANSET, H2020 (Partner, 2019 – 2022)	*Support to the Realisation of the Ocean Energy Implementation Plan of the SET-Plan* *The European SETPlan aims to promote R&I efforts by supporting new technologies that will help achieve the EU's transformation to a low-carbon energy system. Within this framework, the SET implementation plan (IP) for ocean energy was adopted by the Implementation Working Group (IWG). OceanSET will assist the IWG in their work to deliver on the targets set in the IP.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PLOCAN MARINE PLATFORM	*Located on the seabed, at a depth of 30m & 1.5km off the coast in the NE of the island of Gran Canaria contains multidisciplinary labs for the analysis of bio-geochemical variables in the water column, a main deck area & hangar with equipment for loading /unloading operations of materials*
OCEAN OBSERVATORY (Measuring & Monitoring Systems)	*It includes a multidisciplinary and permanent array of autonomous ocean observation platforms for the observation of the marine environment.*
VIMAS BASE	*The VIMAS (Vehicles, Instruments and Underwater Machines) base has a multidisciplinary fleet of state-of-the-art autonomous oceanic platforms and instruments. It is a permanent base for autonomous underwater and surface vehicles, as well as vehicles for visualisation at different depths*
ONSHORE HEADQUARTERS	*The onshore site includes 400 m2 of workshops equipped for electronics & mechanical integration, repair, storage & logistics; labss, incl. a wet lab with a saltwater tank, a control room for piloting marine vehicles and related subjects, as well as spaces to support scientific activity*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999980373	*CHALMERS TEKNISKA HOGSKOLA AB*

Short name: UNIChalmers

Address

Street	-
Town	GOTEBORG
Postcode	412 96
Country	Sweden
Webpage	www.chalmers.se

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	19/08/2008	- no
SME self-assessment	unknown	
SME validation	19/08/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Electrical Engineering	☐ not applicable
	☒ Same as proposing organisation's address	
Street	-	
Town	GOTEBORG	
Postcode	412 96	
Country	Sweden	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Ola	Carlson	Man	Sweden	ola.carlson@chalmers.se	Category B Senior resea	Team member	0000-0002-7441-0147	Orcid ID
Ms	Sara	Fogelström	Woman	Sweden	sara.fogelstrom@chalmers.se	Category D First stage r	Team member	0000-0001-8092-6011	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
Swedish Energy Agency SWPTC, 2014-2022	*Several projects within the Swedish Wind Power Technology Centre (SWPTC) have developed models of Chalmers wind turbine which can be used in this project. SWPTC was financed by the Swedish Energy Agency and industry and academic partners.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Chalmers wind turbine	*Chalmers wind turbine has variable speed operation with a direct driven generator and a frequency converter. The rated power is 45 kW and the rated speed of 75 rpm. The unique wooden tower is 30 m high and the blades are of carbon fibre.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999984059	*FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV*

Short name: Fraunhofer

Address

Street	HANSASTRASSE 27C
Town	MUNCHEN
Postcode	80686
Country	Germany
Webpage	www.fraunhofer.de

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	12/01/2022	- no
SME self-assessment	unknown	
SME validation	15/09/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Fraunhofer Center for Silicon Photovoltaics CSP	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Otto-Eissfeldt-Strasse 12	
Town	Halle (Saale)	
Postcode	06120	
Country	Germany	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
E^2, German grant funded by PtJ 2021-2024	*Development of solar modules manufactured with renewable materials or materials that are able to recycle, characterisation of modules*
AluPV, German grant funded by PtJ 2023-2025	*Development of BIPV, solar panels for building facade, Magnetic field imaging for module inspection*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
3d Lamination	*Lamination of solar modules with unordinary height or geometry*
Magnetic field imaging	*Characterization of modules by measuring magnetic fields to identify module defects*
Lead-free module fabrication	*Fabrication of solar cell strings with lead-free electrical conductive adhesive (ECA)*
Module characterization	*Standard module tests (Flash, EL, climate tests)*
Defect analytics to micro scale	*Light and electron microscopy*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999604110	*FUNDACION TECNALIA RESEARCH & INNOVATION*

Short name: TECNALIA

Address

Street	PARQUE CIENTIFICO Y TECNOLOGICO DE BIZKAI
Town	DERIO (BIZKAIA)
Postcode	48160
Country	Spain
Webpage	www.tecnalia.com

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	18/11/2021 - no
SME self-assessment	unknown
SME validation	09/10/2008 - no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Materials for Extreme Conditions	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Mikeletegi Pasalekua 2	
Town	Donostia – San Sebastián (Gipuzkoa)	
Postcode	20009	
Country	Spain	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Mr	Pablo	Benguri	Man	Spain	Pablo.benguria@tecnalia.com	Category B Senior resea	Team member	0000-0001-8189-1412	Orcid ID
Mrs	Aiala	Urbegain	Woman	Spain	Aiala.urbegain@tecnalia.com	Category C Recognised	Team member	0000-0001-9930-0289	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Evaluation of Anticorrosion Coatings for Offshore Wind Turbine Monopiles for an Optimized and Time-Efficient Coating Application. N. Marinova, A. Urbegain, P. Benguria, A. Travé, R. Caracena. Coatings 2022, 12(3), 384; https://doi.org/10.3390/coatings12030384*
Publication	*Correlation between accelerated laboratory testing and exposure in a real marine environment. A. Urbegain, Pablo Benguria, G. Berriozabal, U. Izagirre. AIAS, Ingeniería de Superficies #125. Octubre 2020*
Other achievement	*HarshLab1.0: one-year testing materials and components in the first offshore floating laboratory in Europe. Pablo Benguria, Jean-Baptiste Jorcin, Aiala Urbegain, Andrés Del Barrio, Iñigo Santos. Oral communication. Congress of the European Federation of Corrosion EUROCORR 2019, Seville.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
NEMMO, H2020, GA 815278 (2019-2023)	*Next Evolution in Materials and Models for Ocean Energy is a EU project coordinated by Tecnalia where our main contributions relies on: i) the design of ageing procedures in lab and its correlation with field exposure in HarshLab to design an accelerated testing procedure for composite tidal blades; ii) the development of sol-gel based particles to provide anti-fouling functionality to coatings for marine application. http://nemmo.eu*
NEWSKIN, H2020, GA 862100 (2020-2024)	*Innovation Eco-system to Accelerate the Industrial Uptake of Advanced Surface Nano-Technologies. Tecnalia contributes to the project with: i) validation of anti-fouling and anticorrosion hybrid coatings; ii) validation of optical anti-reflective and anti-soiling coating, both sol-gel based; iii) Design and validation of a dynamic antifouling test rig https:// www.newskin-oitb.eu/*
NEOMAT, Spain Grant KK-2021/00059 (2021-2023)	*Novel materials, coatings and processes to boost the performance of Basque industry on offshore renewable energies is a project funded by the Basque Government and coordinated by Tecnalia, with the focus on: i) Novel biobased materials for offshore industry; ii) novel antifouling coatings; iii) novel procedures for the evaluation of the performance of coatings and materials in offshore conditions.*
MARINET2, H2020, GA 731084 (2017-2021)	*MaRINET 2 will ensure the continued integration and enhancement of all leading European research infrastructure and facilities specializing in research, development and testing of offshore renewable energy systems including electrical sub systems and grid integration through a range of TRLs (1-7).*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
HarshLab	*Offshore floating laboratory moored in BiMEP Area, 1,6 miles away from the coast in the Bay of Biscay (Spain). HarshLab can handle up to more than 2000 samples in atmospheric, splash and immersion zones, and heavy equipment can be easily handled thanks to the two cranes in the deck. www.harshlab.eu*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999981731	*DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV*

Short name: DLR

Address

Street	LINDER HOHE
Town	KOLN
Postcode	51147
Country	Germany
Webpage	www.dlr.de

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	03/01/2022	- no
SME self-assessment	unknown	
SME validation	28/10/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Solar Research Institute, Systems' Qualification Department	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Paseo de Almeria 73 – 2	
Town	Almeria	
Postcode	04001	
Country	Spain	

Department 2

Department name	Solar Research Institute & Future Fuels Institute	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Karl-Heinz-Beckurts-Str. 13	
Town	Juelich	
Postcode	52428	
Country	Germany	

Department 3

Department name	Institute of Networked Energy Systems, Urban and Residential Tech	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Carl-von-Ossietzky-Str. 15	
Town	Oldenburg	
Postcode	26129	
Country	Germany	

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Mr	Daniel	Benitez	Man	Spain	daniel.benitez@dlr.de	Category B Senior resea	Leading	0000-0001-6078-2989	Orcid ID
Dr	Dmitrij	Laaber	Man	Germany	Dmitrij.laaber@dlr.de	Category B Senior resea	Team member	0000-0002-2890-5931	Orcid ID
Mr	Felix	Goehring	Man	Germany	Felix.goehring@dlr.de	Category B Senior resea	Team member	0000-0002-8514-0453	Orcid ID
Dr	Martin	Vehse	Man	Germany	Martin.vehse@dlr.de	Category B Senior resea	Team member	0000-0003-0578-6121	Orcid ID
Dr	Kai	Gehrke	Man	Germany	Kai.gehrke@dlr.de	Category B Senior resea	Team member	0000-0002-0591-8289	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Laaber, D. (2021). Solar Simulators. In: Meyers, R.A. (eds) Encyclopedia of Sustainability Science and Technology. Springer, New York, NY. https://doi.org/10.1007/978-1-4939-2493-6_1055-1*
Publication	*Thanda, Vamshi Krishna & Fend, Thomas & Laaber, Dmitrij & Lidor, Alon & von Storch, Henrik & Säck, Jan Peter & Hertel, Johannes & Lampe, Joerg & Menz, Steffen & Piesche, Gregory & Berger, Stefan & Lorentzou, Souzana & Syrigou, Maria & Denk, Thorsten &Gonzales, Aurelio & Vidal, Alfonso & Roeb, Martin & Sattler, Christian, Experimental Investigation of the Applicability of a 250 Kw Ceria Receiver/Reactor for Solar Thermochemical Hydrogen Generation. https:// ssrn.com/abstract=4071682*
Publication	*Thelen, Martin und Raeder, Christian und Willsch, Christian und Dibowski, Hans-Gerd (2017) A high-resolution optical measurement system for rapid acquisition of radiation flux density maps. In: AIP Conference Proceedings (1850). SolarPACES Conference 2016, 11-14 October 2016, Abu Dhabi, UAE. doi: 10.1063/1.4984534*
Publication	*Röger, Marc und Herrmann, Patrik und Ulmer, Steffen und Ebert, Miriam und Prahl, Christoph und Göhring, Felix (2014) Techniques to Measure Solar Flux Density Distribution on Large-Scale Receivers. Journal of Solar Energy Engineering (136), 031013-1. American Society of Mechanical Engineers (ASME). doi: 10.1115/1.4027261*
Publication	*Stadler, Hannes und Tiddens, Arne Tidde und Schwarzbözl, Peter und Göhring, Felix und Baumann, Torsten und Trautner, Johannes (2017) Improved performance of open volumetric receivers by employing an external air return system. Solar Energy, 155, Seiten 1157-1164. Elsevier. doi: 10.1016/j.solener.2017.07.050*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
SFERA-III, H2020 GA 823802 (2019 - 2023)	*Solar Facilities for the European Research Area - Third Phase* *The project proposed for here is follow-up project for SFERA-III in terms of transnational access to CSP facilities. Within SFERA-III 6 projects have been carried out so far at the Synlight facility*
PREMA, H2020 GA 820561 (2018-2023)	*The overall objective of PREMA is to demonstrate a technology for pretreatment of Manganese ores that will enable to increase energy flexibility, energy efficiency, enhance raw material use of fines, and reduce CO2 emissions in production of Mn-alloys. In Juelich the usage of solar thermal energy as energy source for the production of Mn-alloy is demonstrated. A particle receiver is prepared for this application. The RI of the multifocus tower has been adapted to the needs of this project.*
HPMS-II, German BMWi grant 0324327A (2018-2023)	*Development of a highly efficient receiver system for molten salt solar tower power plants. The infrastructure of the multifocus tower has been adapted to the needs of this project (molten salt infrastructure) and can be partly be used for further developments*
SolarFuels,German BMWi grant 03EE5085B (2021-2025	*The aim of the industry-led research project is the construction and operation of a pilot plant for the production of synthetic fuels and materials for the chemical industry. The core of the project is the solar reforming of methane. The infrastructure of the multifocus tower has been adapted to the needs of this project (solar chemical applications) and can be partly be used for further developments.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Synlight	*High-flux solar simulator for irradiation testing from 0.1 kW – 300 kW of total thermal power;*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Multifocus Tower	*Solar tower with three test levels, designed for tests with thermal power of up to 2 megawatts*
Solar Tower Power Plant Juelich	*Solar tower with a main receiver with an thermal power of roundabout 10 megawatts which heats up a complete experimental power plant; additional test level at 30 meters height for tests up to 1000 kilowatts of thermal power*
Heliostat Field Juelich	*Heliostat field with around 2000 high-precision heliostats with a surface area of 8.2 square meters each*
Coating Laboratory for thin film deposition	*Combined inline coating systems for developing processes & prototypes at near-industrial scale for a substrate size up to 30x30 cm². It includes: glass cleaning, PECVD, magnetron sputtering, and lamination unit.*
Coating Laboratory for thin film deposition	*An additional system for rapid prototyping and development of new functionalities and material combinations consists of a cluster tool with six process chambers for substrates up to 10x10 cm².*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
998683192	*Fundacion IMDEA Energia*

Short name: IMDEA

Address

Street	AVENIDA RAMON DE LA SAGRA 3
Town	MOSTOLES MADRID
Postcode	28935
Country	Spain
Webpage	http://www.energia.imdea.org/

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	19/08/2008	- no
SME self-assessment	unknown	
SME validation	19/08/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	High Temperature Processes Unit	☐ not applicable
	☒ Same as proposing organisation's address	
Street	AVENIDA RAMON DE LA SAGRA 3	
Town	MOSTOLES MADRID	
Postcode	28935	
Country	Spain	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Manuel	Romero	Man	Spain	manuel.romero@imdea.org	Category A Top grade re	Team member	0000-0001-8152-1331	Orcid ID
Dr	José	Gonzalez-Aguilar	Man	Spain	jose.gonzalez@imdea.org	Category A Top grade re	Leading	0000-0001-9641-2330	Orcid ID
Dr	Rocardo	Conceição	Man	Portugal	ricardo.conceicao@imdea.org	Category C Recognised	Team member	0000-0002-7341-7611	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*A solar tower fuel plant for the thermochemical production of kerosene from H2O and CO2, Zoller. S., Koepf, E., Nizamian, D., Stephan, M., Patané, A., Haueter. Ph., Romero, M., González-Aguilar, J., Lieftink, D., de Wit, E., Brendelberger, S., Sizmann, A., Steinfeld, A. (2022) Joule, 6(7), 1606 – 161620. https://doi.org/10.1016/j.joule.2022.06.012*
Publication	*Soiling effect in solar energy conversion systems: A review, Conceição, R., González-Aguilar, J., Alami Merrouni, A., Romero, M. (2022) Renewable and Sustainable Energy Reviews, 162, 112434. https://doi.org/10.1016/j.rser.2022.112434*
Publication	*Solar Energy on Demand: A Review on High Temperature Thermochemical Heat Storage Systems and Materials, Carrillo, A.J., González-Aguilar, J., Romero, M., Coronado, J.M. (2019) Chemical Reviews, 119, 7, 4777-4816. https://doi.org/10.1021/acs.chemrev.8b00315*
Publication	*Thermal and hydrodynamic behavior of ceramic volumetric absorbers for central receiver solar power plants: A review, Gomez-Garcia, F., González-Aguilar, J., Olalde, G., Romero, M. (2016) Renewable and Sustainable Energy Reviews, 57, 648-658. https://doi.org/10.1016/j.rser.2015.12.106*
Publication	*Concentrating solar thermal power and thermochemical fuels, Romero, M., Steinfeld, A. (2012), Energy and Environmental Science, 5, 11, 9234-9245. https://doi.org/10.1039/c2ee21275g*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
SFERA-III, H2020 GA 823802 (2019-2023)	*Solar Facilities for the European Research Area - Third Phase* *IME contributes to the development and application of enhanced SCADA (Supervisory Control And Data Acquisition) systems and control algorithms for flexible and fast-response operation of heliostat fields and increase the quality of services for optical characterization of point focusing concentrators among others, mainly for very high flux and temperatures like in the production of solar fuels.*
ACES2030, Spain CM S2018/ EMT-4319 (2019-2023)	*Concentrated Solar Thermal energy in the transport sector and in the production of heat and electricity.* *Project funded with regional and EU structural funds and coordinated by* *IME. IME develops different concentrating solar technologies and support CST community with its experimental facilities.*
SUN-TO-LIQUID, H2020 GA 654408 (2016-2019)	*Integrated solar-thermochemical synthesis of liquid hydrocarbon fuels. Experimental validation of the integrated fuel production chain from solar, CO2 & water to liquid fuels at a pre-commercial scale & high energy conversion efficiency. Key achievements: advanced high-flux ultra-modular solar heliostat field, 50 kW solar reactor, & optimized redox materials to produce synthesis gas. IME did design, construction & commissioning of solar field, hosted the experimental facilities, conducted tests*
INSHIP, H2020 GA 731287 (2017-2020)	*Integrating National Research Agendas on Solar Heat for Industrial Processes* *IME participated on actions related to high-temperature heat for industrial processes. These includes experimental test bed design & commissioning as well as performing the aerothermal characterization of 3D-printed volumetric absorbers.*

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STAGE-STE, FP7 GA 609837 (2014-2018)	*Scientific and Technological Alliance for Guaranteeing the European Excellence in Concentrating Solar Thermal Energy* *IME contributed to solar receiver developments based on atmospheric volumetric absorbers and system integration on solarized Brayton cycles.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	**Short description (Max 300 characters)**
Very-high concentration solar tower (VHCST)	*Unique infrastructure for testing components and devices under very high solar fluxes. Customized 250kWth heliostat field (169 heliostats) that makes use of the most recent developments on small size heliostats (1.9 m x 1.6 m) and a tower with reduced optical height to minimize visual impact*
42kWe High Flux Solar Simulator (Kiran42)	*Solar simulator with an electrical power of 42 kWe that, with the use of seven 6- kWe short-arc Xenon lamps, is able to reach irradiances at the focal point above 3,500 kW/m2 and a total radiant power of 12 kW. Includes calorimetric loops and IR and Vis cameras for temperature and flux monitoring.*
High Temperature Processes Laboratory (HTPU-LAB)	*Laboratory for material synthesis and characterization in extreme conditions (high solar irradiance and/or temperature). Material synthesis and shaping by 3D printing. Sintering furnaces, thermal diffusivity, XRD, FEG-SEM, TEM. Vertical solar furnace with three heating zones (up to 1500 ºC).*
Computational Design Lab (HTPUCDL)	*Specific hardware (workstations) and software tools for characterizing, designing and modelling solar thermochemical and high temperature processes.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999624092	*STICHTING NEDERLANDSE WETENSCHAPPELIJK ONDERZOEK INSTITUTEN*

Short name: DIFFER

Address

Street	WINTHONTLAAN 2
Town	UTRECHT
Postcode	3526 KV
Country	Netherlands
Webpage	www.nwo-i.nl

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	15/04/1946	- no
SME self-assessment	15/04/1946	- no
SME validation	15/04/1946	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Solar Fuels	☐ not applicable
	☒ Same as proposing organisation's address	
Street	WINTHONTLAAN 2	
Town	UTRECHT	
Postcode	3526 KV	
Country	Netherlands	

Department 2

Department name	Fusion energy	☐ not applicable
	☒ Same as proposing organisation's address	
Street	WINTHONTLAAN 2	
Town	UTRECHT	
Postcode	3526 KV	
Country	Netherlands	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Anja	Bieberle-Hütter	Woman	Germany	Bieberle.huetter@differ.nl	Category B Senior resea	Leading	0000-0001-8794-9312	Orcid ID
Dr	Beata	Tyburska-Pueschel	Woman	Poland	B.Tyburska-Pueschel@differ.nl	Category B Senior resea	Leading	0000-0002-8434-5131	Orcid ID
Dr	HAans	Van Eck	Man	Netherlands	H.J.N.vanEck@differ.nl	Category B Senior resea	Leading	0000-0002-1166-8837	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*H.J.N. van Eck, G.R.A. Akkermans, S. Alonso van der Westen, D.U.B. Aussems, M. van Berkel, S. Brons, I.G.J. Classen, H.J. van der Meiden, T.W. Morgan, M.J. van de Pol, J. Scholten, J.W.M. Vernimmen, E.G.P. Vos, M.R. de Baar* *High-fluence and high-flux performance characteristics of the superconducting Magnum-PSI linear plasma facility* *Fusion Engineering and Design, Volume 142, Pages 26 – 32, 2019* *https://doi.org/10.1016/j.fusengdes.2019.04.020*
Publication	*J. Rapp, W.R. Koppers, H.J.N. Van Eck, G.J. Van Rooij, W.J. Goedheer, B. De Groot, R. Al, M.F. Graswinckel, M.A. Van Den Berg, O. Kruyt, P. Smeets, H.J. Van der Meiden* *Construction of the plasma-wall experiment Magnum-PSI* *Fusion Engineering and Design, Volume 85, Issue 7-9, Pages 1455 – 1459, 2010* *10.1016/j.fusengdes.2010.04.009*
Publication	*I. Jogi, P. Paris, K. Piip, J. Ristkok, R. Talviste, H.M. Piirsoo, A. Tamm, E. Grigore, B. Tyburska-Pueschel, H.J. van der Meiden* *LIBS applicability for investigation of re-deposition and fuel retention in tungsten coatings exposed to pure and nitrogen-mixed deuterium plasmas of Magnum-PSI* *Physica Scripta, 96 (2021) 114010* *10.1088/1402-4896/ac169c*
Publication	*P. Plonczak, A. Bieberle-Hütter, M. Sogaard, T. Ryll, J. Martynczuk, P. Vang Hendriksen, L. J. Gauckler* *Tailoring of LSCF Nanostructure by Pulsed Laser Deposition* *Adv. Funct. Mat. 21 (2011) 2764–2775* *10.1002/adfm.201100251*
Publication	*D. Beckel, A. Bieberle-Hütter, A. Harvey, A. Infortuna, U. P. Muecke, M. Prestat, J.L.M. Rupp, L.J. Gauckler* *Thin Films for Micro Solid Oxide Fuel Cells* *J. Pow. Sourc. 173 (2007) 325-345.* *10.1016/j.jpowsour.2007.04.070*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
KEROGREEN, H2020 GA 763909 (2018-2022)	*KEROGREEN (Production of sustainable aircraft grade kerosene from water and air powered by renewable electricity, through the splitting of CO2, syngas formation and Fischer-Tropsch synthesis). The project was carried out by 6 partners from 4 European countries aiming at the development and testing of an innovative conversion route for the production of sustainable aircraft grade Kerosene from water and air powered by renewable electricity. DIFFER role: Coordinator*
MIMOSA, HORIZON EURATOM (2022-2025)	*The objective of this project is to design and build a new chamber (DIFFER's Irradiation Corrosion Experiment - DICE) to perform simultaneous irradiation and corrosion experiments on materials relevant to molten salt reactors (MSRs) and to attach the chamber to one of the available beamlines. In the future, this device may be used as a test facility for the concept of cooling the SPARK/ARC divertor with FLiBe.*

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Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Magnum-PSI	*World unique linear plasma generator (14 m long) for studying plasma-wall interaction in fusion reactors and nanostructure processing (relevant for catalytic and electrochemical surfaces)*
PLD4Energy	*Vacuum cluster for the deposition of thin metal oxides films with individual small and large deposition chambers incl. multiple, unique in-situ diagnostics for process upscaling (e.g. RHEED, LAXS, SE, MS, OES), materials screening, and component fabrication (sputtering)*
Ion Beam Facility	*Ion beam analysis (e.g. RBS, PIXE, PIGE) and ion beam irradiation, 3.5 MV singletron, 4 beam lines for materials characterization and modification*
Plasma set-ups	*Home-build plasma set-ups with multiple diagnostics for e.g. CO2 dissociation studies (1 kW to 10 kW). These set-ups can be used in combination with the large infrastructure mentioned in this proposal.*
Materials characterization lab	*Next to our large infrastructure we have a lab for materials characterization equipped with e.g. SEM, AFM, XRD, UVVIS, TEM. This equipment can be used in conjunction with the large infrastructure mentioned in this proposal to fully characterize the materials of interest.*
Electrochemical / catalytic characterization	*We have many set-ups to characterize the electrochemical and catalytic performance of materials, such as C-V, impedance, chopped light measurements, MS. This equipment can be used in conjunction with the large infrastructure mentioned in this proposal to fully characterize the materials of interest.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999997930	*CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS*

Short name: CNRS

Address

Street	RUE MICHEL ANGE 3
Town	PARIS
Postcode	75794
Country	France
Webpage	www.cnrs.fr

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	17/12/2021	- no
SME self-assessment	unknown	
SME validation	18/11/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	PROMES (UPR8521)	☐ not applicable
	☐ Same as proposing organisation's address	
Street	7 rue du four solaire	
Town	ODEILLO	
Postcode	66120	
Country	France	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier	
Mr	Emmanuel	Guillot	Man	France	emmanuel.guillot@promes.cnrs.fr	Category A Top grade re	Leading	0000-0002-0552-0262	Orcid ID	
Mr	Gilles	Flamant	Man	France	Gilles.flamant@promes.cnrs.fr	Category A Top grade re	Team member	1133936	Other ID	PersonId (HAL)
Mr	Nicolas	Boullet	Man	France	nicolas.boullet@promes.cnrs.fr	Category D First stage r	Team member			
Mr	Stéphane	Abanadès	Man	France	stephane.abanades@promes.cnrs.fr	Category A Top grade re	Team member	0000-0002-6689-3652	Orcid ID	
Mr	Régis	Rodriguez	Man	France	regis.rodriguez@promes.cnrs.fr		Team member			
Mr	Jean-Louis	Sans	Man	France	jean-louis.sans@promes.cnrs.fr	Category A Top grade re	Team member			
Mr	Michaël	Tessonneaud	Man	France	michael.tessoneaud@promes.cnrs.fr		Team member			
Mr	Antoine	Pérez	Man	France	antoine.perez@promes.cnrs.fr	Category D First stage r	Team member			
Mr	William	Baltus	Man	France	william.baltus@promes.cnrs.fr		Team member			

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Thermochemical hydrogen production from a two-step solar-driven water-splitting cycle based on cerium oxides, Abanadès S, Flamant G., 10.1016/j.solener.2005.12.005* *Example work by PROMES-CNRS with the solar RI for solar processes development (H2 production), 474 citations in Scopus (02.2023)*
Publication	*Solar Wind Electrons Alphas and Protons (SWEAP) Investigation: Design of the Solar Wind and Coronal Plasma Instrument Suite for Solar Probe Plus, Kasper J. C. & al, 10.1007/s11214-015-0206-3* *Example work with PROMES-CNRS with the solar RI for material science for aerospace field (heatshield), 324 citations in Scopus (02.2023)*
Publication	*Highly efficient solar-pumped Nd:YAG laser, Liang D., Almedia J, 10.1364/OE.19.026399* *Example work at the PROMES-CNRS RI by hosted scientists (transnational access activities supported by SFERA FP7 228296), solar pumped laser tested at MSSF (world records), 94 citations in Wos (2023)*
Publication	*Ce 3d XPS investigation of cerium oxides and mixed cerium oxide (Ce xTiyOz), Bêche E., Charvin P., Perarnau D., Abanades S., Flamant G., 10.1002/sia.2686* *Example work by PROMES-CNRS with the solar RI and support laboratories for solar processes and material science (H2 production), 783 citations in Scopus (02.2023)*
Software	*The SOLSTICE ray-tracing Monte Carlo based software is devoted to the modelling of radiation exchanges in solar systems from the mirrors to the solar receivers.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
SFERA-III, H2020 GA 823802 (2019-2023)	*Solar Facilities for the European Research Area - Third Phase (SFERA-III)* *PROMES-CNRS is involved in the 3 activities (networking, transnational access and joint research activities), leading 2 workpackages. The joint research activities workpackage 9 is leading by Emmanuel Guillot. The SFERA-III project includes TNA activity nearly identical to this project.*
SFERA-II, FP7 GA 312643 (2014-2018)	*Solar Facilities for the European Research Area - Second Phase (SFERA-II)* *PROMES-CNRS was involved in the 3 activities (networking, transnational access and joint research activities), leading 2 workpackages. The joint research activities workpackage 13 was led by Emmanuel Guillot. The SFERA-II project included TNA activity nearly identical to this project.*
EU-SOLARIS, FP7 GA 312833 (2012-2016)	*THE EUROPEAN SOLAR RESEARCH INFRASTRUCTURE FOR CONCENTRATED SOLAR POWER* *This project was the key to create the EU-SOLARIS ERIC. PROMES-CNRS was involved in all workpackages and was leading one.*
SOCRATE, FR-Grant Equipex 10-EQPX-0049 (2011-2021)	*The SOCRATE project (4.5 M€) aimed at improving the solar facilities and laboratories available at PROMES-CNRS. Among them, Odeillo's big solar furnace MWSF performance was improved, the MicroSol'R plant was created, an optical properties laboratory was created, and support was made at Thémis for an electric turbine.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Clé de sol, ERDF PROGOS 20015072 (FR) (2020-2022)	*Project FEDER "Clé de Sol", 2020-2022* *PROMES-CNRS was the only beneficiary of this 1 M€ grant. The coordinator was Emmanuel Guillot. The project aimed at developing advanced instrumentation for controlling the big solar furnace MWSF and the solar tower Thémis, and improved performance of the heliostats at Thémis.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	**Short description (Max 300 characters)**
Solar furnace MWSF	*MWSF in Odeillo is the largest solar furnace in operation. It can deliver up to 1000 kW at up to 10000 kW/m2 on experimental setups, up to 3500+°C, typically from TRL 2 to 6. It is used for material science & solar processes (recently energy storage electricity production)*
MEDIASE at MWSF	*MEDIASE service for emissivity determination: world unique service to determine emissivity of opaque samples, depending on the angle and spectrum, and in temperature from 600 to 2000 + °C.*
Solar furnaces MSSFs	*The largest set of solar furnaces on Earth: eleven units from 1 to 6 kW, from 6000 to 16000 kW/m2. All are fully equipped: fast solar power regulators, 3D platforms, fluids… Numerous experimental setups available, for material science and processes development: energy, industry, transport, medical…*
Solar tower Thémis	*One of the few large scale solar tower available for research applications, from TRL4 to 6. With its 107 concentrating heliostats, it reaches 1500+°C at 2 focal rooms, 1 at 4500 kW (100t class setup), 1 at 500 kW. A full loop with particles as HTF is available with 1 Mwe electric turbine (NextCSP)*
Parabolic trough MicroSol'RI	*MicroSol'r is a complete loop at 200 kW scale with parabolic linear solar collectors, oil as 300°C HTF, 2 storage systems including a thermocline with easily changeable filler materials, steam loop, and an ORC for electricity production on waste thermal energy.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999745342	*FUNDACION CENER*

Short name: CENER

Address

Street	AVENIDA CIUDAD DE LA INNOVACION 7
Town	SARRIGUREN
Postcode	31621
Country	Spain
Webpage	www.cener.com

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	31/12/2017	- no
SME self-assessment	31/12/2017	- no
SME validation	08/09/2008	- yes

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Solar Energy Technologies and Storage	☐ not applicable
	☒ Same as proposing organisation's address	
Street	AVENIDA CIUDAD DE LA INNOVACION 7	
Town	SARRIGUREN	
Postcode	31621	
Country	Spain	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Ms	Amaia	Mutuberria	Woman	Spain	amutuberria@cener.com	Category B Senior resea	Leading	0000-0002-2799-029X	Orcid ID
Dr	Jaione	Bengoechea	Woman	Spain	jbapezteguia@cener.com	Category A Top grade re	Team member	0000-0002-1324-8481	Orcid ID
Mrs	Eugenia	Zugasti	Woman	Spain	ezugasti@cener.com	Category B Senior resea	Team member	0000-0003-2285-5926	Orcid ID
Dr	Ana	Gracia	Woman	Spain	agracia@cener.com	Category B Senior resea	Team member	0000-0001-5032-7878	Orcid ID
Mr	Jaime	Moracho	Man	Spain	jmoracho@cener.com	Category A Top grade re	Team member	0000-0001-7337-7579	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*J. Sanz, F. Nuñez, F Zaversky, Benchmarking analysis of a novel thermocline hybrid thermal energy storage system using steelmaking slag pebbles as packed-bed filler material for central receiver applications, Sol. Energy 188 (2019) 644–654*
Publication	*Cristina L.Pinto, Iñaki Cornago, Alicia Buceta, Eugenia Zugasti, Jaione Bengoechea. Random subwavelength structures on glass to improve photovoltaic module performance. Solar Energy Materials and Solar Cells, 2022 (https://doi.org/10.1016/j.solmat.2022.111935)*
Publication	*Ana Bernardos, Alberto García de Jalón, Marcelino Sánchez. Technical leadership in therma solar energy with cutting-edge projects. Future Energy journal, 2017*
Publication	*Polo, J., Fernández-Peruchena, C., Salamalikis, V., Mazorra-Aguiar, L., Turpin, M., Martín Pomares, L., & Remund,J. Benchmarking on improvement and site-adaptation techniques far modelled solar radiation datasets. Solar Energy, 2020, 201, 469-479. (DOI: 10.1016/ j.solener.2020.03.040)*
Service	*CENER is a certified laboratory by ENAC (National Accreditation body) following ISO standards for the component validation and certification services, including for photovoltaic power generation plants, pyranometers, pyrheliometers, thermosolar systems and components, solar collectors, factory made systems, using the CSTG (according to ISO 9459-2) or DST (according to ISO 9459-5) methodologies*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
VIPERLAB, H2020 GA 01006715 (2021-ongoing)	*Fully connected virtual and physical perovskite photovoltaics lab. Viperlab´s main objectives are to facilitate access to the best perovskite-focused infrastructures. CENER participates in the VIPERLAB infrastructure-sharing project, sharing its testing laboratory, as part of the top-level standardized testing infrastructures, for the European Perovskite R&D community with the mission of accelerating the perovskite PV development in Europe*
OPENLAB, H2020 GA 101037080 (2021- ongoing)	*OPENLAB projects aims to revitalise urban areas across Europe, leading the transition to Positive Energy Neighbourhoods (PEN) through open innovation actions. The project gathers 3 unique demonstration sites in #Pamplona (ES), Tartu (EE) and Genk (BE) to become living labs as innovation hot-spots, testing and validating innovation processes, technologies and services in real-life communities and settings during the duration of the project and beyond*
CAPTure, H2020 GA 101037080 (2016-2021)	*The main objective of this project was to increase plant efficiencies and reduce LCOE by developing all relevant components for implementing an innovative plant configuration based on a multi-tower decoupled advanced solar combined cycle that increases cycle efficiencies and avoids frequent transients and inefficient partial loads, thus maximizing overall efficiency, reliability as well as dispatchability.*
MOSAIC, H2020 GA 727402 (2015- 2020)	*The main objective of this project is to design, manufacturing and validation in a "relevant environment" of an innovative CSP concept based on a fixed hemispheric semi-Fresnel solar field and a high temperature mobile receiver with low implementation and O&M costs at the highest plant efficiencies, thus reducing the LCOE.*
STAGE-STE, FP7 GA 609837 (2014-2018)	*The main objective of this project was to promote coordination and support actions between institutions in the field of solar thermal energy. Promotion of the realization of coordinated projects covering the full spectrum of current research topics concentrating solar energy to provide the highest EU added value and filling gaps between national program*

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Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Materials and Coatings Lab (COATLAB)	*Coating, structuring & characterization RI, with sputtering, thermal evaporator electron beam & spin coating inside glove box, Plasma Enhanced Chemical Vapor Deposition, Laminator, Chemical Bench, photolithography equipment, nanosecond lasers (VIS and NIR); AFM, SEM & optical characterization set-up*
Module testing Lab (SOLPVLAB)	*Main equipment for testing PV modules: flash and continuous solar simulators, climatic chambers, hail impact, mechanical load, Electroluminescence, Lock-in thermography, EVA cross linking analysis, peel-off tests, , assessment of damage of cleaning tests, and outdoor experimental field.*
Experimental Outdoor Field	*CENER can test PV modules and Solar Thermal Collectors in outdoor conditions, with the objective of studying the behavior of PV modules, ST collectors, structures, solar trackers and inverters under real operation conditions.*
Thermal Characterization test bench	*To characterize the heat losses of receiver tubes of parabolic trough collectors. The working temperatures are in the range 100 – 600ºC.*
Solar Energy Systems Simulation Environment	*Advanced simulation packages for a detailed analysis of the behavior and performance of any kind of solar energy components and systems (PV, ST, CSP and storage) and taking into account the specific characteristics of the location of interest and the system being modelled*
Optical Characterization test bench	*The S-Tube tube tester is used to characterize the reflectance and transmittance of receiver tubes of parabolic trough collectors. The working wavelengths are in the range 300-2500 nm.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
994187921	*Laboratorio Nacional de Energia e Geologia I.P.*

Short name: LNEG

Address

Street	Rua da Amieira
Town	S.Mamede de infesta
Postcode	4466-901
Country	Portugal
Webpage	

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	26/01/2022 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Laboratório de Energia (LEN)	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Estrada do Paço do Lumiar, 22	
Town	Lisboa	
Postcode	1649-038	
Country	Portugal	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Pedro	Azevedo	Man	Portugal	pedro.azevedo@lneg.pt	Category B Senior resea	Leading	0000-0002-3829-2948	Orcid ID
Dr	Teresa	Diamantino	Woman	Portugal	teresa.diamantino@lneg.pt	Category B Senior resea	Leading	0000-0002-0481-0460	Orcid ID
Prof	Rafal	Lukasik	Man	Portugal	rafal.lukasik@lneg.pt	Category A Top grade re	Team member	0000-0002-7805-5744	Orcid ID
Dr	Francisco	Girio	Man	Portugal	francisco.girio@lneg.pt	Category A Top grade re	Leading	0000-0002-5376-8430	Orcid ID
Dr	Alexandra	Esteves	Woman	Portugal	alexandra.esteves@lneg.pt	Category B Senior resea	Team member	0000-0002-7010-605X	Orcid ID
Dr	Fernando	Oliveira	Man	Portugal	fernando.oliveira@lneg.pt	Category B Senior resea	Team member	0000-0002-1503-0152	Orcid ID
Dr	Carlos	Nogueira	Man	Portugal	carlos.nogueira@lneg.pt	Category B Senior resea	Team member	0000-0003-2949-5046	Orcid ID
Dr	Jorge	Facão	Man	Portugal	jorge.facao@lneg.pt	Category B Senior resea	Team member	0000-0001-7687-9048	Orcid ID
Mr	João	Cardoso	Man	Portugal	joao.cardoso@lneg.pt	Category D First stage r	Team member	0000-0002-0479-1474	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Filipe Marques, Soraia Páscoa, Maria João Carvalho, João P. Cardoso. Solar Irradiance (Global, Direct and Diffuse) Quality Control Methodologies Review: Application to Time Series Measured https://doi.org/10.18086/eurosun.2020.09.04*
Publication	*M. Abreu, A. Reis, P. Moura, A.L. Fernando, A. Luís, L. Quental, P. Patinha, F. Gírio (2020) Evaluation of the Potential of Biomass to Energy in Portugal - Conclusions from the CONVERTE Project. Energies, 13, 937. DOI: 10.3390/en13040937*
Publication	*M. H. L. Silveira, A. R. C. Morais, A. M. da Costa Lopes, D. N. Olekszyszen, R. Bogel-Lukasik, J. Andreaus, L. Pereira Ramos, Current pretreatment technologies for the development of cellulosic ethanol and biorefineries, ChemSusChem, 2015, 8, 3366-3390. DOI: 10.1002/cssc.201500282*
Publication	*T.C. Diamantino, R. Gonçalves, S. Páscoa, I.N. Alves, M.J. Carvalho, Accelerated aging tests to selective solar absorber coatings for low temperature applications, Solar Energy Materials and Solar Cells 232 (2021), 111320, DOI: 10.1016/j.solmat.2021.111320*
Publication	*M. A. Esteves, F. Fresno, V. R. Fernandes, F. E. Oropeza, V. A. de la Peña O'Shea, C. M. Rangel, TiO2-Reduced Graphene Oxide-Pt Nanocomposites for the Photogeneration of Hydrogen from Ethanol Liquid and Gas Phases, Catalysis Today, 380 (2021) 41-52. https://doi.org/10.1016/j.cattod.2021.05.012*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
SFERA-III, H2020 GA 823802 (2019-2023)	*Extend the activities of previous Sfera projects to the new solar laboratories which will bring added value to this European RI for CSP. Activities include networking activities to further develop the cooperation between the RI, the scientific community, industries &other stakeholders, TNA to provide access to all European & Non-European researchers from both academia & industry to singular scientific & technological solar RI, joint research activities to improve the integrated services provided*
INIESC, PT/FCT ALT20-03-0145-FEDER-022113 (17-22)	*INIESC focused on thermal conversionat medium/high temperatures & aims at the development of CST technologies: conceptual development, support to industry, study & development of applications & capacity building. INIESC addresses different fields for their application, ranging from water desalination or industrial process heat to thermoelectric production or solar fuels, promoting technology transfer to the industry &enabling a holistic approach to the product development process*
BRISK2, H2020 GA 731101 (2017-2022)	*Biofuels Research Infrastructure for Sharing Knowledge II. (INFRAIA-01-2016-2017). Main role: responsible for transnational access in BBRI RI. The project aimed to improve the success of biofuels implementation by: 1) helping to consolidate bioenergy expertise & knowledge, 2) providing opportunities for international collaboration, 3) fostering a culture of co-operation, 4) leading to new bioenergy research activities across Europe*
AMBITION, H2020 GA 731263 (2016-2019)	*Advanced biofuel production with energy system integration – LCE-33-2016 European Common Research and Innovation Agendas (ECRIAs) in support of the implementation of the SET Action Plan. Main role: responsible for activities related to the development of methods and analytical approaches relate to the biomass processing and valorisation.*

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Baterias 2030, PT GA Lisboa-01-0247-FEDER-046109	*Batterias-2030, a mobilizing project co-financed by PT2020 (2020-2023), aims to design, develop & validate innovative & disruptive energy storage technological solutions, easily convertible in electricity, promoting an increase in decentralized energy production, favoring renewable & sustainable sources in an urban environment, incorporating new generation batteries, enabling second-life & end-of-life solutions, & promoting the concept of energy communities based on a low-carbon microgrid*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	**Short description (Max 300 characters)**
Lx-STE: Lisbon Solar Thermal Energy Infrastructure	*Lx-STE performs concentration solar energy related activities aimed both to power production & solar heat for industrial applications, incl. resource measurement & analysis; systems and components design, simulation, testing, & characterization; heliostats related control and O&M procedure testing*
BBRI - Biomass and Bioenergy RI	*BBRI performs activities focused on R&D bench and pilot scale conversion of lignocellulosic feedstock into alcohols and hydrocarbons (Sugar Platform); bioenergy carriers from CO2 and light (Microalgae Platform); and gasification and pyrolysis for biofuels, heat and power (Thermochemical Platform).*
Materials for Energy RI (UME)	*UME do research, testing & technological development of materials for CSP, ES, hydrogen, PV & ocean energy. It comprises 4 main facilities: Lab. of Materials & Coatings (LMR), accredited by EN ISO 17025; Labs of Hydrogen (H2LAB), Batteries & Recycling (BatLAB), Material's Characterization (MaCLab)*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999513221	*SINTEF ENERGI AS*

Short name: SINTEF

Address

Street	Sem Saelandsveg 11
Town	TRONDHEIM
Postcode	7465
Country	Norway
Webpage	www.sintef.no

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	19/01/2022 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Energy Systems	☐ not applicable
	☒ Same as proposing organisation's address	
Street	Sem Saelandsveg 11	
Town	TRONDHEIM	
Postcode	7465	
Country	Norway	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Salavatore	D'Arco	Man	Italy	Salvatore.darco@sintef.no	Category B Senior resea	Leading	0000-0002-9313-8230	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*S. Lentijo, S. D'Arco and A. Monti, "Comparing the Dynamic Performances of Power Hardware-in-the-Loop Interfaces," in IEEE Transactions on Industrial Electronics, vol. 57, no. 4, pp. 1195-1207, April 2010, doi: 10.1109/TIE.2009.2027246.*
Publication	*J. Beerten, S. D'Arco and J. A. Suul, "Identification and Small-Signal Analysis of Interaction Modes in VSC MTDC Systems," in IEEE Transactions on Power Delivery, vol. 31, no. 2, pp. 888-897, April 2016, doi: 10.1109/TPWRD.2015.2467965.*
Publication	*Beerten, J., D'Arco, S. and Suul, J.A. (2016), Frequency-dependent cable modelling for small-signal stability analysis of VSC-HVDC systems. IET Gener. Transm. Distrib., 10: 1370-1381. https://doi.org/10.1049/iet-gtd.2015.0868*
Publication	*M. Quraan, P. Tricoli, S. D'Arco and L. Piegari, "Efficiency Assessment of Modular Multilevel Converters for Battery Electric Vehicles," in IEEE Transactions on Power Electronics, vol. 32, no. 3, pp. 2041-2051, March 2017, doi: 10.1109/TPEL.2016.2557579.*
Publication	*S. D'Arco, J. A. Suul and O. B. Fosso, "Automatic Tuning of Cascaded Controllers for Power Converters Using Eigenvalue Parametric Sensitivities," in IEEE Transactions on Industry Applications, vol. 51, no. 2, pp. 1743-1753, March-April 2015, doi: 10.1109/TIA.2014.2354732.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
Northwind FME, Norwegian Research Council	*FME NorthWind works to turn wind R&D into a profitable export industry that creates green jobs and respects nature. The research will address the grand science and engineering challenges to realise the full potential of the wind energy sector in a sustainable future.*
BESTPATHS, EU FP7	*The BEST PATHS project will help to overcome the challenges of integrating renewable energies into Europe's energy mix. With nearly 40 leading organisations from research, industry, utilities, and transmission systems operators, the project aims to develop novel network technologies to increase the pan-European transmission network capacity and electricity system flexibility.*
Total Control, EU H2020	*This project will develop methods for assessing the value of and the requirements for inertia emulation from HVDC transmission schemes. Furthermore, control strategies suitable for inertia emulation by HVDC converter stations with different power converter topologies will be investigated, and their performance and stability characteristics will be analysed.*
CONWIND KSP, Norwegian Research Council	*CONWIND is a Norwegian-Chinese collaboration project on offshore wind energy which is coordinated by NORCE and the North China Electric Power University (NCEPU). Research on smart operation control technologies for offshore wind farms with the ambitious goal is to increase the profitability of offshore wind farms by more than 2%.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
National Smart Grid Laboratory	*State of the art research facility for testing smart grid solutions and electrical components. Includes capabilities for testing and characterizing power converters and electrical generators.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
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    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
998269196	*UNIVERSIDADE DE EVORA*

Short name: UNIEvora

Address

Street	LARGO DOS COLEGIAIS 2
Town	EVORA
Postcode	7000 803
Country	Portugal
Webpage	www.uevora.pt

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	19/12/1979 - no
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Renewable Energies Chair	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Polo da Mitra da Universidade de Évora	
Town	EVORA	
Postcode	7000-083	
Country	Portugal	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Pedro	Horta	Man	Portugal	phorta@uevora.pt	Category B Senior resea	Leading	0000-0002-7679-0200	Orcid ID
Dr	Diogo	Canavarro	Man	Portugal	diogocvr@uevora.pt	Category C Recognised	Team member	0000-0001-9412-3252	Orcid ID
Dr	Radia	Ait El Cadi	Woman	Morocco	radia.aitelcadi@uevora.pt	Category C Recognised	Team member	0000-0001-8838-1407	Orcid ID
Ms	Paula	Martins	Woman	Portugal	pcrmartins@uevora.pt	Category D First stage r	Team member	0000-0003-1926-9993	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Radia Ait El Cadi et al., "Power Generation and Heating Performances of An Organic Rankine Cycle Driven by Parabolic Trough Collectors", October 2019 International Journal of Engineering and Technical Research V8(10) DOI:10.17577/IJERTV8IS100061*
Publication	*Radia Ait El Cadi et al., "Suitability and characteristics of rocks for sensible heat storage in CSP plants", September 2017 Solar Energy Materials and Solar Cells 169:245-257 DOI:10.1016/ j.solmat.2017.05.033.*
Publication	*Jana Stengler et al., "Évora Molten Salt Platform (EMSP) – Current Status and Perspectives",SolarPACES 2021 Conference, Poster Presentation.*
Other achievement	*D7.5 - "Technical-Economical Assessment of the NEWSOL thermal storage concepts" Project NEWSOL deliverable*
Other achievement	*D5.1 - "System configuration for thermocline concrete tank" Project NEWSOL deliverable.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
EU-SOLARIS, FP7 GA 312833 (2012-2016)	*THE EUROPEAN SOLAR RESEARCH INFRASTRUCTURE FOR CONCENTRATED SOLAR POWER Main Role: Leader of "Task 6.5 – Training" of WP6 - Dissemination & Outreach; Leader of "Task 7.1 – Innovative processes and software" of WP7 - Technical design of STE Research Infrastructure and Research Activities. Partner in other WP's.*
SFERA-II, FP7 GA 312643 (2014-2017)	*Solar Facilities for the European Research Area-Second Phase Main role: Partner in the majority of the WP's.*
STAGE-STE, FP7 GA 609837 (2014-2018)	*Scientific and Technological Alliance for Guaranteeing the European Excellence in Concentrating Solar Thermal Energy Main role: Partner in the majority of the WP's.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
EMSP - Evora Molten Salt Platform	*Full scale working research CSP Plant (3.6MWth) with parabolic trough loop with molten salt as heat transfer medium for high temperatures (560°C). The thermal loop includes a two-tank molten salt TES system: hot tank at~500°C and cold tank at~290°C, with 4.4MWth*
PECS – Solar Concentrators Testing Platform	*Two-axis test platform (18 x 13 m) and hydraulic loop to test large size concentrating collector modules according to ISO9806 up to 380 oC using thermal oil.*
NEWSOL/ALFR MS Loop	*2.9 MWh.th Thermocline MS TES operating at a maximum temperatuire of 500 °C, under connection to an Advanced Linear Fresnel Field (ALFR) of 0.3 MW.th and currently under electrification after interconnection with a 100 kWp PV system under construction.*
Solar Radiation Monitoring network	*Network composed by 14 stations with two axis sun tracking systems equipped with pyranometers, pyrheliometer, temperature and humidity sensors, distributed mainly in the south of Portugal for solar resource assessment*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999995602	*UNIVERSITA DEGLI STUDI DI PADOVA*

Short name: UNIPadova

Address

Street	VIA 8 FEBBRAIO 2
Town	PADOVA
Postcode	35122
Country	Italy
Webpage	www.unipd.it

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	11/11/2008	- no
SME self-assessment	unknown	
SME validation	31/12/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Department of Industrial Engineering	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Via Gradenigo 6/a	
Town	Padova	
Postcode	35131	
Country	Italy	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Giovanna	Cavazzini	Woman	Italy	Giovanna.cavazzini@unipd.it	Category B Senior resea	Leading	0000-0003-0829-0965	Orcid ID
Prof	Alberto	Benato	Man	Italy	Alberto.benato@unipd.it	Category C Recognised	Team member	0000-0002-0122-1353	Orcid ID
Mr	Giacomo	Zanetti	Man	Italy	giacomo.zanetti.4@phd.unipd.it	Category D First stage r	Team member	0000-0003-0890-5296	Orcid ID
Mr	Francesco	Nascimben	Man	Italy	francesco.nascimben@phd.unipd.it	Category D First stage r	Team member	0000-0002-5293-5313	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Zanetti G., Cavazzini G., Santolin A. (2023) Three-dimensional evolution of the flow unsteadiness in the S-shape of pump-turbines and its correlation with the runner geometry. Journal of Energy Storage, vol. 57: 106176, https://doi.org/10.1016/j.est.2022.106176*
Publication	*Martínez-Lucas G., Pérez-Díaz J.I., Chazarra M., Sarasúa J.I., Cavazzini G., Pavesi G., Ardizzon G. (2019). Risk of penstock fatigue in pumped-storage power plants operating with variable speed in pumping mode. Renewable Energy, vol. 133, pp. 636-646, doi: 10.1016/ j.renene.2018.10.060*
Publication	*Benato A., De Vanna F., Gallo E., Stoppato A., Cavazzini G. (2021) TES-PD: A Fast and Reliable Numerical Model to Predict the Performance of Thermal Reservoir for Electricity Energy Storage Units. Fluids 2021, 6, 256. https://doi.org/10.3390/fluids6070256*
Publication	*Cavazzini G., Benato A., Pavesi G., Ardizzon G. (2021) Techno-economic benefits deriving from optimal scheduling of a Virtual Power Plant: Pumped hydro combined with wind farms. Journal of Energy Storage, vol. 37, 102461, https://doi.org/10.1016/j.est.2021.102461*
Publication	*Cavazzini G., Houdeline J.B., Pavesi G., Teller O., Ardizzon G. (2018). Unstable behaviour of pump-turbines and its effects on power regulation capacity of pumped-hydro energy storage plants. Renewable and Sustainable Energy Reviews, vol. 94, pp. 399-409, doi: 10.1016/ j.rser.2018.06.018*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
H-HOPE HE GA 101084362 (2022-2026)	*"Hidden Hydro Oscillating Power for Europe"* *Role: coordinator of the project and leader of WP4 on development of the design strategy of the technology.* *The project focused on the development and validation of an innovative technology for recovering energy in water flows and in hydraulic networks.*
PIACE, Italian Ministry of Industry (2010-2013)	*"Piattaforma Intelligente Integrata Adattiva di Micro-Generazione ad Elevata Efficienza per Usi residenziali" (Small Integrated and Adaptive Platform of High-Efficiency Micro-Cogeneration Units for Residential Use). Role: research unit of the project, leading the development of micro-wind turbine. The project focused on the development of integrated and renewable energy production technologies for the decentralized and distributed co-generation of heat and electricity in the residential sector*
University of Padova, GA CPDA130025 (2013-2015)	*"Analysis of unstable pump characteristics of pump turbines."* *Role: coordinator of the project.* *The project studied in collaboration with a leading hydropower manufacture (GE renewable) the unsteady phenomena affecting the pump-turbine behaviour and limiting the pumped-hydropower plant flexibility.*
Research project funded by IT funds (2021-2022)	*Theoretical study & dynamic modelling of a variable-speed pumped-hydro power plant hybridized with batteries & flywheels. Role: coordinator of project.* *This project is included within a larger project granted by the Italian Government on hybridization of the energy storage technologies. The specific activities carried out by UniPadova focused on the development of a numerical model for optimizing the control strategy of a pumped-hydropower plant hybridized with batteries & flywheels*

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IVANHOE, H2020 GA 863415 (2019-2023)	*"Installed adVAnced Nacelle uHbr Optimisation and Evaluation"* *Role: partner of the project, dealing with fluid-structure interaction in wind turbines.* *UNIPD developed and optimised a rapid design loop and validated it with a high fidelity CFD code, complemented with experimental activities.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
CAPRI	*University of Padova Strategic Research Infrastructure Grant 2017: "CAPRI: Calcolo ad Alte Prestazioni per la Ricerca e l'Innovazione"* *HPC infrastructure for CFD simulations and optimization of the fluid machines tested in the laboratory.*
TES-Lab	*The lab has state-of-the-art Francis, Kaplan and Pelton turbine test rigs and a pump test rig to conduct research activities in the hydropower field (optimal design and performance of hydraulic machines). The TES Lab can be adapted for innovative experimental campaigns on the hybrid storage system.*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999974068	*UNIVERSITY OF STRATHCLYDE*

Short name: UNISrathclyde

Address

Street	Richmond Street 16
Town	GLASGOW
Postcode	G1 1XQ
Country	United Kingdom
Webpage	www.strath.ac.uk

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	05/11/2021	- no
SME self-assessment	unknown	
SME validation	23/05/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Department of Mechanical and Aerospace Engineering	☐ not applicable
	☒ Same as proposing organisation's address	
Street	Richmond Street 16	
Town	GLASGOW	
Postcode	G1 1XQ	
Country	United Kingdom	

Department 2

Department name	Department of Naval Architecture and Offshore Marine Engineering	☐ not applicable
	☒ Same as proposing organisation's address	
Street	Richmond Street 16	
Town	GLASGOW	
Postcode	G1 1XQ	
Country	United Kingdom	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier	
Mr	Cameron	Johnstone	Man	United Kingdom	Cameron.johnstone@strath.ac.uk	Category A Top grade re	Leading	55066930800	Other ID	SCOPUS
Dr	Stephanie	Ordonez	Woman	Mexico	s.ordonez@strath.ac.uk	Category B Senior resea	Team member	36646379600	Other ID	SCOPUS

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

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List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Schmitt,P, Fu,S, Benson,I, Lavery,G, Ordoñez-Sanchez,S, Frost,C, Johnstone,C, Kregting,L, 2022, A comparison of tidal turbine characteristics obtained from field and laboratory testing, Journal of Marine Science and Engineering, vol 9*
Publication	*Fu,S, Ordonez-Sanchez,S, Martinez,R, Allmark,M, Johnstone,C, O'doherty,T, 2021, Using blade element momentum theory to predict the effect of wave-current interactions on the performance of tidal stream turbines, International Marine Energy Journal, vol 1, pp 25-36*
Publication	*Allmark,M, Martinez,R, Ordonez-Sanchez,S, Lloyd,C, O'Doherty,T, Germain,G, Gaurier,B, Johnstone,C, 2021, A phenomenological study of lab-scale tidal turbine loading under combined irregular wave and shear flow conditions, Journal of Marine Science and Engineering, vol 6*
Publication	*Fu,S, Johnstone,C, 2021, Numerical performance model for tensioned mooring tidal turbine operating in combined wave-current sea states, Journal of Marine Science and Engineering, vol 11*
Publication	*Martinez,R, Gaurier,B, Ordonez-Sanchez,S, Facq,J, Germain,G, Johnstone,C, Santic,I, Salvatore,F, Davey,T, Old,C, Sellar,B, 2021, Tidal energy round robin tests: a comparison of flow measurements and turbine loading, Journal of Marine Science and Engineering, vol 4*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
Marinet2, H2020 GA 731084 (2017-2021)	*As Co-I and member of the project management team in this 37 partner project, this will develop and implement standardised practices for operation of testing infrastructure for wave- tidal technology performance assessment and benchmarking*
Marinerg-I, H2020 GA 739550 (2017–2019)	*As Co-I and member of the project management team in this 18 partner project, this will develop the business model for pan European marine testing infrastructures to operate under, within an ESFRI recognised organisation.*
DYLOTTA, EPSRC EP/N020782/1 (2016 – 2020)	*As Co-PI on this two partner project, we are developing new understanding on the dynamic loads and the impact on tidal turbine performance when operating in arrays in order to inform new array operational control strategies and spatial layout- commissioning.*
TedMex, Newton Fund 541124682 (2020 - 2023)	*As PI, this 3 partner project is developing tidal energy technology to economically harvest marine current energy from lower velocity flows for coastal communities in Mexico. Prototype HAT and VAT technologies have been developed, performance tested at the Kelvin Hydrodynamic lab and scaled up for a demonstration project in Mexico.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Kelvin Hydro-dynamic Laboratory	*The Kelvin Hydrodynamic Laboratory tow, wave tank has working dimensions of 76m x 4.6m x 2.5m, equipped with a towing carriage which has computer-controlled drive giving a speed up to 5m/s, at steady & unsteady speeds with accelerations to 1m/s2.*
James Weir Wind Tunnel	*The James Weir wind tunnel is a recirculating, open jet with a working section of 1.6m diameter. The working velocities range from 0.2m/s – 25m/s.*

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Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Administrative forms

PIC	Legal name
999974941	*THE UNIVERSITY OF EDINBURGH*

Short name: UNIEdinburgh

Address

Street	OLD COLLEGE, SOUTH BRIDGE
Town	EDINBURGH
Postcode	EH8 9YL
Country	United Kingdom
Webpage	www.ed.ac.uk

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	yes
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	18/08/2021	- no
SME self-assessment	unknown	
SME validation	12/12/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	FastBlade (School of Engineering)	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Watt Road, Rosyth Business Park	
Town	Rosyth	
Postcode	KY11 2YD	
Country	United Kingdom	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Fergus	Cuthill	Man	United Kingdom	Fergus.Cuthill@ed.ac.uk	Category B Senior resea	Leading	0000-0002-8674-1656	Orcid ID
Prof	Conchúr	Ó Brádaigh	Man		c.obradaigh@ed.ac.uk	Category A Top grade re	Leading	0000-0002-8048-4222	Orcid ID
Prof	Dilum	Fernando	Man		dilum.fernando@ed.ac.uk	Category A Top grade re	Leading	0000-0001-7481-7935	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*REPORT OF FULL-SCALE LABORATORY ROTOR BLADE TESTING ACCORDING TO IEC/TS 62600-3. It gives a detailed account of the tests carried out by the University of Edinburgh on the Deepgen III tidal turbine blade, free issued by the European Marine Energy Centre: EMEC. One static and one fatigue load case. https://supergen-ore.net/uploads/resources/FastBlade_Test_Report_Loadtide.pdf*
Publication	*FASTBLADE EWTEC 2021 Post Review 1. The paper evaluates the choice of instrumentation and facility equipment designed to enable the fast and yet robust fatigue testing of tidal blades. https://www.researchgate.net/ publication/360386346_FASTBLADE_EWTEC_2021_Post_Review_1*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
Structural Composites Research Facility (SCRF)	*It's proposed to establish an innovative Structural Composites Research Facility for faster fatigue or cyclic load testing of large structures. This will initially be focussed on fibre-reinforced composite material structures, such as stiff tidal turbine blades (e.g. fabricated from carbon fibre and glass fibre reinforced polymer resins). The facility will be the first of its kind in the world, and will use a brand new, ultra-efficient digital displacement regenerative pumping hydraulic system*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Regenerative Hydraulic Pumps	*The hydraulic pumps at FASTBLADE are Digital Displacement pumps supplied by Danfoss (formerly Artemis Intelligent Power). The pumps are unique in their ability to reverse the flow of hydraulic fluid into the hydraulic actuators and recover the energy already put into a test specimen by deforming it.*
Reaction Frame	*The reaction frame is used to support all test specimens and load application equipment at Fastblade. It consists of a reaction plane, support wall, T-Slot bed plates and adapter plate, all mounted on bridge bearings.*
Dual Overhead Cranes	*A pair of Over Head Travelling Cranes (OHTC) are installed for manoeuvring specimens and equipment, 10 T limit per crane with a combined load capacity of 20T.*
Instrumentation Suite	*The FASTBLADE data acquisition system is a National Instruments Distributed compact Rio & compact DAQ system. The system allows the acquisition hardware to be distributed around the facility to minimise wire length on analogue sensors. The modules are all synchronised together using TSN*
Hydraulic Network	*The FASTBLADE hydraulic system can be adapted to use almost any type of actuator required for a specific type of test. Including both servo hydraulic actuators and regular double / single acting actuators.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
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- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
972504347	*FUNDACION CENTRO TECNOLOGICO DE COMPONENTES*

Short name: CTC

Address

Street	CALLE ISABEL TORRES PARQUE CIENTIFICO Y TEC
Town	SANTANDER
Postcode	39011
Country	Spain
Webpage	www.centrotecnologicoctc.com

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is unknown (small- and medium-sized enterprise) for the call.

SME self-declared status	unknown
SME self-assessment	unknown
SME validation	unknown

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Industry and Energy	☐ not applicable
	☒ Same as proposing organisation's address	
Street	CALLE ISABEL TORRES PARQUE CIENTIFICO Y	
Town	SANTANDER	
Postcode	39011	
Country	Spain	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Mr	Alvaro	Rodriguez	Man	Spain	arodriguez@centrotecnologicoctc.com	Category A Top grade re	Leading	0000-0001-7979-2474	Orcid ID
Ms	Veronica	Gonzalez de Lena	Woman	Spain	vgonzalez@centrotecnologicoctc.com	Category B Senior resea	Team member	0000-0001-7411-4981	Orcid ID
Dr	Abraham	Diaz	Man	Spain	acasas@centrotecnologicoctc.com	Category A Top grade re	Team member	0000-0002-7060-9298	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Huichao Bi, Claus Erik Weinell, Benjamín Santos Varelab, Sergio González, Álvaro Rodríguez Ruiz, Kim Dam-Johansen "Coating degradation and rust creep assessment - A comparison between a destructive method according to ISO 12944 and selected non-destructive methods" 2022 European Technical Coatings Congress, Krakow, Poland*
Publication	*Grinon-Echaniz, R.; Paul, S.; Thornton, R.; Refait, P.; Jeannin, M.; Rodriguez, A. „Prediction of thermal spray coatings performance in marine environments by combination of laboratory and field tests" Coatings 2021 | Journal article. DOI: 10.3390/coatings11030320*
Publication	*i, H.; Weinell, C.E.; Agudo de Pablo, R.; Santos Varela, B.; González Carro, S.; Rodríguez Ruiz, Á.; Dam-Johansen, K. "Rust creep assessment—A comparison between a destructive method according to ISO 12944 and selected non-destructive methods" Progress in Organic Coatings 2021 | Journal article. DOI: 10.1016/j.porgcoat.2021.106293*
Publication	*Rodríguez, A.; Santos, B.; González de Lena, V.G.; Yedra, A.; Manteca, C.Development of innovative coatings for marine renewable energy. Progress in Renewable Energies Offshore - Proceedings of 2nd International Conference on Renewable Energies Offshore, RENEW 2016. DOI: 10.1201/9781315229256-95*
Publication	*Description of services offered by CTC in the Marine Corrosion Test Site El Bocal https://centrotecnologicoctc.com/wp-content/uploads/2020/05/Servicios-MCTS-El-Bocal-EN-4.pdf*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
MARINET2, H2020 GA 731084 (2017-2021)	*Marine Renewable Infrastructure Network for Enhancing Technologies 2* *Main role of CTC: participation in 3 WP and RI provider (MCTS El Bocal). We will use the same methodology in RISEnergy*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Marine Corrosion Test Site El Bocal	*Marine Laboratory placed in open water to test, study and analyse the behaviour of different materials and coatings against marine biofouling and corrosion. https:// centrotecnologicoctc.com/en/mcts-marine-laboratory-el-bocal/#top*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? ○ Yes ◉ No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999587135	*TURKIYE BILIMSEL VE TEKNOLOJIK ARASTIRMA KURUMU*

Short name: TUBITAK

Address

Street	Ataturk Bulvari 221
Town	ANKARA
Postcode	06100
Country	Turkiye
Webpage	www.tubitak.gov.tr

Specific Legal Statuses

Legal person	yes
Public body	yes
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	02/12/2008	- no
SME self-assessment	unknown	
SME validation	02/12/2008	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	TUBITAK MAM Clean Energy Technologies	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Barış Mah. Dr. Zeki Acar Cd. No:1	
Town	Gebze, Kocaeli	
Postcode	41470	
Country	Turkiye	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Dr	Namik	Ünlü	Man	Turkiye	Namik.unlu@tubitak.gov.tr	Category A Top grade re	Leading	0000-0002-5690-4653	Orcid ID
Dr	Berrin	Engin	Woman	Turkiye	Berrin.engin@tubitak.gov.tr	Category A Top grade re	Team member	0000-0001-8476-0506	Orcid ID
Dr	Ufuk	Kayahan	Man	Turkiye	ufuk.kayahan@tubitak.gov.tr	Category A Top grade re	Team member	0000-0001-6934-1848	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*Unlu N. & Ozdogan S., Entrained flow Co-gasification of torrefied biomass and coal, Energy, 125864, 2023*
Publication	*Atimtay AT, Kayahan U, Unlu A, Engin B, Varol M, Olgun H and Atakul H, Co-firing of pine chips with Turkish lignites in 750 kWth circulating fluidized bed combustion system, Bioresource Technology, 2017*
Publication	*Üresin Ersin, Gülsaç Işıl Işık, Budak Mustafa Salih, Ünsal Mehmet, Özgür Büyüksakallı Kader, Aksoy Parvana, Sayar Aslı, Ünlü Namık and Okur, Osman, Effects of operational parameters on bio-oil production from biomass, Waste Management and Research, 2019*
Publication	*Karatas H and Akgun Fehmi, Experimental results of gasification of walnut shell and pistachio shell in a bubbling fluidized bed gasifier under air and steam atmospheres, Fuel, 2018*
Publication	*Karatas, Hakan, Olgun Hayati, Engin Berrin and Akgun Fehmi, Experimental results of gasification of waste tire with air in a bubbling fluidized bed gasifier, Fuel, 2013*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
BRISK (EU) (2011-2015)	*Biofuels Research Infrastructure for Sharing Knowledge TUBITAK was Project partner, Task 6.3 leader, responsible for tests of torrefaction and fluidized bed gasification, analysis of biomass feedstocks, analysis of pyrolysis liquids. The project aimed the sharing research infrastructure same as this proposal.*
NETBIOCOF (EU) (2005-2007)	*Integrated European Network for Biomass Co-firing. TUBITAK was Project partner, to identify technical and non-technical barriers to the biomass co-firing further implementation in Europe. The project aimed to assess ongoing research in biomass co-firing in Europe, identifying the gaps in knowledge and the barriers to cooperation of R&D activities in a European scope.*
BIGPOWER (EU) (2005-2008)	*Research Capacity of TUBITAK-MRC Institute of Energy in the Fields of Integrated Biomass Gasification with Power Technologies. TUBITAK was Project coordinator. In the scope of the project an atmospheric pressure fixed bed downdraft biomass gasification system (up to 10 kg / h feeding capacity) was designed with an adequate gas cleaning system. The project aimed to improve the research capacity of the center on biomass gasification and integrated power technologies.*
BIOMASUD PLUS (EU) (2016-2018)	*Developing the sustainable market of residential Mediterranean solid biofuels. TUBITAK was Project partner, responsible for collecting biomass feedstocks from different regions of Turkiye, extending BIOmasud certification system in Turkiye. The project aimed to extend the BIOmasud certification system to all Mediterranean countries participating.*
SPO, TU, Advanced Coal & Biomass Excellency Center	*Advanced Coal and Biomass Excellency Center. Biomass to the Chemical project in biorefinery concept. The infrastructure had been open to graduate students and researchers from different universities*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	Short description (Max 300 characters)
Fixed bed gasification system	*40 kWthermal, with tar and particulate recovery units. Suitable for gasification of different feedstock to produce syngas with parametric studies*

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Entrained flow gasifier	*20 kWthermal with particulate removal, tar and soot analysis and online gas analyzer.*
Bubbling fluidized bed gasifier	*20 kWthermal with particulate removal, tar analysis and online gas analyzer.*
Torrefaction, pyrolysis and activation setup	*1 kg/h, inert, CO2, and steam as atmospheres, up to 900 °C, cooling unit with tar and gas analysis*
Pressurized bubbling bed oxy-combustion system	*30 kWthermal with online combustion gas analyzer*
Chemical Looping gasifier	*Batch scale 4 kg, connected to GC*
Rapid biomass pyrolysis system	*1 kg/h biomass feed with solid and condensable recovery*
Catalytic Pyrolysis System	*Batch type 200 gr feed for bio refinery concept*
Biomass upgrading	*50kg/h Biomass Pelletizer* *50kg/h Biomass Briquette Machine* *50 kg/h Biomass Grinder*
Hydrothermal Carbonization and liquefaction system	*High Pressure and Temperature Continuously Stirred Tank Reactor (CSTR, 1 L capacity)*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

PIC	Legal name
999446000	*HELMHOLTZ-ZENTRUM BERLIN FUR MATERIALIEN UND ENERGIE GMBH*

Short name: HZB

Address

Street	HAHN MEITNER PLATZ 1
Town	BERLIN
Postcode	14109
Country	Germany
Webpage	www.helmholtz-berlin.de

Specific Legal Statuses

Legal person	yes
Public body	no
Non-profit	yes
International organisation	no
Secondary or Higher education establishment	no
Research organisation	yes

SME Data

Based on the below details from the Participant Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

SME self-declared status	11/08/2021	- no
SME self-assessment	unknown	
SME validation	15/02/1971	- no

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Departments carrying out the proposed work

Department 1

Department name	Interface Design	☐ not applicable
	☐ Same as proposing organisation's address	
Street	Albert-Einstein-Straße 15	
Town	Berlin	
Postcode	12489	
Country	Germany	

Links with other participants

Type of link	Participant

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Researchers involved in the proposal

Title	First Name	Last Name	Gender	Nationality	E-mail	Career Stage	Role of researcher (in the project)	Reference Identifier	Type of identifier
Prof	Marcus	Bär	Man	Germany	marcus.baer@helmholtz-berlin.de	Category A Top grade re	Leading	0000-0001-8581-0691	Orcid ID
Dr	Regan	Wilks	Man	Canada	regan.wilks@helmholtz-berlin.de	Category B Senior resea	Team member	0000-0001-5822-8399	Orcid ID
Dr	Raul	Garcia Diez	Man	Spain	Raul.garcia_diez@helmholtz-berlin.de	Category C Recognised	Team member	0009-0000-9374-1083	Orcid ID

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Role of participating organisation in the project

Project management	☐
Communication, dissemination and engagement	☐
Provision of research and technology infrastructure	☒
Co-definition of research and market needs	☐
Civil society representative	☐
Policy maker or regulator, incl. standardisation body	☐
Research performer	☐
Technology developer	☐
Testing/validation of approaches and ideas	☐
Prototyping and demonstration	☐
IPR management incl. technology transfer	☐
Public procurer of results	☐
Private buyer of results	☐
Finance provider (public or private)	☐
Education and training	☐
Contributions from the social sciences or/and the humanities	☐
Other If yes, please specify: (Maximum number of characters allowed: 50)	☐

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

List of up to 5 publications, widely-used datasets, software, goods, services, or any other achievements relevant to the call content.

Type of achievement	Short description (Max 500 characters)
Publication	*A. Siebert et al., Monitoring the sodiation mechanism of anatase TiO2 nanoparticle-based electrodes for sodium-ion batteries by operando XANES measurements, DOI: 10.1021/acsaem.0c02025. This study reveals the amount of irreversible & reversible inserted Na+ upon cycling, a change of Ti coordination during the first cycle, & a decrease of the original six-coordinated symmetry. It gives a more comprehensive picture of the sodiation mechanism of TiO2-based anodes under realistic operating condition*
Publication	*M. Sood et al., Origin of Interface Limitation in Zn(O,S)/CuInS2-Based Solar Cells, DOI: 10.1021/acsami.1c19156. A small (0.1 eV) "spike"-like conduction band offset at the Zn(O,S)/CuInS2 interface is derived, excl. an unfavorable energy-level alignment to be the prominent cause for strong interface recombination.*
Publication	*R.G. Wilks et al., Dynamic effects and hydrogen bonding in mixed-halide perovskite solar cell absorbers, DOI: 10.1021/acs.jpclett.1c00745. This study shows that the organic component of CH3NH3PbI3–xClx-based perovskites shows electronic hybridization with the inorganic framework via H-bonding between N & I sites. The N K core excitation leads to a greatly increased N–H bond length on a fs-scale that modifies the interaction with the inorganic framework compared to that in the ground state.*
Publication	*H. Wittkämper et al., Oxidation induced restructuring of Rh-Ga SCALMS model catalyst systems, DOI: 10.1063/5.0021647. For Rh–Ga alloys exposure to molecular oxygen leads to the formation of an oxide shell in which Rh is enriched. Based on ab initio molecular dynamics & computational studies on the Ga2O3/Ga interface, it is concluded that Rh incorporation into the Ga2O3 film occurs by substituting octahedrally coordinated Ga. These results are highly relevant for the catalysis with SCALMS systems*
Publication	*L. Choubrac et al., Sn substitution by Ge: Strategies to overcome the open-circuit voltage deficit of kesterite solar cells, DOI: 10.1021/acsaem.0c00763:* *Employing HAXPES, it is evidenced that only a combination of different surface treatments is able to remove all detrimental secondary phases. This work clearly confirms the emerging trend that Ge-for-Sn substitution is a successful strategy to improve the VOC of kesterite solar cells.*

List of up to 5 most relevant previous projects or activities, connected to the subject of this proposal.

Name of Project or Activity	Short description (Max 500 characters)
CatLab, German BMBF Grant 03EW0015A/B (2020-2025)	*Catalysis Laboratory* *The main objective of this project is the development of novel thin film catalysts for the endothermic release of hydrogen from hydrocarbons and its immediate further reaction with CO or CO2 to form long-chain alcohols: The role of the PI in this project is the study of the thin-film catalyst properties before, after (exposure to) and during relevant conditions to lay the foundation for a deliberate optimization*
CLINT, German DFG CRC Grant 1452 (2021-2024)	*Catalysis at liquid interfaces* *This CRC aims at exploring the highly dynamic, anisotropic environment of liquid interfaces to create, tailor, and stabilize catalytically active sites with unique reactivity and performance. With this concept, CLINT aims to develop novel catalytic materials that combine selectivity, productivity, robustness, and ease of processing at the highest level: In the framework of the CRC, the PI studies the chemical and electronic structure of SCALMS model catalysts.*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

VIPERLAB, H2020 GA 101006715 (2021-2024)	*Fully connected virtual and physical perovskite photovoltaics lab* *VIPERLAB aims to accelerate the perovskite PV development in Europe by fostering collaborations between academia and industry as well as facilitating and coordinating access to the best EU-based perovskite research infrastructures: Under this umbrella, the PI offers access to EMIL a unique characterization platform for the study of perovskite PV structures.*
SITA, HE GA 101075626 (2022-2025)	*Stable inorganic tandem solar cell* *SITA aims to explore an innovative concept for tandem solar cells with a 2-terminal (2T) approach based on two technologies with strong competence base in Europe: Silicon Heterojunction (SHJ) and high bandgap Cu(In,Ga)(Se,S)2 (CIGS) absorber: The role of the PI in this activity is the characterization support w.r.t. optimizing interface properties of the tandem solar cell.*
Care-O-Sene, German BMBF grant (2022-2025)	*Catalyst Research for Sustainable Kerosene* *Care-O-Sene aims at a further development of catalysts for the Fischer-Tropsch process for the large-scale production of green kerosene as a sustainable aviation fuel: Under this framework the PI will study real-world and model FT catalyst materials (under relevant conditions) developed in this project to guide further optimization.*

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work.

Name of infrastructure of equipment	**Short description (Max 300 characters)**
EMIL – Energy Materials In-Situ Lab Berlin	*EMIL (located at BESSY II) uniquely combines deposition tools that are in-system connected to analysis chambers, providing a complementing set of photon-in-electron-out and photon-in-photon-out spectroscopic techniques that make full use of EMIL's "two-color" beamline*

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Gender Equality Plan

Does the organization have a Gender Equality Plan (GEP) covering the elements listed below? (•) Yes ( ) No

Minimum process-related requirements (building blocks) for a GEP

- **Publication:** formal document published on the institution's website and signed by the top management
- **Dedicated resources:** commitment of human resources and gender expertise to implement it.
- **Data collection and monitoring:** sex/gender disaggregated data on personnel (and students for establishments concerned) and annual reporting based on indicators.
- **Training:** Awareness raising/trainings on gender equality and unconscious gender biases for staff and decision-makers.
- **Content-wise, recommended areas** to be **covered** and addressed via concrete measures and targets are:
    - work-life balance and organisational culture;
    - gender balance in leadership and decision-making;
    - gender equality in recruitment and career progression;
    - integration of the gender dimension into research and teaching content;
    - measures against gender-based violence including sexual harassment.

This proposal version was submitted by **Olga Suminska-Ebersoldt** on **09/03/2023 16:23:00** Brussels Local Time. Issued by the Funding & Tenders Portal Submission System.

Proposal ID **101131793**

Acronym **RISEnergy**

3 - Budget

No.	Name of beneficiary	Country	Role	Personnel costs/€	Subcontracting costs/€	Purchase costs - Travel and substistence /€	Purchase costs - Equipment/€	Purchase costs - Other goods, works and services/€	Internally invoiced goods and services/€ (Unit costs-usual accounting practices)	Transnational access to research infrastructures/€ (Unit costs)	Virtual access to research infrastructures/€ (unit costs)	Indirect costs/€	Total eligible costs	Funding rate	Maximum EU contribution to eligible costs	Requested EU contribution to eligible costs/€	Max grant amount	Income generated by the action	Financial contributions	Own resources	Total estimated income
1	Karlsruher Institut Fuer Technologie	DE	Coordinator	922 040	72 000	473 300	0	32 000	0	1 466 330	0	356 835.00	3 322 505.00	100	3 322 505.00	3 322 505.00	3 322 505.00	0.00	0.00	0.00	3 322 505.00
2	Ait Austrian Institute Of Technology	AT	Partner	234 000	8 000	7 150	0	5 000	0	63 895	21 137	61 537.50	400 719.50	100	400 719.50	400 719.50	400 719.50	0.00	0.00	0.00	400 719.50
3	Commissariat A L Energie Atomique Et	FR	Partner	86 554	0	5 400	0	1 500	0	98 247	0	23 363.50	215 064.50	100	215 064.50	215 064.50	215 064.50	0.00	0.00	0.00	215 064.50
4	Centro De Investigaciones Energeticas,	ES	Partner	165 464	0	16 200	0	3 000	0	392 216	0	46 166.00	623 046.00	100	623 046.00	623 046.00	623 046.00	0.00	0.00	0.00	623 046.00
5	Consiglio Nazionale Delle Ricerche	IT	Partner	112 013	0	6 900	0	2 000	0	1 097 790	0	30 228.25	1 248 931.25	100	1 248 931.25	1 248 931.25	1 248 931.25	0.00	0.00	0.00	1 248 931.25
6	European Distributed Energy	DE	Partner	165 138	0	5 400	0	9 500	0	0	0	45 009.50	225 047.50	100	225 047.50	225 047.50	225 047.50	0.00	0.00	0.00	225 047.50
7	Erevnitiko Panepistimiako Institouto	EL	Affiliated	5 000	0	0	0	0	0	123 548	0	1 250.00	129 798.00	100	129 798.00	129 798.00	129 798.00	0.00	0.00	0.00	129 798.00
8	Rheinisch-westfaelische Technische	DE	Affiliated	6 300	0	0	0	0	0	64 875	23 793	1 575.00	96 543.00	100	96 543.00	96 543.00	96 543.00	0.00	0.00	0.00	96 543.00
9	Technical University Of Sofia	BG	Affiliated	4 569	0	0	0	0	0	30 907	0	1 142.25	36 618.25	100	36 618.25	36 618.25	36 618.25	0.00	0.00	0.00	36 618.25
10	Universitatea Politehnica Din Bucuresti	RO	Affiliated	6 800	0	0	0	0	0	18 750	0	1 700.00	27 250.00	100	27 250.00	27 250.00	27 250.00	0.00	0.00	0.00	27 250.00

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11	Danmarks Tekniske Universitet	DK	Partner	165 000	0	8 100	0	2 000	0	192 120	0	43 775.00	410 995.00	100	410 995.00	410 995.00	410 995.00	0.00	0.00	0.00	410 995.00
12	Eccsel European Research	NO	Partner	70 000	0	7 000	0	0	0	0	0	19 250.00	96 250.00	100	96 250.00	96 250.00	96 250.00	0.00	0.00	0.00	96 250.00
13	Bureau De Recherches Geologiques	FR	Affiliated	7 565	0	2 520	0	0	0	0	0	2 521.25	12 606.25	100	12 606.25	12 606.25	12 606.25	0.00	0.00	0.00	12 606.25
14	United Kingdom Research And	UK	Affiliated	18 800	0	2 520	0	0	0	121 250	0	5 330.00	147 900.00	100	147 900.00	147 900.00	147 900.00	0.00	0.00	0.00	147 900.00
15	Sotacarbo - Societa Tecnologie	IT	Affiliated	7 048	0	0	0	0	0	25 075	0	1 762.00	33 885.00	100	33 885.00	33 885.00	33 885.00	0.00	0.00	0.00	33 885.00
16	Alliance Europeenne De Recherche	BE	Partner	357 500	0	8 400	0	44 100	0	0	0	102 500.00	512 500.00	100	512 500.00	512 500.00	512 500.00	0.00	0.00	0.00	512 500.00
17	Enbw Energie Baden-wurttemberg	DE	Partner	111 804	0	5 400	0	0	0	0	0	29 301.00	146 505.00	100	146 505.00	146 505.00	146 505.00	0.00	0.00	0.00	146 505.00
18	Agenzia Nazionale Per Le Nuove	IT	Partner	150 400	0	9 300	0	7 000	0	217 710	0	41 675.00	426 085.00	100	426 085.00	426 085.00	426 085.00	0.00	0.00	0.00	426 085.00
19	Epl Technology Frontiers	CY	Partner	196 100	0	14 400	0	7 000	0	0	0	54 375.00	271 875.00	100	271 875.00	271 875.00	271 875.00	0.00	0.00	0.00	271 875.00
20	European Solar Research Infrastructure	ES	Partner	96 900	0	8 100	0	0	0	0	0	26 250.00	131 250.00	100	131 250.00	131 250.00	131 250.00	0.00	0.00	0.00	131 250.00
21	Forschungszentrum Julich Gmbh	DE	Partner	111 982	0	8 100	0	0	0	142 826	2 106	30 020.50	295 034.50	100	295 034.50	295 034.50	295 034.50	0.00	0.00	0.00	295 034.50
22	Interuniversitair Micro-electronica	BE	Partner	100 022	8 000	8 100	0	0	0	342 173	0	27 030.50	485 325.50	100	485 325.50	485 325.50	485 325.50	0.00	0.00	0.00	485 325.50
23	Nederlandse Organisatie Voor	NL	Partner	53 820	0	10 368	0	0	0	226 382	0	16 047.00	306 617.00	100	306 617.00	306 617.00	306 617.00	0.00	0.00	0.00	306 617.00
24	University College Cork - National	IE	Partner	565 972	32 000	22 800	0	15 580	0	603 224	0	151 088.00	1 390 664.00	100	1 390 664.00	1 390 664.00	1 390 664.00	0.00	0.00	0.00	1 390 664.00
25	Universita Degli Studi Di Roma La	IT	Affiliated	12 146	0	7 100	0	3 500	0	0	0	5 686.50	28 432.50	100	28 432.50	28 432.50	28 432.50	0.00	0.00	0.00	28 432.50
26	Univerzita Tomase Bati Ve Zline	CZ	Affiliated	3 100	0	0	0	0	0	175 643	0	775.00	179 518.00	100	179 518.00	179 518.00	179 518.00	0.00	0.00	0.00	179 518.00
27	The Cyprus Institute	CY	Affiliated	7 170	0	0	0	0	0	246 610	0	1 792.50	255 572.50	100	255 572.50	255 572.50	255 572.50	0.00	0.00	0.00	255 572.50

28	University Of Cyprus	CY	Affiliated	36 800	0	7 100	0	1 500	0	40 625	0	11 350.00	97 375.00	100	97 375.00	97 375.00	97 375.00	0.00	0.00	0.00	97 375.00
29	Fundacio Institut De Recerca De	ES	Affiliated	4 800	0	0	0	0	0	56 634	0	1 200.00	62 634.00	100	62 634.00	62 634.00	62 634.00	0.00	0.00	0.00	62 634.00
30	Offis Ev	DE	Affiliated	7 000	0	0	0	0	0	806	0	1 750.00	9 556.00	100	9 556.00	9 556.00	9 556.00	0.00	0.00	0.00	9 556.00
31	Ricerca Sul Sistema Energetico -	IT	Affiliated	6 500	0	0	0	0	0	108 500	0	1 625.00	116 625.00	100	116 625.00	116 625.00	116 625.00	0.00	0.00	0.00	116 625.00
32	Alma Mater Studiorum - Universita Di	IT	Affiliated	5 675	0	0	0	0	0	136 625	0	1 418.75	143 718.75	100	143 718.75	143 718.75	143 718.75	0.00	0.00	0.00	143 718.75
33	Universita Degli Studi Di Perugia	IT	Affiliated	6 700	0	0	0	0	0	30 291	0	1 675.00	38 666.00	100	38 666.00	38 666.00	38 666.00	0.00	0.00	0.00	38 666.00
34	Institute Of Electrochemistry And Energy	BG	Affiliated	4 500	0	0	0	0	0	30 954	0	1 125.00	36 579.00	100	36 579.00	36 579.00	36 579.00	0.00	0.00	0.00	36 579.00
35	Centre For Renewable Energy	EL	Affiliated	4 300	0	0	0	0	0	567	0	1 075.00	5 942.00	100	5 942.00	5 942.00	5 942.00	0.00	0.00	0.00	5 942.00
36	Norges Teknisk-naturvitenska	NO	Affiliated	14 164	0	0	0	0	0	20 691	0	3 541.00	38 396.00	100	38 396.00	38 396.00	38 396.00	0.00	0.00	0.00	38 396.00
37	Consorcio Para El Diseno, Construccion,	ES	Affiliated	5 000	0	0	0	0	0	138 891	0	1 250.00	145 141.00	100	145 141.00	145 141.00	145 141.00	0.00	0.00	0.00	145 141.00
38	Chalmers Tekniska Hogskola Ab	SE	Affiliated	8 074	0	0	0	0	0	88 187	0	2 018.50	98 279.50	100	98 279.50	98 279.50	98 279.50	0.00	0.00	0.00	98 279.50
39	Fraunhofer Gesellschaft Zur Forderung	DE	Affiliated	14 904	0	0	0	0	0	69 494	0	3 726.00	88 124.00	100	88 124.00	88 124.00	88 124.00	0.00	0.00	0.00	88 124.00
40	Fundacion Tecnalia Research &	ES	Affiliated	6 439	0	0	0	0	0	4 353	0	1 609.75	12 401.75	100	12 401.75	12 401.75	12 401.75	0.00	0.00	0.00	12 401.75
41	Deutsches Zentrum Fur Luft - Und	DE	Affiliated	7 715	0	0	0	0	0	498 115	0	1 928.75	507 758.75	100	507 758.75	507 758.75	507 758.75	0.00	0.00	0.00	507 758.75
42	Fundacion Imdea Energia	ES	Affiliated	3 385	0	0	0	0	0	48 395	0	846.25	52 626.25	100	52 626.25	52 626.25	52 626.25	0.00	0.00	0.00	52 626.25
43	Stichting Nederlandse Wetenschapp	NL	Affiliated	10 437	0	0	0	0	0	131 069	0	2 609.25	144 115.25	100	144 115.25	144 115.25	144 115.25	0.00	0.00	0.00	144 115.25
44	Centre National De La Recherche	FR	Affiliated	5 667	0	0	0	0	0	189 350	0	1 416.75	196 433.75	100	196 433.75	196 433.75	196 433.75	0.00	0.00	0.00	196 433.75

45	Fundacion Cener	ES	Affiliated	4 500	0	0	0	0	0	182 713	0	1 125.00	188 338.00	100	188 338.00	188 338.00	188 338.00	0.00	0.00	0.00	188 338.00
46	Laboratorio Nacional De Energia E	PT	Affiliated	5 710	0	0	0	0	0	336 848	0	1 427.50	343 985.50	100	343 985.50	343 985.50	343 985.50	0.00	0.00	0.00	343 985.50
47	Sintef Energi As	NO	Affiliated	12 725	0	0	0	0	0	77 144	0	3 181.25	93 050.25	100	93 050.25	93 050.25	93 050.25	0.00	0.00	0.00	93 050.25
48	Universidade De Evora	PT	Affiliated	3 290	0	0	0	0	0	28 885	0	822.50	32 997.50	100	32 997.50	32 997.50	32 997.50	0.00	0.00	0.00	32 997.50
49	Universita Degli Studi Di Padova	IT	Affiliated	4 800	0	0	0	0	0	104 513	0	1 200.00	110 513.00	100	110 513.00	110 513.00	110 513.00	0.00	0.00	0.00	110 513.00
50	University Of Strathclyde	UK	Affiliated	6 720	0	0	0	0	0	41 749	0	1 680.00	50 149.00	100	50 149.00	50 149.00	50 149.00	0.00	0.00	0.00	50 149.00
51	The University Of Edinburgh	UK	Affiliated	9 000	0	0	0	0	0	124 040	0	2 250.00	135 290.00	100	135 290.00	135 290.00	135 290.00	0.00	0.00	0.00	135 290.00
52	Fundacion Centro Tecnologico	ES	Affiliated	4 500	0	0	0	0	0	16 594	0	1 125.00	22 219.00	100	22 219.00	22 219.00	22 219.00	0.00	0.00	0.00	22 219.00
53	Turkiye Bilimsel Ve Teknolojik	TR	Affiliated	4 500	0	0	0	0	0	160 648	0	1 125.00	166 273.00	100	166 273.00	166 273.00	166 273.00	0.00	0.00	0.00	166 273.00
54	Helmholtz-zentrum Berlin Fur	DE	Affiliated	7 000	0	0	0	0	0	97 524	0	1 750.00	106 274.00	100	106 274.00	106 274.00	106 274.00	0.00	0.00	0.00	106 274.00
			TOTAL	3 958 012	120 000	643 658	0	133 680	0	8 413 776	47 036	1 183 837.50	14 499 999.5		14 499 999.5	14 499 999.5	14 499 999.5	0.00	0.00	0.00	14 499 999.5

4 - Ethics & security

Ethics Issues Table

1. Human Embryonic Stem Cells and Human Embryos			Page
Does this activity involve Human Embryonic Stem Cells (hESCs)?	○ Yes	◉ No	
Does this activity involve the use of human embryos?	○ Yes	◉ No	

2. Humans			Page
Does this activity involve human participants?	○ Yes	◉ No	
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants?	○ Yes	◉ No	
Does this activity involve conducting a clinical study as defined by the Clinical Trial Regulation (EU 536/2014)? (using pharmaceuticals, biologicals, radiopharmaceuticals, or advanced therapy medicinal products)	○ Yes	◉ No	

3. Human Cells / Tissues (not covered by section 1)			Page
Does this activity involve the use of human cells or tissues?	○ Yes	◉ No	

4. Personal Data			Page
Does this activity involve processing of personal data?	◉ Yes	○ No	1-100
Does it involve the processing of special categories of personal data (e.g.: genetic, biometric and health data, sexual lifestyle, ethnicity, political opinion, religious or philosophical beliefs)?	○ Yes	◉ No	
Does it involve profiling, systematic monitoring of individuals, or processing of large scale of special categories of data or intrusive methods of data processing (such as, surveillance, geolocation tracking etc.)?	○ Yes	◉ No	
Does this activity involve further processing of previously collected personal data (including use of preexisting data sets or sources, merging existing data sets)?	◉ Yes	○ No	1-100
Is it planned to export personal data from the EU to non-EU countries? Specify the type of personal data and countries involved	◉ Yes	○ No	1-100

The researchers using RIs in Japan, USA, Canada, UK (WP2) will have to provide information on name, sex, affiliation, contact details (according to the data minimization principle).

Is it planned to import personal data from non-EU countries into the EU or from a non-EU country to another non-EU country? Specify the type of personal data and countries involved	◉ Yes	○ No	1-100

The experts supporting RISEnergy in Selection Panel and Advisory Board will have to provide information on name, affiliation and contact details (according to the data minimization principle).

Does this activity involve the processing of personal data related to criminal convictions or offences?	○ Yes	◉ No	

5. Animals	Page

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Does this activity involve animals?	○ Yes	◉ No	

6. Non-EU Countries			Page
Will some of the activities be carried out in non-EU countries?	◉ Yes	○ No	3, 96

Researchers will travel to RIs in Japan, USA, Canada, UK. in the frame of WP2.

In case non-EU countries are involved, do the activities undertaken in these countries raise potential ethics issues?	○ Yes	◉ No	
It is planned to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)?	○ Yes	◉ No	
Is it planned to import any material (other than data) from non-EU countries into the EU or from a non-EU country to another non-EU country? For data imports, see section 4.	○ Yes	◉ No	
Is it planned to export any material (other than data) from the EU to non-EU countries? For data exports, see section 4.	○ Yes	◉ No	
Does this activity involve low and/or lower middle income countries, (if yes, detail the benefit-sharing actions planned in the self-assessment)	○ Yes	◉ No	
Could the situation in the country put the individuals taking part in the activity at risk?	○ Yes	◉ No	

7. Environment, Health and Safety			Page
Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants.(during the implementation of the activity or further to the use of the results, as a possible impact) ?	○ Yes	◉ No	
Does this activity deal with endangered fauna and/or flora / protected areas?	○ Yes	◉ No	
Does this activity involve the use of substances or processes that may cause harm to humans, including those performing the activity.(during the implementation of the activity or further to the use of the results, as a possible impact) ?	◉ Yes	○ No	1-100

8. Artificial Intelligence			Page
Does this activity involve the development, deployment and/or use of Artificial Intelligence? (if yes, detail in the self-assessment whether that could raise ethical concerns related to human rights and values and detail how this will be addressed).	◉ Yes	○ No	15

9. Other Ethics Issues			Page
Are there any other ethics issues that should be taken into consideration?	○ Yes	◉ No	

I confirm that I have taken into account all ethics issues above and that, if any ethics issues apply, I will complete the ethics self-assessment as described in the guidelines How to Complete your Ethics Self-Assessment ☒

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Ethics Self-Assessment

Ethical dimension of the objectives, methodology and likely impact

4-Personal Data: Collection and Processing of personal data will be necessary to undertake some of the project activities and reach corresponding objectives and KPIs. Hence personal data will be processed especially in the frame of events organized by the consortium, and activities linked to RI provision (WP2). Collection and processing of personal data of project participants and members of the advisory board and selection panel will also be required to successfully implement and manage project activities.

6-Non-EU Countries: Some of the activities of RISEnergy will be carried out in Non-EU Countries. However, it is not planned to import/ export any materials.

7-Environment, Health and Safety: Some of the activities undertaken at RIs in the frame of WP2 might be harmful (e.g. use of specific chemicals). However, RISEnergy will pay special attention to limit such activities as much as possible. In any case, if applicable RI users / providers will have to respect general good practices and legislations in place (see below).

8-Artificial Intelligence: In RISEnergy AI technologies are considered in conjuction with the development of new materials as part of certain RIs and service: The NRCanNRC Centre for Accelerated Materials Discovery and Innovation (CAMDI), Cloud Lab for Catalyst Ink Fabrication (JULIO), and Helmholtz Institute Ulm (HIU) RIs will use Materials acceleration platforms (MAPs) with AI technologies to make predictions about new, higher-performance materials. AI will use information from material modeling to suggest new material compositions. Any failures, such as applying the wrong model, will only result in worse-performing materials and pose no risk.
The AI technology used in the project do not raise any ethical concerns related to human rights and values. It has nothing to do with social activity, is reliable, works as intended and cannot harm humans (more information in Section 1.2, page 15 + WP2 RI descriptions).

Remaining characters 3033

Compliance with ethical principles and relevant legislations

4-Personal Data: The processing of personal data within the project will be done in full accordance with European data protection regulations (GDPR) as well as national requirements. The personal data which will be collected are, where possible, limited to names and contact information. The data subjects will be informed about the purpose of the data collection and their rights as data subjects (informed consent). The contact information of the Data Protection Officer will be provided for the data subjects. The collected data will be stored on a project internal, password protected server. The data will be deleted immediately after events or at project end.

6-Non-EU Countries: The ethical standards and guidelines of Horizon Europe will be rigorously applied, regardless of the country in which the research is carried out.

7-Environment, Health and Safety: Our project strongly supports the “do no significant harm” ambitions concerning all six environmental objectives of the EU Taxonomy Regulation No 2020/852. IF APPLICABLE (WP2): For all experimental work and research employing chemicals, COSH forms and risk assessments will be put in place prior to undertaking the activity and will be read and signed by the users and line managers. All materials and device preparation will take place in chemical flow hoods, fume hoods, glove boxes or in vacuum chambers, minimizing risk of exposure to researchers. Additionally, all personnel will wear personal protective equipment (gloves, clean room suits and goggles) to minimizing the risk of exposure to lead and other chemicals employed. Waste chemicals will be disposed of following standard safe practices in the countries in which the research is taking place and will not be put into domestic waste (Health and Safety First Principle).

8-Artificial Intelligence: RISEnergy will comply in full with the ethical principles and all national and EU-relevant legislation (AI Act; proposal for a regulation of the European Parliament and of the Council laying down harmonised rules on AI Act and amending certain union legislative acts, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0206).

Remaining characters 2830

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Acronym **RISEnergy**

Security issues table

1. EU Classified Information (EUCI)[2]			Page
Does this activity involve information and/or materials requiring protection against unauthorised disclosure (EUCI)?	◯ Yes	◉ No	
Does this activity involve non-EU countries which need to have access to EUCI?	◯ Yes	◉ No	
2. Misuse			**Page**
Does this activity have the potential for misuse of results?	◯ Yes	◉ No	
3. Other Security Issues			**Page**
Does this activity involve information and/or materials subject to national security restrictions? If yes, please specify: (Maximum number of characters allowed: 1000)	◯ Yes	◉ No	
Are there any other security issues that should be taken into consideration? If yes, please specify: (Maximum number of characters allowed: 1000)	◯ Yes	◉ No	

Security self-assessment

Please specify: (Maximum number of characters allowed: 5000)

Remaining characters 5000

[2]According to the Commission Decision (EU, Euratom) 2015/444 of 13 March 2015 on the security rules for protecting EU classified information, "European Union classified information (EUCI) means any information or material designated by an EU security classification, the unauthorised disclosure of which could cause varying degrees of prejudice to the interests of the European Union or of one or more of the Member States".

[3]Classified background information is information that is already classified by a country and/or international organisation and/or the EU and is going to be used by the project. In this case, the project must have in advance the authorisation from the originator of the classified information, which is the entity (EU institution, EU Member State, third state or international organisation) under whose authority the classified information has been generated.

[4]EU classified foreground information is information (documents/deliverables/materials) planned to be generated by the project and that needs to be protected from unauthorised disclosure. The originator of the EUCI generated by the project is the European Commission.

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RESEARCH INFRASTRUCTURE SERVICES FOR RENEWABLE ENERGY (RISENERGY)

#@APP-FORM-HERI@#

List of participants[1]

Part No.	Participant organisation name	Country
1 (co.)	Karlsruher Institut fuer Technologie (KIT)	DE
2	AIT Austrian Institute of Technology GmbH (AIT)	AT
3	Commissariat á l'Énergie Atomique et aux énergies alternatives (CEA)	FR
4	Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)	ES
5	Consiglio Nazionale delle Ricerche (CNR)	IT
6	European distributed energy resources laboratories (DERlab) e.V. (DERlab)	DE
7	*Erevnitiko panepistimiako institouto systimaton epikoinonion kai ypolgiston-EMP (NTUA)*	*EL*
8	*Rheinisch-Westfälische technische Hochschule Aachen (RWTH)*	*DE*
9	*Echnical university of Sofia (TUS)*	*BG*
10	*Universitatea politehnica din Bucuresti (UPB)*	*RO*
11	Danmarks tekniske universitet (DTU)	DK
12	ECCSEL European research infrastructure consortium (ECCSEL)	NO
13	*Bureau de recherches géologiques et minières (BRGM)*	*FR*
14	*United Kingdom research and innovation (UKRI)*	*UK*
15	*Sicieta tecnologie avanzate low carbon -Societa per azioni (SOTACARBO)*	*IT*
16	Alliance européenne de recherche dans le domaine de l'énergie (EERA)	BE
17	*Institute of electrochemistry and energy systems (IEES)*	*BG*
18	*Centre for renewable energy sources and saving foundation (CRES)*	*EL*
19	*Fundacion centro tecnologico de componentes (CTC)*	*ES*
20	*Stichting Nederlandse Wetenschappeljk onderzoek instituten (DIFFER)*	*NL*
21	*Fraunhofer Gesellschaft zur Förderung angewandten Forschung EV (Fraunhofer)*	*DE*
22	*Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (HZB)*	*DE*
23	*Fundacio institute de recerca de l'energia de Catalunya (IREC)*	*ES*
24	*Norges teknisk – naturvitenskapelige universitet (NTNU)*	*NO*
25	*OFFIS E.V. (OFFIS)*	*DE*
26	*Consortio para el diseno, construccion, equipamiento y explotacion de la plataforma oceanica de Canarias (PLOCAN)*	*ES*
27	*Ricerca sul sistema energetico- RSE SPA (RSE)*	*IT*
28	*SINTEF Energi AS (SINTEF)*	*NO*
29	*Fundacion Tecnalia research & innovation (Tecnalia)*	*ES*
30	*Turkiye Bilimsel ve teknolojik arastirma kurumu(TUBITAK)*	*TR*
31	*Alma mater studiorum- Universita di Bologna (UNIBologna)*	*IT*
32	*Chalmers tekniska hogskola AB (UNIChalmers)*	*SE*
33	*University of Cyprus (UNICyprus)*	*CY*
34	*The University of Edinburgh (UNIEdinburgh)*	*UK*
35	*Universita degli studi di Roma La Sapienza (UNILaSapienza)*	*IT*

[1] **Note**: due to a problem with the EU F&T Portal shortly before submission the order and numbers of participants indicated in the table may be different from the one in Part A. IT Helpdesk has been informed and suggested to go ahead with our original order.
In italic: *Affiliated Entities (AE)*

36	*Universita degli studi Padova (UNIPadova)*	*IT*
37	*Universita degli studi di Perugia (UNIPerugia)*	*IT*
38	*University of Strachclyde (UNIStrathclyde)*	*UK*
39	*Univerzita Tomase Bati ve Zline (UNITomasBata)*	*CZ*
40	EnBW Energie Baden-Wurttemberg AG (EnBW)	DE
41	Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA)	IT
42	EPL Technology frontiers Ld (EPL)	CY
43	European solar research infrastructure for concentrated solar power (EU-SOLARIS)	ES
44	*Fundacion CENER (CENER)*	*ES*
45	*Centre national de la recherche scientifique (CNRS)*	*FR*
46	*The Cyprus institute (CYI)*	*CY*
47	*DeutschesZentrum für Luft – und Raumfahrt EV (DLR)*	*DE*
48	*Fundacion IMDEA Energia (IMDEA)*	*ES*
49	*Laboratorio Nacional de Energia e Geologia I.P. (LNEG)*	*PT*
50	*Universidade de Evora (UNIEvora)*	*PT*
51	Forschungszentrum Jülich GmbH (FZJ)	DE
52	Interuniversitair micro-electronica centrum (IMEC)	BE
53	Nederlandse organisatie voor toegepast natuurwetenschappelijk onderzoek (TNO)	NL
54	University College Cork – National University of Ireland, Cork (UCC)	IE

All RISEnergy participants agree and adopt the “European Charter for Access to Research Infrastructures”.

1. EXCELLENCE #@REL-EVA-RE@#

1.1 Objectives and ambition #@PRJ-OBJ-PO@#

Context and challenges

The European Green Deal aims to transform the EU into a modern, resource-efficient and competitive economy with zero net greenhouse gas emissions by 2050, decoupling economic growth from resource use, and policies that "leave no person or place behind". The European Commission has adopted a series of proposals aimed at shaping EU climate, energy, transport and taxation policies to reduce net greenhouse gas emissions by at least 55% from 1990 levels by 2030. This target requires the implementation of greater energy efficiency, a higher share of renewable energy, improved grids and more sustainable energy storage in the energy system by 2030. Research and innovation are still needed and in order to keep the timeline, results should be brought to market through **an accelerated innovation chain.** The European Commission (**EC**) has also created many research and innovation initiatives to make the green energy system more efficient, competitive and cost-effective. In the latest framework programme for research and innovation, Horizon Europe (**HEU**), missions and partnerships are intended to help achieve this faster, in addition to project-related support. In close cooperation with missions, partnerships of HEU and the SET-PLAN the project RISEnergy will establish a **proactive innovation management** for supporting research, industries and SME to implement a more targeted approach to develop new energy devices for the energy system through the most efficient use of EUs excellent research infrastructures (**RI**) and competences for renewable energy technologies. RISEnergy will cooperate with other energy research related RI projects (like StorRIES, ERIGrid 2.0, etc.) and RI facilities not being part of the project itself and other stakeholders like policy makers and citizens. Through coordinated access to the most outstanding energy-related RIs, embedded in a larger network of existing RI projects/initiatives, RISEnergy will facilitate and accelerate research at various stages along the value chain, enabling faster time-to-market of individual energy technologies, taking into account the energy system.Users will benefit from a unique entry point for receiving advise for visiting the best fitting RI for their challenge, ideas for improving research or innovation aspects and receive information on potential collaborators. **Users**, **policy makers, and citizens** also **receive services and information** on how to close gaps and improve the energy system with new technologies and the necessary RIs, based on existing roadmaps and life-cycle assesment (**LCA**). This should also add to the acceptance of new technologies by the citizens.

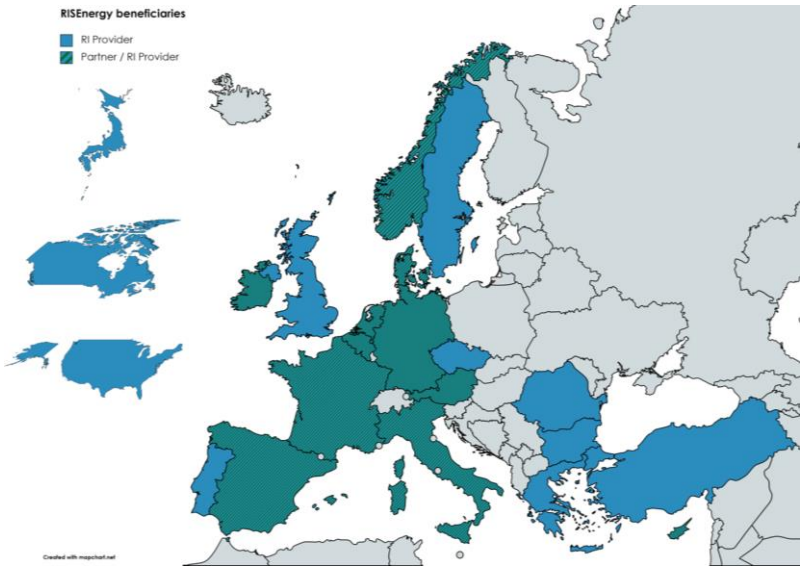

Figure 1 Geographical distribution of RISEnergy beneficiaries

Consortium: To address these challenges, RISEnergy brings together a consortium highly capable of becoming a leading enabler of such a horizontal approach. The consortium includes 17 full partners, 37 affiliated entitites, and will have 15 subcontractors providing RIs (69 organisations involved) from 22 countries (Figure 1) all having a vast background in all kinds of energy technologies from industry, academia and research organisations. Most of the partners and beneficiaries are ESFRI landmarks (EU-SOLARIS amd ECCSEL) and/or members of the European Energy Research Alliance (**EERA**), DERlab and national institutions (KIT, CNR, ENEA and CEA). They have a long-term history of co-operating with each other and over the years they have established the core of a European energy ecosystem. RISEnergy intends to combine the individual strong research capabilities of the participants into an even stronger network focused on implementation by combining new activities, services, and RIs into one operational entity focused on driving innovation.

Objectives

RISEnergy aims at initiating a **long-term, coordinated research effort** among leading private companies and research institutions with **common expertise related to energy technologies** to identify and promote ways to **scale up technologies within the EU.**

This goal will be achieved by addressing six Main Objectives (MOs):

MO1: **Enable research and innovation** to increase energy efficiency and reduce the cost of energy technologies **to foster wider use of renewables into energy systems** through proactive innovation management on two levels:

- SO1a: The individual level, supporting ideas with a **unique entry point with tailor-made access roads** for academics, industry, and SMEs.
- SO1b: The global level, advising stakeholders, RI providers, academic and industry Users, and policy makers on LCA, ICT development and networking issues.

MO2: Provide transnational access (**TA**) on-site or remote and **virtual access (VA)**, and training to facilities in a new constellation **to support renewable energy technologies and systems**: Provide more than 50,000 hours of access to major top level European and international world-leading research facilities.

MO3: Set up a RI-ecosystem and reach out to all relevant stakeholders:

- SO3a: **stakeholders** from "classical" academic research and industry R&D departments, including SMEs, **performing research along the value chain**, from materials and technology development to applications in the eight main areas, namely photovoltaics (**PV**), concentrated solar power/solar thermal energy (**CSP/STE**), hydrogen, biofuels, offshore wind, ocean energy (waves and tides), integrated grids and energy storage, and in cross-cutting areas such as materials research or information and communication technologies to enable a smart energy system (**ICT – enabling**);
- SO3b: **energy research related RI providers**;
- SO3c: **policy makers**;
- SO3d: **citizens**.

These ten research areas of MO3 are remainder to in the rest of the proposal as the **target areas**.

MO4: Provide comprehensive cross-RI services of unprecedented quality to support and accelerate **renewable energy technologies and systems,** TRL progression & system integration, fostering collaboration across technology disciplines and stakeholder groups.

- SO4a: Identify ICT enabling technology platforms, promoting and exemplifying their application usage;
- SO4b: Create frameworks for digital services, systems and digital twins incorporating “data as a service” (**DaaS**) & “simulation as service” (**SaaS**) to support (and contextualise) physical and virtual access and open data;
- SO4c: Create metadata structures along the value chain from materials and devices to frameworks and systems to help Users find the most suitable metadata schemata to support FAIR data management;
- SO4d: Integrate LCA, critical raw materials (**CRM**) & socio-economic factors to drive member state acceptance (& remove barriers to commercialization) incorporating sustainability KPIs and recommendations for future research.

MO5: Education and training activities that address User needs for access planning, access execution, innovation acceleration and exploitation of cross-RI services, taking into account wide and diverse of background knowledge and time constraints of potential Users.

MO6: Establish a **European reference organisation** to promote and coordinate **international RI-access** in energy research from and to Europe for a more effective use of relevant renewable energy RIs.

Relation to the work programme

RISEnergy targets the topic **HORIZON-INFRA-2023-SERV-01-01: Research infrastructure services to enable R&I addressing main challenges and EU priorities.** The project specifically addresses the sub-topic "**RI services for renewable energy technologies and systems"** by implementing the followong objectives and actions.

Work programme - Expected Outcome for all areas: Provision of innovative, customised and efficient RI services enhancing and increasing society's long-term and consistent problem-solving capacity and evidence-based policy. The **implementation** of MO1, MO2, MO3, and MO4 will provide Users with access to world-class RIs and cross-RI services to streamline access procedures and build an RI-ecosystem that reach out to all stakeholders.

Work programme - For RI services for renewable energy technologies and systems: Enabling R&I to increase energy efficiency and foster a wider use of renewable energies, supporting the objective of the European Green Deal, the 'Fit for 55' energy targets and the SET-Plan action on integrating renewable technologies into energy systems.
Implementation: To integrate renewable technologies into the energy system, new, more cost-effective technologies need to enter the market and the innovation chain needs to be accelerated. The **MO1** has this in focus.

Work programme - Scope: Provide trans-national access and/or virtual access to integrated and customised RI services for challenge-driven research and innovation in each of the areas listed.
Implementation: MO1 and MO2 are relevant. MO2 will offer world-class access options. MO1 will combine experts from different fields to advice access Users on cross-cutting fields.

Work programme - For RI services for renewable energy technologies and systems: Wider access for academic and industrial researchers to enhanced and further integrated RI services in support of the green transition.
Implementation: MO3 and MO4 have this in focus. The RI ecosystem will connect to a broader access community and RI services will integrate and even enhance existing services from one community into others.

Work programme - Scope: Access also includes ad hoc Users' training and scientific and technical support.
Implementation: RI hosting facilities provide training and support at a technical and scientific level for RI Users; furthermore prior to access online training resources are offered for preparation of access, the effective use of RI for innovation support, and new training materials to use the developed cross-RI services, including ICT tools for data management and to simulate processes (MO5).

Work programme - Scope: Activities to facilitate and integrate the access procedures, to further develop the remote or virtual provision of services and to improve, customise and harmonise the services the infrastructures will also be supported, including for better serving the needs of open EU industrial research and innovation.
Implementation: RISEnergy's access procedure is based on successful ongoing RI projects. RISEnergy brings together all stakeholders under MO3 and will discuss best practise to further improve, customise and harmonize services. Innovation needs have a special focus in RISEnergy and are treated as the highest priority under MO1.

Work programme - Scope: Development of new services, relevant to the challenges, can be supported, including joint/cross-RI services, provided that the resulting services are opened and offered already under the actions and that the long term sustainability of such services is ensured by the participant RIs.
Implementation: Cross-RI services are provided under MO4, with a focus on strengthening the innovativeness of Users' research ideas and exemplifying the value proposition of multi-disciplinary collaboration across multiple technology sectors. All services will be launched in month 24 and the final version of these services will be provided in month 42.

Work programme - Scope: Data management (and related ethics issues), interoperability, as well as the connection of digital services (e.g. data services) to the European Open Science Cloud, should be addressed where relevant.
Implementation: The relevant datamanagement and services is explicitly addressed in MO4.

Work programme - Scope: Proposals should duly take into account major European or international initiatives relevant in the domain. Whenever appropriate, they should foster the use and deployment of (open) global standards.
Implementation: Under MO3, RISEnergy will establish a large RI ecosystem with various stakeholders. They will be asked to participate in a specific task under MO1 to explore industry needs. Important ESFRI institutions ECCSEL and EU-SOLARIS as well as EERA as a SET-Plan body are partners in the proposal.

Work programme - Scope: Proposals should make available a wide portfolio of complementary RI services, including data services, and customised workflows to enable R&I addressing the set challenge.
Implementation: RISEnergy will include complementary RI services for all target areas as well as cross-RI services with a focus on more than one technology area. A particular focus is on accelerating the innovation chain of new materials in devices and ICT enabling technologies. In addition, RISEnergy offers special ICT data services.

Work programme - Scope: Proposals should consider the inclusion of infrastructures that can facilitate a rapid transition of research findings to innovations. Proposals should include an outreach and engagement plan to actively advertise their services to targeted research communities and, if applicable, to relevant industries, including SMEs.
Implementation: Materials acceleration platforms (MAP), ontology databases and digital twins are the bases to accelerate innovation chain from materials to devices. Several RIs provide technologies for MAPs and the MO4 will deal with services to support the ICT part. An outreach and engagement plan are included in chapter 2.2 and in chapter 3.1 in task 5.3.

Work programme - Scope: Proposals are expected to exploit synergies and to ensure complementarity and coherence with other EU grants supporting access provision.
Implementation: RISEnergy collected 10 letters of support from other EU grants supporting access provision. RISEnergy will integrate them into the RI ecosystem, so that they can participate in activites related to best practises, roadmap or establishing a longterm persceptives for renwable RIs in Europe.

Work programme - General Scope: Proposals should include the list of services/installations opened by research infrastructures for Transnational Acess (TA) or Virtual Access (VA) and the amounts of units of access made available for Users.
Implementation: RISEnergy has collected 84 TA RIs and three VAs which are described in detail in WP2.

Work programme - Specific Scope: The efforts that researchers and innovators are devoting in finding new solutions to accelerate the green transition, should be enabled by the most advanced research and testing facilities.
Implementation: These RIs from the target areas were selected by panels of experts in the various research areas. The selection was based on the criteria of excellence and impact, with a focus on proven availability for Users.

Work programme - Specific Scope: Under previous Framework Programme RI for various types of renewable energy, for energy efficiency and smart grids have served their respective communities enabling advanced R&D. Building on these experiences these different facilities and testing platforms should now make a further step and integrate their services to create a unique entry point to a wide and integrated catalogue of complementary services for all researchers and innovators working for a more green and efficient energy.
Implementation: RISEnergy will integrate all stakeholders under MO3 and offers a unique entry point through the core objective MO1. The proactive innovation manage secretariat will have knowledge on all RIs of the ecosystem and will apply this knowledge to support the research and innovation inquiries of the Users to accelerate developments.

Work programme - Specific Scope: Proposals should integrate services provided by the key RIs in the EU and Associated Countries in the fields of solar power (photovoltaic and concentrated solar power), hydrogen, biofuels, offshore renewable energy (**ORE**), integrated grids and energy storage. Broader access at EU level should be provided to services for research, development and testing of renewable energy systems including grid integration across a range of TRLs. Services can also be customised and combined for an integrated and interdisciplinary support to R&I, along the entire value chain, from materials, technology development to applications.
Implementation: See MO2. RISEnergy has compiled 84 TA RIs from the 10 target areas based on their excellence and relevance.

Work programme: Specific Scope: Proposals should ensure appropriate links with relevant European and international initiatives, including the EU missions on Climate change and Emission-free cities, as well as to the Blue Economy Partnership and to the SET-Plan actions.
Implementation: Key partners and especially EERA have links to EU missions, partnerships and SET-plan. This is implemented as MO3 with special emphasis in SO3C.

Progress beyond the state-of-the art and ambitions

Integration of RIs to provide an overaraching RI services

RISEnergy is proposed by a project consortium in which integration is already very advanced at two levels. At the first level, all RISEnergy energy research networks have been constituted as Joint Programmes (JPs) under EERA for more than 10 years. On a second level, in the field of materials research, processes and ICT, the cooperation between JPs has been deepened and implemented through jointly prepared project proposals, projects and public statements. As a result, the partners know each other well.

Several energy research areas have or have recently had a European RI framework project that already provides trans-access to their RIs (Bio: "BRISKII[2]"; CSP: "SFERA-III[3]"; grid: "ERIGrid[4]"; ocean and wind: "MaRINERGi" and "MaRINET2"; PV: "VIPERLAB[5]"; storage: "StoRIES[6]"; ICT: "EnABLES[7]"). However, these RIs are mainly limited to their respective networks and not beyond. The unique entry point to all of the RIs in RISEnergy takes this integration to the next level.

The integration of energy related RIs into a unique service provider will be done for three stakeholder groups: a.) TA/VA Users, b.) RI institutions and RI projects, and c.) policy makers.

TA/VA Users will have two options to use access-services in RISEnergy. Option 1 is the "normal" direct application through a call for proposals for those Users who know exactly what kind of research is needed. Option 2 is through the proactive innovation pathway. Prior to a RISEnergy call, Users can submit information about a research idea and the RISEnergy proactive innovation secretariat will identify experts in the consortium who can advise on the research idea as well as the most appropriate facility to conduct the research. A suitable facility may not be part of the RISEnergy RI set but part of another RI network e.g, is included in the ECCSEL portefolio for making research on Carbon Capture and Utilisation (**CCU**) issues.

Other European and international **RI institutions and RI projects** will be integrated into the extended network of RISEnergy. Natural contacts to important H2020 RI projects are already in place as the coordinators of these projects participate in RISEnergy. Other RI facilitiess have already expressed their support through a letter of support. During the project phase, more RI facilitiess are expected to join the extended network of RISEnergy. This stakeholder group will discuss best practices to improve User access, combine existing renewable energy RI-roadmaps to optimize User access, and contribute to a landscape analysis to consider options for potential new renewable energy ESFRI infrastructures.

EERA is part of the SET-Plan and will integrate the **policy markers**, as well as renewable energy related EU missions on "Climate change" and "Emission-free cities" and Horizon Europe partnerships, BATT4EU, Clean Hydrogen and Sustainable Blue Economy, into the extended RISEnergy network.

Cross-RI Services: services for the RIs to new Users: The cross-RI services are a special part of the proactive innovation management and are based on developments in different energy research areas. In other projects or through institutional funding, the partners of the RISEnergy consortium have developed tools to achieve better research results using latest ICT technologies and taking into account sustainability aspects. These tools will require data from all target areas and will be provided as cross-RI services to support innovation. They will also add value for Users and policy makers to make strategic research and innovation decisions. In the second half of the RISEnergy project, when the tools are available, Users will be able to familiarize themselves with the new tools in advance of access.

Proactive Innovation Management (MO1): RISEnergy will accelerate innovation with new disruptive technologies and ideas. In all target areas, these leaps in innovation seem plausible, given the availability of new methods for implementing optimized materials in devices and the increasing contribution of ICT support. These new methods are partially successfully[8] established in certain research fields, but needs **tailor-made support in other areas.** Building on the experience of the MARINET RI project, RISEnergy will establish an innovation-related WP to support Users from all target areas with research inquiries to show them these new methods and point them to the

[2] https://brisk2.eu/
[3] Solar Facilities for the European Research Area: https://sfera3.sollab.eu
[4] https://erigrid2.eu/; https://erigrid.eu and http://der-ri.net
[5] https://www.viperlab.eu/
[6] https://www.storiesproject.eu
[7] https://www.enables-project.eu/
[8] http://mission-innovation.net/wp-content/uploads/2018/01/Mission-Innovation-IC6-Report-Materials-Acceleration-Platform-Jan-2018.pdf

most appropriate RI that could be used. A particular focus will be on cross-cutting inquiries and in general on industry and SMEs. This is one way to proactively support innovation and research to have market-ready devices and products faster. For the first time, processing research inquiries provides a centralized, **unique entry point** of access for trans-national access to all relevant energy research RIs in Europe. Here, "all relevant RIs" include RIs that are not in the portfolio of RISEnergy, but in the portfolio of projects or institutions that are in the cloud of RISEnergy and have sent a letter of support to RISEnergy. RISEnergy will have an Internet platform with a database containing systematic information on RI and related assets, testing capabilities and services of research institutes and organizations worldwide focusing on the 10 target areas. This platform is planned to be a point of reference, connecting to several other databases and platforms, such as the EIRIE[9] platform and the DERlab[10] RI database.
Framework conditions, like international collaboration, standards, ICT tools, policy support for research and innovation, and availability of future RIs are also important to foster innovation. RISEnergy will build on the expertise from all target areas and take up best practices to foster innovation so that RIs are made more effectively accessible to the User community, RIs are sustainably used and promoted, and research on the likely right topics is conducted more quickly.
After access ends, Users then have the opportunity to provide feedback, giving the consortium the chance to improve the innovation management, the cross-cutting tools and especially the interface. This is another proactive concept, as RISEnergy will provide Users with access and support for those activities with the greatest potential for innovation.
The RISEnergy consortium includes key European and international partners with expertise in all target areas. In addition, the RISEnergy consortium is well connected with other cross-cutting research fields, e.g. geothermal through EERA and industry. This environment offers a high degree of diversity in team composition and is an ideal breeding ground for fresh ideas in practice. The capacity for innovation is particularly high in mixed teams consisting from different age groups and backgrounds. Experienced experts teach young graduates and doctoral candidates how to test ideas and how to apply the latest tools in materials development. Cross-fertilisation is also built into the consortium, where scientists inspire engineers with state-of-the art methods of experimentation and analysis, and engineers train scientists in developing and testing mature technologies, ready for the field and the market.
This active management of innovation activities goes **beyond the state of the art** in all research areas, although parts of it are already applied in RI projects on storage and ocean energy. This combination is unique and it **is absolutely realistic** and certain that RISEnergy can implement the proactive innovation management support successfully.

Networking Activities in RI ecosystem: The main objective of the Networking Activities will be to support short term and long-term innovation aspects. RISEnergy is the first project on European level, that will integrate all relevant energy RI stakeholders in promoting the different aspects of innovation. The research community of all target areas is already part of the EERA community and partly of the DERlab network. RISEnergy will enlarge the EERA network and will add new industries and research organisations. The material industry association EMIRI sent RISEnergy a LoS. EMIRI is already collaborating with the EERA JP Advanced Materials and Processes in Energy Application (AMPEA). RISEnergy will foster a culture of cooperation both geographical also with international partners and between research, academia and industry. RISEnergy will closely communicate with policy makers of the SET-Plan and Framework programme missions and partnerships. Again, it is **absolutely realistic** that RISEnergy will establish the renewable energy RI ecosystem, because many of the partners are already connected in bilateral or other entworks and they all are committed to extend their collaboration.

Progress and achievements of the project will be monitored continuously with respect to their relevance for the realisation of its vision andbenchmarking them against suitably defined key performance indicators (KPIs). This in itself is a challenging task as the KPIs must reflect the socio-economic impact of each promising User project, in particular its impact on innovation going beyond simply a scientific publication, but they also have to be realistically measurable and quantifiable for a RI. They need to consider realistic time scales between a first experiment, the availability of a reproducible result, and its potential uptake in an industrial process. Within RISEnergy, this comprehensive task is led by 10 experts from the proactive innovation WP4.

Position in terms of R&I maturity

Research and development activities as such are not part of RISEnergy. Rather, the goal is to provide a RI-ecosystem enabling and fostering research development with services to support and accelerate the development of materials in devices, applications, and the energy system needed to achieve the European Commission's Green Deal and the "Fit for 55" goals. RISEnergy has established 10 selection panels to identify world-class RIs and their TRL scope in the

[9] https://ses.jrc.ec.europa.eu/eirie/en
[10] https://infrastructure.der-lab.net/

research areas of photovoltaics (TRL 3-6), CSP (TRL 7-8), hydrogen (TRL 2-6), biofuels (TRL 3-6), offshore wind (TRL 3-7), ocean energy [waves and tides] (TRL 3-8), integrated grids (TRL 3-7), energy storage (TRL 1-8), energy materials for devices (TRL 1-6) and energy-related ICT RIs (TRL 2-6). About one-third of the selected RIs are cross-cutting and can serve different technologies. Furthermore, the different research areas together with the different TRLs allow for a variety of opportunities to develop also new technologies for the energy system.

To achieve the Green Deal and "Fit for 55" goals, the cost of new components of renewable energy systems must be greatly reduced, e.g., hydrogen catalysts must use at least ten times fewer critical raw materials and new seasonal storage systems must be developed. New materials need to be used in new devices and the innovation chain needs to be accelerated to bring products to market. In the case of lithium batteries, the development process from initial material trials to market took 20 years. If we want to reduce CO_2 emissions by 55% by 2030, we need to accelerate the innovation chain now. Therefore, we have included RIs for material development in the proposal and linked them to IT-related services to simulate new devices and systems. However, RISEnergy includes not only large-scale materials research facilities, but also the entire value chain, starting at very low TRLs to real life testlaboratories. RISEnergy facilities will potentially support related activities up to TRL8, but the number of expected projects will decrease as TRL increases due to the nature of the experiments in terms of complexity, duration and scale, capabilities and impacts of the RIs, and this is unlikely to change over time regardless of project progress. Nonetheless, as noted above, specific actions will be taken for industry, whose needs may have a higher TRL than those of academic researchers.

#§PRJ-OBJ-PO§#

1.2 Methodology #@CON-MET-CM@# #@COM-PLE-CP@#

Concepts, models and assumptions

Research Infrastructures: The overall approach of RISEnergy is sketched in Figure 2. Three key activities, namely access to excellent reseach Infrastructures, cross-RI services and proactive innovation management will be executed that will form the core of a novel Renewable Energy RI Ecosystem. RISEnergy intends to create a large community of RI offering free-access to Users. The RISEnergy proposal includes the widest programme for Transnational Access (TA) ever proposed in an integrating activity on renewables in all framework programmes. The 84 TAs cover all target areas of renewable RIs. Several facilities allow to combine systems other covering the whole value chain from materials manufacturing to recycling and system integration. Three Virtual Access RIs are also included in the portfolio. In order to asure an outstanding selection the RIs were selected by panels of experts in the various research areas mentioned. The selection criteria were excellence and impact, with emphasis on the expected number of access Users. The goal of the RISEnergy TAs is to provide access to about 250 Users (about 2.500 days) supported by a budget of **10.0 M€.** This amount is small compared to the cumulative funding for User access to framework programme projects available in the various renewable energy target areas. To add value to RISEnergy beyond RI access, about one-third of the funding is available to create synergies between the target areas and maximize the innovative impact of such access opportunities. Users will be able to connect to RISEnergy's cross-cutting basic services and proactive innovation management activities.

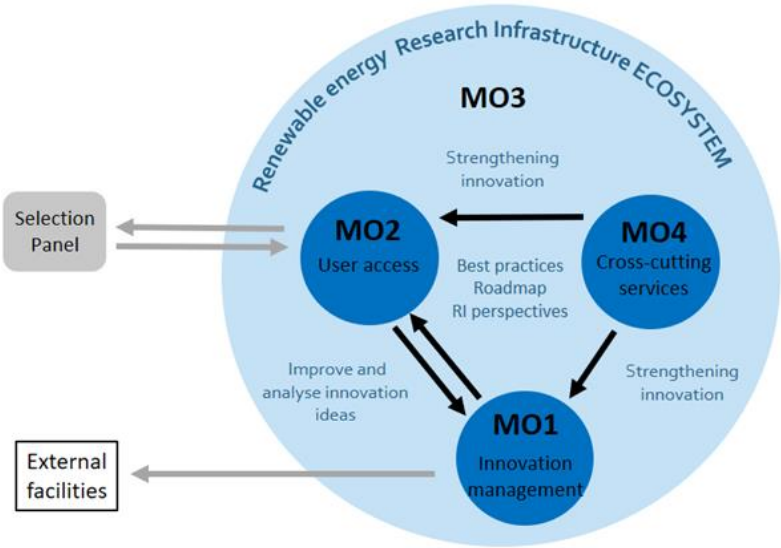

Figure 2 Overall approach of RISEnergy

Furthermore, a well-distributed coverage of European partners was aimed for to allow the majority of European researchers access to dedicated technology research facilities. This was achieved by limiting to three the maximum number of RIs provided by a single organisation. The composition of the selected facilities covers all energy technology areas from the Work Programme with PV (7), CSP/STE (7), hydrogen (4), biofuels (7), offshore wind

(7), ocean energy (7), integrated grids (7), energy storage (7), ICT - enabling (4) and other cross-cutting RIs (30). To reduce the administrative burden, 35 RI providers are affiliated entities (AE) to DERlab, EU SOLARIS, ECCSEL and EERA while 15 are subcontractors. Finally, 11 RI providers are full members of the consortium. The RIs already selected form a world-class network covering the whole value chain from materials to devices and systems, including hardware, software and firmware, and engaging with the entire ecosystem from developers and producers to system integrators and Users. RISEnergy will also consider widening its RIs portfolio according to User requests upon internal validation.

Cross-RI Services: Material development platforms: Nowadays, self-driving labs (SDLs) and semi-automated labs can employ artificial intelligence with robotic platforms and high-throughput experimentation to rapidly explore the chemical space and potentially develop catalyst ink formulations with optimized properties. These so-called materials acceleration platforms (MAPs) consist of three core units, Figure 3 (i) software to orchestrate experiments; (ii) robotic equipment to execute experiments; (iii) off-line or in-line characterization and analytics to assess properties and performance. Workflow automation for SDLs hinges on F.A.I.R. data and metadata management to maximize data utility, improve data integration from diverse sources, ensure data quality, and enable quick data discovery and tracking. However, such data management for semi-automated or self-driving labs has not yet been implemented. Current design of the workflow orchestration software is hardware-centric and targeted at the actual instruments.

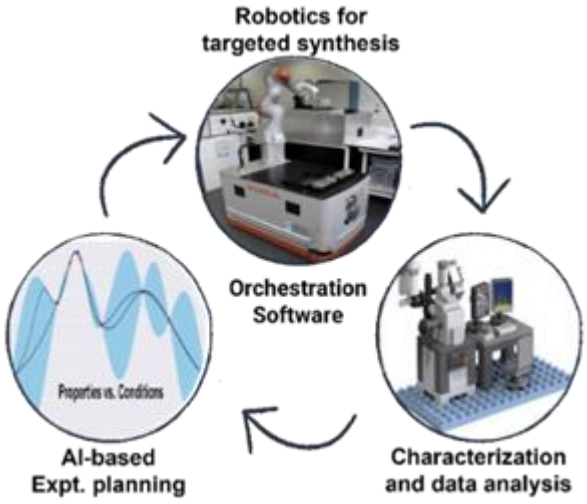

Figure 3 Materials Acceleration Platforms development cycle

The "Energy Materials In-Situ Laboratory's" (EMIL) is using the synchrotron beam to characterize optoelectronic devices and is part of the RISEnergy RI porte folio. These large-scale analytical devices for materials research are very useful to understand the chemical and physical processes in the materials identified through fast MAP approaches, which using models to predict the most suitable materials. MAPs find the most suitable materials very quickly, but does not contribute to the understanding of the physical and chemical processes in the materials. Thus, in a second step, synchrotrons and others RIs of the ARIE network could help to better understand the processes, which is the prerequisite to improve the models for the MAPs. RISEnergy will connect the excellent apparatuses by providing tools with the aim to accelerate materials development at the end-User. RISEnergy partners are heavily involved in the development of such MAPs and will provide services and access to introduce Users to this new paradigm for accelerating materials development in devices.

Cross-RI Services: ICT-enabling: Wireless sensors are a key technology platform to enable us to collect data that for anomaly detection, efficiency and performance monitoring. The trillion-sensor economy of 2025[11] gives us **unprecedented opportunities** to exploit such data bringing billions of € in savings and disruptive benefits for industry and society by reducing carbons emission and integrating renewables.

The main technology value proposition is that wireless IoT edge devices can be easily retrofitted or placed on, in or near renewable energy system (**RES**) technology equipment and infrastructure. These sensors capture critical information:

- At <u>development stages</u> data helps people make informed decisions/selections in assessing and integrating RES technology at material, device and system level in terms of efficiency, reliability/resilience (condtion monitoring), etc.
- At <u>operation and maintenance</u> level the data enables RES to become scalable, resilient, reconfigurable and sustainable.
- This is an end-to-end portfolio of solutions that applies both to smart grid **(SG)** macro equipment and the ultra low power **(ULP)** WSN modules themselves for their entire life cycle.

Utilising the potential of the sensory data is a big opportunity to meet the Green Deal objectives of the European

[11] The World in 2025: 8 Predictions for the Next 10 Years (singularityhub.com)

Union (EU)[12] and to contribute to the UN Sustainable Development Goals.[13] It **supports the EU Energy Transition Goal:** Creation of a low-carbon, secure, reliable, resilient, accessible, cost-efficient, and market-based pan-European integrated energy system.

The value proposition specifically of long battery life ULP WSN sensors and SG level ICT enabled RES technologies relates strongly to key digital technologies (KDT) and EU objectives and related documents such as the Green Deal and "Fit for 55". For example, in section 3.1 of the **Circular Economy** *…less than 40% of electronic waste is recycled in the EU20. Value is lost when …. the battery cannot be replaced…or materials incorporated in devices are not recovered'.* So, we need to find ways to make batteries last longer and ideal have self-powered WSN devices using energy harvesting and related ICT technologies. In addition, using ICT to undertake predictive maintenance typically saves ~ 8% to 12% over preventative maintenance and up to 40% over reactive maintenance overhead costs[14] bringing multiple socioeconomic benenfits.

The cross-RI service examples above strongly relate to the **New Industrial Strategy for Europe** which is relevant for both the RES technologies and the loads that they serve. They are also strongly linked to the **UN Sustainable Development Goals** (SDGs)[15] as shown in Figure 4, being particularly relevant for goals #7-9 and 11-13.

Figure 4 Relevance of long battery life IoT devices and RES technologies to UN SDGs

RISEnergy leverages highly from an existing 'power IoT' RI **EnABLES**.
It plans to leverage existing strategic links with 2 other 'ICT enabing' related RIs ASCENT+ (nanotechnology and MEMS integration) and EMERGE (printed materials, e.g PV panels). All 4 RISEnergy 'ICT enabling' RIs come from these these 3 RIs.
Proactive Innovation Support: The implementation of the three activities described above will benefit from an proactive approach to faciltate efficient TA/s VA, and integrating the cross-RI srevices into the ecosystem. The proactive innovation support will adress the assessement, governance of the TAs/Vas, as well as educational and training activities on TA and cross-RI srevices. An advisory board composed of representatives from industry and SMEs, applied research, open innovation testbeds and technology platforms will closely monitor the project progress and provide advice and support to ensure that RISEnergy stays on track towards the final goal. In the following, a brief overview is given,

- Engage with innovators to provide pathways for technology development;
- Supporting early-stage product development process aiming at optimising the raw material use, increasing the circularity, reducing the environmental impact, maximizing the social benefit;
- Maximise synergies between renewable enegry sectors to enhance innovation;
- Technical appraisal of TA reports to identify further opportunities;
- Broad engagement with industry, and government stakeholders relevant to innovation support and development
- On-site RI training activities and training for for cross-RI services developed in RISEnergy;
- Workshops to assure consensus on a metadata framework for FAIR open data, to inspire their usage;
- Information on best practices for ICT enabling, experimental data workflows (incl. meta-data applications) and innovation acceleration through RI use;
- The selection rules for RIs Users will prioritise the innovation potential of the research activity.

At the end of each User access, RISEnergy will analyse the added value of the service tools. The feedback from the Users will be taken into consideration for improving the services.
The service offering for RI providers includes the following elements:

- Workshops on best practices and developing and increasing synergies among RIs entities;
- Development of a common roadmap for future RIs.

The service offering for policymakers includes the following elements:

[12] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
[13] https://sdgs.un.org/goals
[14] https://www.onupkeep.com/learning/maintenance-metrics/maintenance-statistics
[15] https://sdgs.un.org/goals

- Integration into the RI ecosystem;

Providing a landscape analysis for future long-term facility development, offering guidance to Users to foster innovation.

Renewable RI EcoSystem: The landscape of energy research related RIs stakeholders is extremely broad which, on one hand, constitutes an unprecedented offer for the User communities and, on the other hand, a challenge regarding a successful coordination of the consortium. Through the activities described above, the core of a Renewable Energy RI ecosystem will form naturally, which to establish and advance further is a main objective of RISEnergy.
KIT already established an RI-ecosystem for the energy storage community two years ago with the StoRIES[16] project, and based on this experience, RISEnergy aims to become an even broader **energy RI-ecosystem** encompassing all energy-related research facilities and RIs.
RISEnergy intends to reach out to all relevant stakeholders: 1.) RISEnergy RI Users from research institutions, universities, industry and SMEs by integrating them into a project cloud network having the opportunity to participate in workshops on accelerating innovation activities, introducing them to ICT enabling research, discussing future RI roadmaps and standards, and finally offering them to visit RISEnergy facilities; 2.) RI operators not participating in RISEnergy to discuss new future RI roadmaps and data standards, exchange best practices, and share Users; 3.) policy makers to inform them about the current state of RIs and the innovation needs of the research field.
RISEnergy will create a RI ecosystem by expanding on the initial EERA co-operation framework._EERA is the largest energy research community in Europe, covering the range of all low carbon technologies and bringing together some 250 research centres and universities. EERA runs Joint Programmes (JP) on 18 different energy research fields. EERA joint activities have focused on preparing roadmaps, conducting joint workshops and assembling teams to submit projects and tenders. EERA functions as the research pillar of the SET Plan and is closely associated with many SET Plan activities. EERA will also connect to the relevant EU missions and partnerships. Most of the coordinators of previous RI framework projects, involved in RISEnergy, are also involved in EERA. Through EERA, RISEnergy is linked to 10 renewable energy RI framework projects and has collected LoS.
RISEnergy sees itself as a hub project and therefore will integrate all partners of the linked RI framework projects into the new RISEnergy one. RISEnergy also intends to work closely with future Framework Programme RI projects as well. And RISEnergy will seek to develop a system that will allow new, emerging Framework Programme projects to connect with the ecosystem and take over and extend funding for core ecosystem activities beyond the life of RISEnergy.
RISEnergy will also cooperate with the "Analytical Research Infrastructures in Europe" (**ARIE**[17]). ARIE comprises seven RI networks operating a total of around 120 advanced materials research facilities. RISEnergy is also connected to Mission Innovation and international RIs conducting materials research. All these RI projects and initiatives have a User community that is invited to visit the RISEnergy facilities, develop new ideas, ask for support, and learn how to use modern tools to accelerate the innovation chain and contribute to the challenges of the RI framework, e.g., a common RI roadmap for renewable energy.
RISEnergy aims to strengthen the ties between the high-technology hub of Western Europe and the EU widening[18] countries and countries outside Europe, such as Canada, Japan, US or UK where EU international agreements on Science and Technology are in place. Six RIs from Bulgaria, Cyprus, Czech Republic, Greece, Portugal and Romania are participating.
RISEnergy integrates citizens to obtain feedback on 2050 scenarios, which is important to assess the development of new markets, target innovation accordingly, and thereby better predict RI use.
All ecosystem partners are informed about all activities, e.g. workshops and meeting, and can provide feedback on public documents or participate in the development of cross-RI services.

[16] https://www.storiesproject.eu
[17] https://arie-eu.org/
[18] Widening countries have low participation rates in Horizon Europe and will receive special support measures in Horizon Europe

Structure, roles and responsibilities

The Structure of RISEnergy Ecosystem is defined in two different layers as shown in Figure 5.

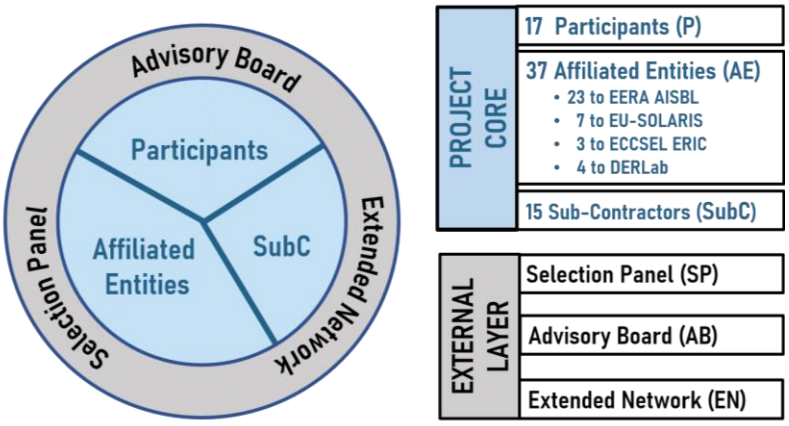

Figure 5 RISEnergy organizational structure

PROJECT CORE: The project core is composed of all members involved in the project either by providing access to their RIs or contributing to the project implementation or both. The members in the project core are coming from research, academia and industry.

EXTERNAL LAYER: The external layer is composed of external experts and stakeholder entities coming from research, academia and industry. The external layer is part of the RI ecosystem, supporting the project implementation by giving advice to the different needs.

The **Advisory Board (AB)** is composed of well-recognised experts in the field of renewable energies and have been selected considering the different technologies as well as covering RES systems, materials and ICT enabling from the research and the industry side[19].

- Photovoltaics (PV): David Mosar (EURAC, Italy)
- Biofuels (Bio): Paula Blanco Sánchez (Aston University, United Kingdom)
- CSP/STE: Juan Ignacio Burgaleta (Consultant Engineer, Spain)
- Integrated grids (IG): Peter Palensky (TU Delft, The Netherlands)
- Ocean energy (OE): Deborah Greaves (University of Plymouth, United Kingdom)
- Offshore wind (OW): Stephan Barth (ForWind, Germany)
- Hydrogen (Hy): John T.S Irvine (University of St. Andrews, United Kingdom)
- Energy storage (ES): Philippe Stevens (Électricité de France, France)
- Cross-cutting (Materials): Xavier Crispin (University of Linköping, Sweden)
- Cross-cutting (ICT enabling): Brian Zahnstecher (PowerRox, USA)

The AB is foreseen to help the consortium in assessing the project performance. The AB shall verify the status report, will consider the joint criteria proposed in the project and will provide this external feedback to the General Assembly **(GA)**. The AB is informed regularly about the project progress. Members of the AB can participate to the project general meetings.

The **Extended Network (EN)** is composed of representatives from relevant stakeholders in the field of renewable energies. By now 22 stakeholders have already confirmed their participation in the project and provided letters of support, which comprise: RI EU-projects (10), European associations (4), international stakeholders (1), industry partners (4), research and academia members (2)[20]. The EN is foreseen to contribute to the ES Ecosystem in assessing the project performance from the point of view of the industry and stakeholder. Moreover, it is foreseen win additional stakeholders over to the EN during the project period. For instance, national funding Institutions, consumer associations, recycling industry etc.

The **Selection Panel (SP)**, acting in WP2, is responsible of the evaluation of the User projects for accessing the RI. More information regarding the SP and the evaluation procedure is given in Chapter 3.1, task 2.1. By now 69 experts covering the 10 target areas of renewable energy have already confirmed their participation[21]). It is foreseen to win additional stakeholders over to the Selection Panel (SP) during the project implementation phase.

The **Steering Committee (SC)** is composed of the WP leaders (EERA, KIT, EPL, UCC) and representatives of the 10 target areas: photovoltaics (IMEC), concentrated solar power/solar thermal energy (EU-SOLARIS), hydrogen (FZJ), biofuels (TNO), offshore wind (DTU), ocean energy (UCC), integrated grids (AIT), energy storage (KIT), ICT enabling (UCC) and materials research (CEA). The SC is led by the Project Coordinator (PC). The SC is responsible for the revision and coordination of the technical activities and their integration. It is also responsible for individuating technical problems and for indicating adequate strategies for solution, to be approved by the GA. The SC is, in particular, responsible for the evaluation of the progress of the technical activities and the evaluation of the technical-scientific results achieved in relation to the objectives of the programme.

[19] index.php (eera-energystorage.eu)
[20] index.php (eera-energystorage.eu)
[21] EERA Joint Programme Energy Storage - RISEnergy Selection Panel members (eera-energystorage.eu)

The **General Assembly (GA)** is the decision-making body of the project. It is composed of one representative from each participant of the consortium (17 full participants). The GA is responsible for supervision and evaluation of any proposed indispensable modification of the activities in progress, approval of budget related issues, approval of the periodic reporting to the commission, resolution of any other issue that may arise during the course of the project and final decisions based on the recommendations of the AB.

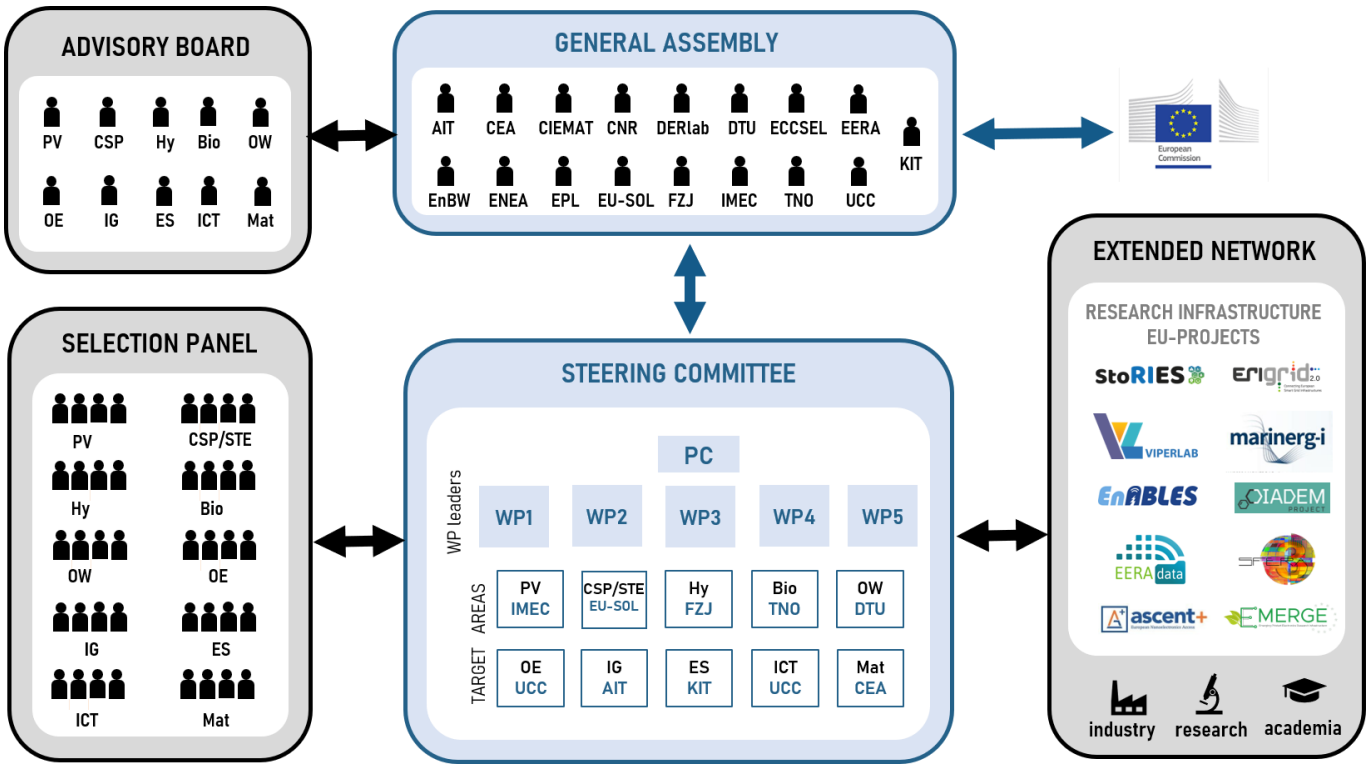

Figure 6 Management structure of RISEnergy (PV: photovoltaics, CSP/STE: concentrated solar power/solar thermal energy, Hy: hydrogen, Bio: biofuels, OW: offshore wind, OE: ocean energy, IG: integrated grids, ES: energy storage, ICT: information and communication)

Approach

To achieve the main objectives described in the previous chapter, a four-step plan will be implemented.

Step 1: Involve stakeholders and Users (M1-M54): In addition to the already involved entities (partners, affiliated entities and subcontractors, 69) and external layer (101), RISEnergy will actively search for stakeholders (which could become Users) with the target to cover the whole energy research field. This will have a strong, but not exclusive focus on renewable energy technologies which is important for an accelerated implementation.

Step 2: Determine User needs (M1-M54): Taking advantage of the network established in Step 1, but working in parallel to it, the needs of energy producers, industry/large consumers, service companies, and households will be identified in order to determine the possible incentives for the proactive innovation concept.

Step 3: Generate innovation (M7-M54): Users will take advantage of the free-of-charge services offered by the RISEnergy research and virtual infrastructures to generate new results according to the needs defined in Step 2.

Step 4: Initiate renewable energy ecosystem (M25-M54): Based on the outcome from steps 2 and 3, RISEnergy will develop a Roadmap enabling EU to become a front runner in renewable energy innovation. Also, cross-RI servicies will be available to support the stakeholders of the RI ecosystem.

Steps 1 and 2 will be mostly accomplished within the first half year, and they will be active for the entire duration of the project to continuously include new stakeholders and renewable energy needs from emerging fields.

WPs in short

The Approach outlined before will be implented by four Work Packages (WPs). RISEnergy brings together several organizations with experience in renewable energy RI project implementation and ESFRI infrastructure. The aim is to improve the framework for renewable energy RI and to foster and accelerate innovative ideas of access Users. It is assumed that building an RI ecosystem with all relevant stakeholders is the basis for achieving **both goals**. Therefore, we have entrusted WP1 with the task of building this RI ecosystem, discussing the framework conditions with stakeholders and finding possible ways to improve them. To be efficient, WP2 will focus only on the administrative handling of the access procedures for transnational and virtual access. Technical services that

accelerate the innovation chain are located in the cross-RI services of WP3. WP4 deals with innovative User ideas and carries out measures to bring them to higher TRL levels and to accelerate market maturity, especially by facilitating the use of relevant RIs.

Table 1 Correlation of RISEnergy objectives with work packages and methodology steps

Objectives	Work packages	Step
SO1A	WP4	2 & 3
SO1B	WP1 and WP3	3
MO2	WP2	3
SO3a	WP1	1 & 2
SO3b	WP1	1 &3
SO3c	WP1 and WP3	1 & 4
SO3d	WP3	4
SO4a	WP3	4
SO4b	WP3	4
SO4c	WP3	4
SO4d	WP3	4
MO5	WP4	2 &3
MO6	WP1	4

WP1 will set up the RI ecosystem by engaging relevant external experts in order to fill in the gaps and reinforce the expertise provided by the consortium in order to provide feedback on the activities carried out within the consortium. Among other activities, WP1 will collect best practices and lessons learnt from relevant RI initiatives and networks, identify technology and research gaps by analysing various roadmaps and documents and analyse new ESFRI RIs in the energy area. Eventually, WP1 will contact relevant initiatives at EU and international level (e.g. SET Plan representatives, EU Missions and partnerships, ETIPs, international initiatives, etc.) to advise their funding programmes and R&I agendas and accelerate innovation and market uptake. WP1 will also monitor the development and outcomes in WP2, 3 and 4 in relation to the formation of an ecosystem.

WP2 manages the transnational and virtual access to World-class RIs within respective subtasks and the selection process through a Selection Panel (SP). To handle a possible very high demand for some of the TA and VA facilities, RISEnergy will apply the principle of dynamic allocation of access units by readjusting the EC support of TA and VA facilities with lower-than-expected interest from the User community.

WP3 "Cross cutting and RES RI-Services to support technologies, systems and policy makers" contains all the general services in RISEnergy. It will identify and, where possible, provide research and development support. It will identify ICT enabling technology platforms, promoting and exemplifying their application usage, create a framework for digital services, systems and digital twins incorporating DaaS (data as a service) & SaaS (simulation as service), create metadata services along the value chain from and integrate LCA, CRM & socio-economic factors to drive member state and citizens acceptance.

WP4 “Proactive Innovation Management” is focusing on fostering individual ideas and interactive knowledge transfer to stakeholders. Collaboration with innovators will provide a pathway for technology development and maximize synergies between renewable energy sectors to foster innovation. Through WP4, a thorough technical assessment of TA reports will be conducted to identify further opportunities for broadening engagement with industry and policy stakeholders relevant to innovation support and development. The identified needs of RIs for training activities to support the RISEnergy ecosystem will be pursued, with with emphasis on the layer of cross-RI services, and complementing the innovation support activities.

WP5 “Project Coordination and Management” will focus on the administrative management and the technical issue to disseminate progress of the project and to outreach. This WP wil also include communication and outreach activities to efficiently inform and advertise the usage of the RIs and interact with stakeholders to maximize the impact of the TA/VAs and the developed services.

The overall connection between RISEnergy objectives, WPs and steps, is given in **Fehler! Verweisquelle konnte nicht gefunden werden.**.

Artificial Intellingence (AI) use at RIs

Artificial Intelligence is now more and more going to be implemented into into research and development and in this project, AI technologies are considered in conjuction with the development of new materials as part of certain RIs and services.

The NRCanNRC Centre for Accelerated Materials Discovery and Innovation (CAMDI), Cloud Lab for Catalyst Ink Fabrication (JULIO), and Helmholtz Institute Ulm (HIU) RIs will use MAPs with AI technologies to make predictions about new, higher-performance materials. AI will use information from material modeling to suggest new material compositions. Any failures, such as applying the wrong model, will only result in worse-performing materials and pose **no risk**. The goal of a MAP is not to better understand new materials, but merely to find better-performing materials. The technology was introduced in 2018 and achieved remarkable results, finding new and even better-performing materials 10 times faster than high-throughput methods. Experts understand the multi-dimensional mathematical background behind **the AI** in this case, and the pusage **is technically robust, accurate and reproducible**. **The AI technology used has nothing to do with social activity, is reliable, works as intended and cannot harm humans.**

Positioning of RISEnergy in the national and international research and innovation landscape

RISEnergy is an interdisciplinary collaboration triggered by the challenge formulated in the call for proposals, and goes hand in hand with the approach chosen by the consortium. The realization of the services described before to support the progress in innovative renewable energy technologies requires a close collaboration of all execellent RIs, of which there are many and very diverse facilities worldwide and in Europe.

In the aftermath of COP21 the international initiative '**Mission Innovation**[22]' was created, in which Denmark, Finland, France, Germany, Italy, Norway, Sweden, the Netherlands and the UK and international peer partners from US, Canada, Australia, China and others, are participating. The Mission Innovation collaborative module "materials for energy" (**M4E**) is headed by Canada and Germany. Canada is represented by Natural Resources Canada (**NRCan**) and Germany by the Helmholtz centers FZJ and KIT. All three partners are involved in RISEnergy. They see RISEnergy as a measure to strengthen the international M4E network. Since new materials are actually important for all research topics in the energy field, the M4E network is linked to other missions of Mission Innovation, allowing easy access to other specific energy research topics and connecting international partners in to the RISEnergy ecosystem. The interconnections are manifold, for example, the Mission Innovation Mission "Green Powered Future" is co-lead by RSE and the same person leads the EERA Joint Porgramme on Smart Grids.

RISEnergy integrated six extraordinairy and **unique** international RI facilities into the RI portfolio, with the UK as an international partner country.

In StoRIES the University of Toronto and the University of British Columbia (both from Canada) are collaborating with National Research Council of Canada (**NRC**) and Natural Resources Canada (**NRCan**) to improve and upgrade MAPs and their technologies. These organisations are involved in the StoRIES ecosystem and contribute to the improvement of StoRIES services, some of which are similar to RISEnergy services but focused on energy storage. StoRIES also collaborates with the two Australian partners, the "Australian Alliance for Energy Productivity" and the "Centre for New Energy Technologies LTD".

Interdisciplinarity

RISEnergy is a unique interdisciplinary collaboration from eight different energy research fields with a strong link to the SET-Plan through EERA. In EERA, most of the participants of RISEnergy have been working together for more than ten years in projects or in the preparation of position papers, etc. EERA and its JPs are known as knowledge hubs for building interdisciplinary activitiesExperts from the 10 target areas are participating in the three main activities:

- the RI ecosystem will bring together stakeholders, Users, RI providers and policy makers in workshops to discuss best practices and common roadmaps to identify synergies.
- cross-RI services are adapted and integrated as required in accordance to the Users needs. For relevant feedback, the entire ecosystem, including the EERA Joint Programmes, will be contacted.
- experts from all target areas will analyze the User reports and provide feedback relevant to built the ecosystem. The same experts will analyze Users inquiries and jointly create recommendations to improve the ideas. This will be organized by the innovation management secretariat.

Research areas that are not part of the ten RISEnergy target areas are also included, as RISEnergy partners lead mission innovation activities and EERA Joint Programmes. Thus, research areas such as geothermal and hydropower will be linked, e.g., through the StoRIES project, through participation of individuals in the SET Plan implementation working groups, and through general EERA meetings. Experts responsible for geothermal SET Plan research activities will participate in RISEnergy meetings on best practices and roadmap synergies. And activities of interest to thermal storage in geothermal RI will be available for User consultation in the Proactive Innovation Management Expert Group.

Added value of social sciences

RISEnergy will use proven methods to establish an innovation ecosystem and will advise research inquiries from Users to accelerate innovation. Most of the tasks in RISEnergy are technical in nature. Nevertheless, two activities with a social science aspect are included in RISEnergy.

Big scientific projects have been studied in the social sciences[23] since the second half of the twentieth century. The main common denominators are that they provide public resources for research and that they are established to

[22] http://mission-innovation.net/

[23] Cramer and Hallonsten (2020, eds.). Big Science and Research Infrastructures in Europe. Edward Elgar.

support research over the long term. They improve the efficiency of the research process as well as fundamental aspects of the scientific method, such as comparability, replication, and dissemination of knowledge and information. The social science perspective draws on the preceding impact assessments[24] to support the overall management of the project in terms of performance monitoring and impact generation. Thus, the impact of such closely linked services among RIs and academic and industrial Users on future innovation and progress in technology development will be explored. In the specific case of RISEnergy, Users will provide feedback on the social science innovation aspects of the access process with a link to responsible research and innovation.
To enable policy makers and citizens to assess the potential impacts of future technologies, WP3 will provide a multi-criteria decision analysis (**MCDA**) tool with selected sustainability KPIs (e.g. based on techno-economic and environmental aspects). The tool can be used to provide recommendations for future research and identify new research areas. A workshop will be conducted to engage broader stakeholders, such as citizens or policy makers, and to obtain socio-scientific feedback.

Gender dimension

Sex and gender analysis are not relevant for the project contents of RISEnergy. The work programme indicates, that in this topic the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement. Any relevant analysis that provides meaningful results on the gender dimension in the energy system would require several years and significant budgetary resources. Partners are aware of the EU regulations on gender balance and completely share the principle of equality between women and men, not only to eliminate inequalities, but also to promote equality, as signed in the *Treaty on European Union, and the Treaty of Amsterdam (May 1, 1999)* and the project is fully in line with the *"Guidance on Gender Equality in Horizon 2020".*

Open science

RISEnergy treats open science as a guiding principle for TA and VA and for the development of new services and will comply with the open science obligations defined in Article 17 in the Model Grant Agreement (**MGA).** Transparency of research results as well as knowledge transfer to industry partners and society will be significantly improved by lowering the access barrier to research results. Therefore, RISEnergy will not only comply with the mandatory open science practices but will also encourage researchers and RI Users to follow the recommended open science practices.
For peer-reviewed publications by project members and the User community, RISEnergy will ensure open access by the deposition of a machine-readable electronic copy of the publication in a trusted repository for scientific publications (Zenodo) under CC BY or license with equivalent rights. For publications of scientific results originating from the project itself, i.e. when the staff of the institutions involved in RISEnergy are among the authors, the Open Research Europe platform (open peer review model) is considered with high priority. If authors prefer another journal or publishing venue, the RISEnergy budget includes funding for open access publications in full open access venues. In case of exceptional results that merit inclusion in very high impact publications without the possibility of open access publishing, 'green' open access must be ensured by archiving the peer-reviewed preprint in an online repository, either in disciplinary archives (such as arXiv) or in Zenodo. Authors are informed that they must retain sufficient intellectual property rights (**IPR**) to meet their Open Access obligations and are encouraged to inform the publisher of this obligation (including licensing requirements) at the time of manuscript submission. Additionally, they are asked to provide adequate justification for choosing the publication route in hybrid open access journals. 'Gold' open access papers will be archived in the same repositories as the green option.
The same spirit of open science is promoted for the resulting datasets and software. All research partners will be committed to apply a data policy that complies with the EU open science principles.
In order to give Users of the facilities sufficient time to analyze the data from the use of the RIs, the sites offer an in embargoed data publication model as the default, but allow for exceptions. This may be necessary when working with industry Users to protect intellectual property rights (e.g., patents). Data generated (after the embargo period, if needed) as well as the ontologies for metadata designed as part of RISEnergy will follow open science and FAIR principles (see also next section).
RISEnergy will ensure that all consortium partners and Users comply with mandatory open science practices. To inform RISEnergy researchers and RI Users about the importance of open science practices, also beyond the mandatory ones, a set of instructions including information from the MGA and more detailed information from the Horizon Europe Programme Guide (16. Open Science) regarding open access publications, early and open sharing, open peer review, and the importance of reproducibility of research output will be prepared at the beginning of the

[24] See e.g. Hallonsten, O and O Christensson (2017). *An Ex Post Impact Study of MAX-Lab*. Lund University School of Economics and Management.

project. This set of instructions will be regularly circulated among consortium partners and kept up to date with ongoing initiatives, such as transformative agreements negotiated at the national level with publishers. It will also be an integral part of the Access policy for RISEnergy TA and VA, which will be available on the RISEnergy website and provided to RI Users prior to their research visit to the RISEnergy RIs.
Open access status (green or gold) and repositories where publications have been made available/archived are monitored by the WP5 leader. The performance of RISEnergy User access or WP activities related to scientific and data/software publications will be regularly reported to the SC which will intervene directly to correct problems or ask the Chair of the RISEnergy GA to deal with the problem in the last instance.
Software, workflows, tools, codes and flowcharts are made openl access in consistent and manageable repositories such as GitHub or gitlab (software licensed under CC0, MIT or GPLv2) to improve reproducibility of research results. The use of appropriate software licenses, such as those listed as free by the Free Software Foundation and open source by the Open Source Initiative, is strongly recommended.
Citizens, Users, and policy makers will not only receive services and information on how to close gaps and improve the energy system with new technologies and the necessary RIs, based on existing roadmaps and LCA analyses but will be also integrated by asking their feedback on 2050 scenarios, which is important to assess the development of new markets, target innovation accordingly, and thereby better predict RI use.

Data management

Open science and data management for RISEnergy actually applies at two levels: first for the project work itself, but even more so through the institutional policies of the project RI providers. While the project partners have full control to ensure that the former adhere to the set goal of open science, the project will provide guidance for the latter, integration of existing institutional open science practices, and a platform to further integrate distributed IT services across all partners.
The raw data, metadata, and processed data generated within RISEnergy will need to comply with the FAIR concept advocated by Europa. Within the first 6 months of the project a Data Management Plan (**DMP**) will be developed within WP5 and included in deliverable D5.2. The RISEnergy's DMP will be a tool for identifying and managing all the data in the project, to identify its origin, its content, the responsible person (data manager), and the servers where they will be hosted. The repository area will be created in particular considering the system of TA and VA to RIs established under the project. It includes (scientific) data management, but also document management (e.g., reports, presentations, agreements) and knowledge management (e.g., intellectual property (**IP**), data security protocol, and process flows), and will be updated as the project progresses because not all data or potential uses are known at this stage of the project proposal.
The DMP will also serve as a guideline to make the project data Findable, Accessible, Interoperable, and Re-usable (FAIR) according to Open Science principle in Horizon Europe and will define the long-term preservation and maintenance of the scientific data and describe the long-term sustainability strategy as implemented during the lifetime of RISEnergy.
In RISEnergy, we adopt a sustainable and flexible database management to effectively represent heterogenous data that contain insights into materials fabrication and characterization processes, performance measurements, simulations, testing, pilot demonstration and energy systems reliability. Need to be described on multiple spatial and temporal scales due to inherent heterogeneity of data sets, the database management platform will be capable of storing data with a wide bandwidth of meta-data types from materials to devices and upto systems which is the foundation of accelerating and high utilization of shared RIs in this project.
Types of Data/Research Outputs: The primary data to be collected/generated under RISEnergy are expected to be scientific presentations, surveys, feedback forms, questionnaires, non-personal data related to TA and VA, technical data and reports/publications, and text publications and images/sketches documenting the technical work and outreach activities of the project. Secondary output is expected to be generated from primary research data and secondary data from analysis of RI Users who have had access to a RISEnergy RI, as well as computer codes, algorithms, flowcharts, and generated process know-how. RISEnergy will use commonly accepted formats for data generation, such as PDF/A, txt, doc/docx, pptx, .xls/.xslx, .cvs, SQL, .mp3, .wav, .wma, .ra,.jpeg, .jpg, .png, .tif, .avi, .mp4, .flv, .mov, .wmv. The type of data for sustainability-oriented assessment will be text, numeric and the format will be zolca, xls, ecospold 1 and 2. The expected size is from few KBs to multi-TBs (modelling data) depending on the nature of the data.
Findability: All published data will be tagged with unique identifiers (e.g. DOI) through publication in public, domain, or institutional repositories. Special care will be taken to ensure that publishing platforms are connected to OpenAIRE so that all results can be found through a meta-platform.

Accessibility: To ensure open access to peer-reviewed scientific articles each partner will take care that a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication as well as the research data needed to validate the results presented in the deposited scientific publications is deposited in the online repository Zenodo as soon as possible and at the latest on publication under CC BY or a licence with equivalent rights. All metadata is openly available under CC0 licence, and all open content is openly accessible through open application programming interfaces (**APIs**).

Interoperability: To make the data interoperable, the raw data stored in public repositories will include the typical metadata employing widely used domain-specific standard if available. It is intended to use a common file format for processed data prior to data deposition on a repository. The selected file format depends on the origin of the same and can differ (e.g., LCA, techno-economic models, etc.). Whenever it applies, validated open access software will be used to make data interoperable.

Security is an essential aspect in this project. Establishing secure channels for communication between Users, partner organizations, and processes including authentication and data confidentiality, as well as access control and authorization, require design protocols to enforce certain security policies. Security mechanisms will be applied to manage the distribution of cryptographic keys as well as for group authorization in order to mitigate risks such as cyberattacks, data loss, service interruption, and malware programmes. *Key* and *authorization management.* Public-key certificates will be used for the distribution of cryptographic keys. The channel to send the public key provides authentication, while the paired private key is sent from a secure channel with both authentication and confidentiality. Additionally, the secure access delegation will be done through Open Authorization (OAuth 2.0) protocol using tokens of User defined exipry length. *Cloud-compatiblity and scalability.* This task will focus on the inter-operability of the cloud communication protocols, including data security, metadata definitions, and scalability of the FAIR meta-data framework. FZJ / CIEMATwill lead the development of the secured cloud communication and scalability tests. WP4 will lead the development of dynamic data management approaches in this task and integration with ontologies and data infrastructure. KIT will assist in the process of down-selection and assessment of the security protocols specific to the used infrastructure and given the host organization’s requirement.

Reusability: Data, text, and images will be published under Creative Commons licenses wherever possible (CC-BY 4.0 by default and its derivatives as needed). Software will be made available under very permissive software licenses (e.g., Apache, MIT, BSD) unless enhancement of existing software or transfer to industry requires a more restrictive license.

Curation and storage/preservation costs: All project research outputs will be directly integrated into each project partner's data curation and preservation procedures. Due to the nature of major RIs, these already include financial and technical plans for the preservation of all published/generated data as part of the facilities' operating costs. The curation of metadata will be handled by the academic libraries of the project partners, as they are also responsible for the (data) publication processes and provide DOIs. #§CON-MET-CM§# #§COM-PLE-CP§#

2. IMPACT #@IMP-ACT-IA@#

The expected outcomes of this call are the contribution to the provision of excellent, innovative, customised and efficient RI services enhancing and increasing society's long-term and consistent problem-solving capacity and evidence-based policy making. Through the above described objectives and methodology, RISEnergy will

- enable research and innovation to increase energy efficiency and foster a wider use of renewable energy, supporting the objective of the European Green Deal of a climate neutrality by 2050, the 'Fit for 55' energy targets and the SET-Plan action on integrating renewable technologies in the energy systems, and
- enable wider access for academic and industrial researchers to enhanced and further integrated RI services in support of the green transition.

According to the INFRASERV relevant destination from the Work programme, RISEnergy established clear pathway for contributing to the following impacts:

1.) *Reinforced RIs capacity to provide at scale and across the EU services to support excellent research to address societal challenges, and Horizon Europe missions and partnerships' objectives.* The **MO3 aims** to foster synergies and establish procedures among research organisations, universities, industry, and policy makers to increase the capacity of RIs at scale.

2.) *Enhanced and increased society's long-term and consistent problem-solving capacity and evidence-based policy making in areas linked to health, and the green and digital transition, including a better understanding of socio-economic implications, through the provision of innovative, customised and efficient RI services.* **MO1 is designed** to provide users with tailored expert advice to conduct their research in the most appropriate research infrastructures in the most efficient way. In task 3.4, RISEnergy will provide a tool for experts, policy makers and the general public to improve their understanding of the socio-economic impacts of the energy transition.

3.) *New discoveries and knowledge breakthroughs enabled by access provision to the best and in some cases unique state-of-the-art RIs.* **RISEnergy offers several unique state-of-the-art RIs.** For example, HIU has access to BIG-MAP, which is designed to accelerate battery device development by a factor of 5-10 or the BladeMaker at Fraunhofer IWES.

4.) *A new generation of researchers trained to optimally exploit all the essential and advanced tools for their research.* The research field of renewable energies is very broad. However, ICT-related technologies offer great potential for accelerating and connection research and innovation in this broad research community. **MO5 and Task 4.4** focus on training activities on advanced tools to enable this topic.

5.) *Cross-fertilisation and a wider sharing of knowledge and technologies across disciplines and between academia and industry and businesses.* RISEnergy builds an ecosystem between renewable energy disciplines, academia, and industry to improve collaboration and ultimately technologies. Policy makers, the public and the business community will be engaged by being able to explore the socio-economic impacts of the energy transition through web-based tools, which will be addressed in Task 3.4.

In addition, RISEnergy will pay special attention to *facilitate a **fast-track access** for Ukrainian researchers from government-controlled territories, through specific outreach activities, support in preparing applications to the access calls, selection priority at equal scientific merit, as well as extended ad-hoc training and duration of visits (beyond 3 months).*

In order to achieve this, the project has defined concrete, tailormade activities to maximise the impact.

2.1 Project's pathways towards impact

In order to achieve maximum impact, the consortium has decided to provide 2/3 of the funding for User access and 1/3 of the funding for establishing an RI ecosystem, further development of cross-RI services and a proactive innovation management.

<u>Impact, beyond the immediate scope and duration of the project</u>

This RIESEnergy community runs many RI, national and framework research projects, from which several of had structural and synergy aspects, but none covered so many as 10 energy research fields. Furthermore, RISEnergy targets all steps along the value chain. Thus, the project lays the foundation for an energy research ecosystem bringing together academia and industry to accelerate the development of novel solutions and scalable technologies for a renewable energy system.

Through the environment of EERA, including international Mission Innovation partners, RISEnergy will stimulate new collaborations and projects, in close relation to the SET-Plan actions. RISEnergy has the potential to establish a longlasting collaborative environment with the scope to accelerate the innovation chain for reneable energy technologies.
On the many options one possibility will be to identify and promote new renewable ESFRI RI initiatives and get them operational. The philosophy of RISEenergy is to support and disseminate research on the whole TRL range and enable industries to take up new ideas and lower TRL results more quickly and bring them into the market. For this impact in three areas, Science, Economical/Technolgy and Societal some examples are highlighted in the following:

Scientific impact: RISEnergy will help catalyze a radical paradigm shift towards clean, reliable, efficient and cost-optimal energy technologies across the entire supply chain, minimizing the use of fossil fuels by fundamental advancements in energy material design, manufacturing and process development and system integration. Continued transnational access to unique RIs is a key requisite for this, to which RISEnergy will make a substantial contribution, by preparing a framework for future RI collaborations (ESFRI, virtual labs).
Strong cost reductions will open up new industrial opportunities, reducing Europe's dependence on fossil fuels. This is the long-term goal of EERA and the RISEnergy partners. RISEnergy will not achieve this goal by alone, but will support it by creating many synergies between the different research fields and bringing new technologies closer to industrialy Users.
The EU aims to be climate-neutral by 2050 – **an economy with net-zero greenhouse gas (GHG) emissions**. This objective is at the heart of the European Green Deal.
Energy storage (ES) is essential in enabling the EU to develop a low-carbon energy system. ES can provide more flexibility and balance to the grid by providing a back-up for intermittent renewable energy, but long-term storage is also required. Pumped hydro storage systems for large-scale electricity storage represent almost 99% of the current global storage capacity, but it is very far from being sufficient to replace natural gas-fired power plants. Power2X is a buzzword, however comprising a wide range of different technologies at various TRL levels and for a variety of application areas. In the long run, emerging Low TRL technologies like electricity storage in reactive metals can benefit from established technologies such as the production of synthetic fuels, which has been developed since the 1930th.
Many of the alternative energy technologies rely on functional materials, and better performing materials are the basis for key innovations. Therefore, it is important to combine the most advanced methods and tools to significantly accelerate the development of materials in devices and up to scale. Advanced techniques that will be used in RISEnergy have been shown to accelerate development by a factor of ten[25]. Highly innovative materials with greater dependence on cheap and abundant raw materials and with strong cost reduction potential will open up new industrial opportunities and strengthen Europe's position and competitiveness in the global energy market.
The RIEnergy project will include a key selection of RIs that support materials development e.g. by MAP, but also facilities that allows to integrate materials into devices and their testing in different combinations and under real life conditions and exploring novel ICT eneabling concepts. While hybrid energy system technology is likely to be the focus in the near future, this will also impact the social science RI already included in RISEnergy, as well as life cycle assessment issues to ultimately improve the sustainability of individual devices and the energy system as a whole.

Economic/technological impact: Scientific and industrial Users often perform their tests in one and the same facility. RISEnergy offers them two major advantages:
1. The RI Selection Panel as well as the innovation management secretariat of task 4.1 choose the best facility available in the RISEnergy portfolio and beyond for the intended access;
2. The services developed in WP3 enable industry Users to rapidly model and validate their renewable technology ideas in order to deploy investments wisely. Users connect to a materials development platform MAP, where materials modeling and experimental data are combined using new advanced methods, resulting in faster and better performing products than usual.
For example, hydrogen is playing an increasingly central role in the EU's climate and energy policy plans. The EC's latest proposal specifies and dramatically increases this. On the one hand, the original annual 10 million tonnes (Mt) of hydrogen from domestic production are to be joined by a further 10 Mt per year by 2030 through imports. Secondly, the proposal corrects the estimate of the required domestic capacity targets: 120 gigawatts (GW) of

[25]MAP AMANDA : https://link.springer.com/article/10.1007/s10853-021-06281-7 ; BIG-MAP : https://www.big-map.eu/

capacity will be needed. Relying exclusively on green hydrogen, it is produced with mainly electrolysers and renewable electricity. Hydrogen is an example of how RISEnergy can work in the future: The development of efficient hydrogen technologies is closely related to other technologies and material development. Electrolysers are at the heart of the emerging green hydrogen world, however current status is using upstream CRM supply chains of Ni, Pt and Ir, and the sourcing of critical components, which to replace is an ongoing research activity. Electrolysers can be operated both onshore and offshore with different types of renewable electricity, which requires research facilities in conjunction with PV, CSP, Ocean and wind energy. In addition, different transport routes, but also communication and (micro) grid management and operation strategies need to be developed and experimentally validated. A renewable energy ecosystem will facilitate and enable the necessary research and create and manage a database relevant to the deployment of these hydrogen technologies.
RISEnergy will contribute to building this community by introducing FAIR ontology databases and inviting the User community to use them. Positive and negative research results are included in the database. Other national and mission innovation projects will contribute to these ontology databases. However, RISEnergy will be the European hub project connecting to industry, RTOs and universities.

Societal Impact: Using the most excellent RI world-wide will allow the Users to develop better renewable technologies faster and bring them faster into the market. This will result in decreased CO_2 emissions.
If only 10% of global energy production is stored in electro chemical, chemical and thermal energy storage systems, 400 times more storage capacity would be required for these systems as today. The necessary infrastructure will have a structural societal impact.
The emerging dependence on critical materials will have a commercial impact and certain materials will also have an environmental impact if not incorporated into a sustainable circular economy. RISEnergy will address these concerns by supporting a fair transition through task 3.4 allowing citizens and policy makers.to understand the complex problems better
One important societal impact that renewable energy technologies can have is on energy security. On the one hand, dependence on energy imports is reduced and the energy system becomes more robust and less vulnerable to attacks due to the (partial) transition from centralized to decentralized structures. The information and communication technologies and services developed within RISEnergy form the basis for an ecosystem that has the necessary facilities, tools and competencies (capacities) to generate data and evidence-based information and to engage in a societal dialogue on these aspects.

Scale and significance of the project's contribution and Key Performance Indicators
RISEnergy will impact on the individual energy technology developments but also to local microgrid scale based on different technologies as it is a unique combination of the key disciplines in renewable energies. Quantifying those expected results and impacts in terms of measurable numbers is not meaningfully possible in this project. However, a qualitative discussion is useful.
The impact of RISEnergy objectives (and WP activities) in the work programme under topic **HORIZON-INFRA-2023-SERV-01-01: Research infrastructure services to enable R&I addressing main challenges and EU priorities** are summarised in the following:
MO1: Enable research and innovation to foster a wider use of renewables into energy system: Proactive innovation management should promote the acceleration of innovation. It is not enough for research centers to just do low TRL research and wait for industry to pick up the ideas. Although many research centers have offices to transfer ideas to industry, this is not enough. Implementing the Green Deal and "Fit or 55" are major challenges, and we need to work together to find research solutions and get them to market as quickly as possible. RISEnergy will have contact with a larger community to be able to carry this out. We need a more structured approach to bring the results of the lower TRLs to the market at scale. So, the RISEnergy community, along with EERA partners, is committed to accelerating innovation with a new, collaborative approach beyond the end of this project. Experience from the fromer MARINET projects have shown that **this approach has a significant high impact.**
MO2: Provide transnational access: European renewable stakeholders will benefit from RISEnegry structured TA programme. RISEnery will offer both European and non-European Users the opportunity to select and apply for TA support in 87 world-class facilities in 22 countries. Users have It is expected that more than 250 industrial and academic Users will receive support. Access to RISEnergy's RIs is limited only by the duration of the project and funding. To ensure that the funding for access is used up in the best possible way, RISEnergy offers a wide range of excellent RIs from different renewable research areas. Again, this **approach has a higher impact,** than offering fewer RIs with for a smaller community of Users.

MO3: Set up a RI-ecosystem and reach out to all stakeholders: RISEnergy targets to form a community of at least 200 organisations focusing on renewable energy RIs. RISEnergy has already received 101 letters of support from experts and organizations interested in sharing information or participating in the actions carried out by RISEnergy or interested in using RISEnergy RIs through the access programme. Through further dissemination activities, training and published calls for User access, RISEnergy intends to expand the cloud community to 400 entities (experts and organisations). It is also expected that more organizations from the RISEnergy Cloud will join EERA and will collaborate in an extended network in the future. Finally, RISEnergy will seek the involvement of national funding agencies and ministries in the Roadmap drafting. RISEnergy will also conduct a landscape analysis and try to convince funding agencies to further support access and proactive innovation management in future activities. Learning best practices for providing and running RIs, developing mutually agreed upon roadmaps, and providing relevant information to policymakers will also have a **high impact** for future RI projects.

MO4: Provide comprehensive cross-RI services: The services developed within RISEnergy are central to accelerating the innovation chain. As this is the main goal for the future, the RISEnegry partners will maintain these services and make them even better so that the expected impact will be even stronger. This is a pivotal and timely opportunity for example to drive convergence between RES & ICT technology domains and create synergies, leveraging from the technology leadership the EU already has in these two sectors. The EU also has a diverse range of RIs available for collaborative multi-technology demonstrator sites at laboratory and micro-grid scales, demonstrating how they can be effectively combined in RES soutions (e.g. PV & wind energy generation with storage solutions). Furthermore, the provision of metadata across the entire innovation chain from materials and devices to systems, various DaaS & SaaS services and frameworks as tools and the integration of LCA, CRM & socio-economic factors will lead the way for value extraction and removal of barriers to commercialisation. All of these tools have the potential to greatly accelerate innovation. They can be a game changer for introducing renewable energy technologies and will have a **very high impact.**

MO5: Education and training activities: RISEnergy will focus on increasing the European pool of trained and well-informed young scientists and engineers from industry and academia in the field of renewable energy technologies. A specific task will create and implement a training programme for all types of stakeholders, researchers, policy makers and citizens. These education and training activities are in part based on previous projects and will be continued and improved after the end of this project. Education and training play an important role in promoting innovation and therefore it makes also an **important impact.**

MO6: European reference organisation to promote and coordinate international RI-access: RISEnergy will leverage the pivotal role of EERA, founded to coordinate long-term energy research activities towards a European virtual centre of excellence, to establish a durable reference structure that will define the state-of-play in materials devices, renewable energy technologies and energy systems. Member States are already organised in the SET-Plan and technology roadmaps and implementation plans are available. RISEnergy aims to make renewable energy RIs a key theme in the SET Plan and to achieve long-term RI structures through an established network, collaborations and national support. A roadmap will summarise the necessary steps to accelerate research and innovation in renewable technologies, which is a prerequisite for European industry to produce innovative, marketable products for the global market. It is important for international governmental organizations to discuss with a recognized organization that has a long-term perspective. Therefore, a successful implementation of MO6 will have a **high impact**.

The progress of the project work is continuously measured by the achievement of the milestones. The following list of key performance indicators (KPIs) has been selected to measure the impacts for each MO during the project execution.

MO1: KPI 1.1: 30 active innovation concepts or successful innovation ideas 6 month or one year after the end of the User access;

MO2: KPI 2.1: Provision of 2500 access days to User groups;
KPI 2.2: At least 30% of Users are from industry;
KPI 2.3: At least 10% of Users are from SMEs;
KPI 2.4: 10% of Users are international;

MO3: KPI 3.1: Strength of the network: 200 organisations participating in any RISEnergy action;
KPI 3.2: Number of RI projects (former and ongoing ones): 10 participants from those RI projects;
KPI 3.3: Support by Member States: 10 national funding agencies or ministries involved in the roadmap drafting;

MO4: KPI 4.1: 250 RI Users using RISEnergy general services offered;

MO5: KPI 5.1: 300 different organizations participating in the workshops;

MO6: KPI 6.1: 10 international laboratories involved in workshops of the RI-ecosystem and User access activities.

Potential barriers - arising from factors beyond the scope and duration of the project

A potential barrier to the adoption of renewable energy technologies is the fact that many devices and applications are not yet in mass production and are a relatively new approach compared to fossil fuels. For example, the historically isolated development of individual storage technologies, the resulting fragmentation in industry and research community, but also existing standards and regulation have to be overcome. It is therefore important that RISEnergy puts emphasis on an integrated approach towards renewable energy technology development, identifying the technical synergies but also the needs for new or adapted regulations codes and standards. An example is the SET-Plan approach, which also focuses on individual topics in separated WGs. Attempts to identify cross sectorial synergies and opportunities have started, but would need a further structured support, which RISEnergy can provide. Bringing those different technology areas together in one project is a first step to overcome this obstacle, but requires further special attention.

A major obstacle is seen in the competition of RES to fossil derived energy sources, and the existing corresponding infrastructure, which favours centralized large-scale installations, and thus, requires investment intensive storage facilities while costs of fossil energies are low. Incentives to develop alternative, e.g., decentralized solutions are missing. Here, RISEnergy with its integrated energy system analysis tools can help identifying new business cases and suggest appropriate support mechanisms for integrated storage concepts beyond individual technologies.

Another obstacle lies in the recent geopolitical changes (Ukraine war). While on the one hand there is a need to develop alternative energy supply chains and bring them to the market, there has been recent investment in fossil fuels, for example LNG terminals, which will have an important role in the market in the coming years, so that alternative energy technologies will have a harder time gaining acceptance.

An example of how existing economic frames hinder the development of new storage concepts is the taxation of energy (electricity/fuels). Today, the conversion of one form of energy into another is combined with an increased value of the energy and thus subject to taxation (tax on useful energy is usually paid by the final consumer). ES implies that useful energy is converted forth and back, with no further added value of the form of energy. New frames and regulations are thus, needed, especially if storage involves multiple parties and transfer of energy through external networks.

The production of electrolyzers will be challenging if the goals of the EU climate and energy policy are to be implemented. The electrolysis capacity installed in the EU would have to increase by almost 900 times within eight years. Europe faces the double task of installing the necessary electrolyser capacity and securing its own market share in electrolyser production. In general, however, it must be noted that geopolitical, industrial and resource policy aspects are hardly taken into account in the current plans, especially with regard to electrolysers. Electrolysers are at the heart of the emerging green hydrogen world. However, the challenges that come with scaling up production are overlooked. Upstream CRM supply chains as well as the increasing market dominance of third parties in electrolyser production need to be considered.

In general, there is still a lack of policies on regional and European level that supports the deployment of renewable energy concepts, especially when these involve combinations of storage systems, different forms of energy and multiple partners/ external networks. The ecosystem established through RISEnergy based on a strong European partnership together with a strong link to the member states can initiate the necessary dialog and contribute to the development of coherent policies on all levels (Member States and EU level).

In summary, RES is closely linked to renewable electricity policy. Improved market conditions and regulations agreed at EU level could result in a massive effort in technology development. Today, development is very slow due to the uncertainties involved. However, by investing in RTD, European industry could bring a large number of innovative renewable energy technologies to the market within a few years.

If successful though, these technologies are not established and User acceptance is crucial. Examples from battery electric vehicles have shown that the introduction of alternative technologies is especially difficult if a well-known technology is going to be replaced or traditional workplaces are expected to disappear. Evidence and data-based Information to a broader audience is required and the RISEnergy ecosystem will lay the foundation for information, further education and dissemination on various levels to support the acceptance of these technologies.

Another potential obstacle to achieving full impact is the possibility of the same scientific developments happening elsewhere in parallel (e.g., in another publicly funded project). This will reduce the added value of RISEnergy as not all the developments will have the expected novelty. However, this scenario is highly unlikely as the consortium involves some of the most prominent scientific groups in the field of renewable energy research, meaning the project will build on the latest state-of-the-art and has the optimal conditions to be the first to deliver the novel technology.

Finally, the continued evolution of COVID pandemic might affect those activities requiring the movement of people among countries. RISEnergy will make efforts to reduce the negative impact by minimising in person events and,

even, User access by implementing online meetings and workshops and assisted virtual access to the RIs.

2.2 Measures to maximise impact - Dissemination, exploitation and communication #@COM-DIS-VIS-CDV@#

Plan for the dissemination and exploitation including communication activities

Even though a 'plan for the dissemination and exploitation including communication activities' is not requested by this work programme topic, dissemination, outreach and engagement are transversal components of key importance for this project to keep the RI ecosystem and other potential Users informed.

To ensure optimal visibility of the RISEnergy project and increase its impact and outreach, dissemination will be carried out through a wide range of tools and methods.

Part of the tasks of WP5 are to coordinate and implement respective activities. The consortium is utmost aware that it is essential to not only communicate the added value of the project, its progress and results, but also to actively engage relevant stakeholders to become Users of the Research Infraestructures that are available during the course of the project and also to become part of a network/pool of Users that will further promote and replicate the opportunities offered by RISEnergy.

The responsibility for leading the efforts in dissemination, outreach and engagement of RISEnergy lays with EERA. Thanks to its size and outreach, EERA is the best suited partner to lead this task. Notwithstanding, is critical that all consortium partners, specially those involved in key WP for the success of the project, will assist in this endeavor.

Target groups are the stakeholder groups described in Table 2 below. These include researchers from the academic sector active active along the whole energy value chain; actors and researchers from the industrial sector, including SMEs, interested in gaining access to RIs; RI providers and operators; policymakers; funding agencies; and interested general public (citizens). The main **communication** tools will be:

- Branding: The recognition factor of RISEnergy will be increased by the development and consistent use of a logo and a distinctive key visual.
- **Website**: The RISEnergy project website will serve as the central point for all (digital) communication activities, containing all publicly available information about the project and the documents produced of public interest. The website will also serve as a **unique entry point** for Users, providing access to searchable information on RIs offered under this project and integrating ongoing RI projects and other, e.g. national RIs. **Proactive Innovation** support will be established as another point of contact and communication. Further information on the web-site can be found in WP5.
- Communication material: Flyer, factsheets and a roll-up will back up off-line communications and ensure good visibility especially at events.
- Newsletters and social media: Existing digital channels of consortium partners will be used to provide ad-hoc and to the point information with minimum delay. Moreover, additional channels specific to the project will be created.
- Workshops and events: Organisation of own events to disseminate further the opportunities created by RISEnergy for relevant actors, as well as participation in third party events.
- Press activities: Three press releases will be sent to selected media and relevant journalists.
- Policy briefs: At least two policy briefs will be developed on the main needs from research facilities and RIs to speed up innovation in Europe.
- Network/Pool of Users (champions): they will be leveraged as multipliers of RISEnergy and its activities. They will share knowledge, experiences, and best practices and promote further the available infrastructures to maximize the outreach of the project, attracting new Users, and the further engagement of all parties.

Communication activities

Effective external and internal communications must be an essential part of RISEnergy to ensure that target audiences are aware of and encouraged to take advantage of the extensive opportunities and benefits. In the same way, new and prospective scientists and those not currently connected to RIs will be made aware of the services available. In addition to external communication, internal communication between partners is also critical to ensure that employees are informed in a timely manner and are able to perform tasks to the best of their ability, while acting as knowledgeable advocates for their colleagues and employees in other areas.

Table 2 List of target groups (stakeholders) with which RISEnergy will interact, specifying goals of the interaction, messages, and dissemination, outreach and engagement tools

Target groups	Goals	Messages	Tools
Research community from the academic sector active along the whole energy value chain interested in gaining access to RIs	- provide a **unique entry point** - provide **proactive support & training** on services - d**isseminate** the existence of the project and the offered opportunities (infrastructures available, support offered to Users, etc.) - **Involve** their participation in and promote their profiting from the services offered by the RISEnergy research and virtual infrastructures	- The unique opportunity to profit from the services offered by the RISEnergy research and virtual infrastructures to generate innovation	- Targeted factsheets and flyer - Website - Outreach events and workshops - Third party events - Newsletters - Social media - Network/Pool of Users (Champions)
Actors and researchers from the **industrial sector,** including SMEs, interested in gaining access to RIs	**- training on possibilities how to use RIs** - **disseminate** the existence of the project and the offered opportunities (infrastructures available, support offered to Users, etc.) - **Involve** their participation in and promote their profiting from the services offered by the RISEnergy research and virtual infrastructures	- The unique opportunity to profit from the services offered by the RISEnergy research and virtual infrastructures to generate innovation	- Targeted factsheets and flyer - Website - Outreach events and workshops - Third party events - Newsletters - Social media - Network/Pool of Users (Champions)
RI providers and operators	- **verify availability** to share and receive information on future plans - **discuss** new future RI roadmaps and data standards, **exchange best practices**, and **share Users**	- To become part of a broad energy RI-ecosystem (probably, the biggest) encompassing all energy-related research facilities and RI.	- Targeted factsheets and flyer - Website - Outreach events and workshops - Third party events - Network/Pool of Users (Champions)
Policymakers	**- the multi criteria evaluation tool** - **inform** them about the current state of RIs and the innovation needs of the energy-related research field - involve them to take action on the identified needs	- The critical importance of having policies in place that promote innovation, in particular on what it concerns research facilities and RI, in order to enable the EU to become a front runner in renewable energy.	- Policy briefs - Website - Outreach events and workshops - Third party events - Network/Pool of Users (Champions)
Funding agencies	- **inform** them about the benefits of having open access to RI and the business opportunities they open - Convince them to further support access and proactive innovation management in future activities. - **stimulate cross sectorial funding** opportunities	- The benefits and business opportunities derived from (potential) Users having open access to research facilities and infrastructures.	- Targeted factsheets and flyer - Website - Outreach events and workshops - Third party events - Network/Pool of Users (Champions)
General public (non-governmental organisations, citizens)	- **inform** them about the progress of the project and the impact it has on European objectives regarding innovation in the energy field	- The progress in this project has a direct or indirect impact of problems you are looking to solve and on things that matter to you	- Website - Social media - Press activities

With the aim of tracking the performance of the activities, the following (preliminary) engagement funnel is foreseen to be put in place, in which the number of Users that will receive support as a result of this project will be the key indicator – as a result of our actions is expected that about 250 industrial and academic Users will receive support. Additional indicators will be taken into account to monitor the effectiveness of communication, outreach and engagement activities and adapted through the project, should the need arise. Table 3 summarizes these KPIs.

Table 3 KPIs for dissemination, outreach and engagement

Actions	Key objectives	KPIs	Targets
Outreach events and workshops	Inform and engage the community; present results and good practices; gather intelligence and feedback.	# of outreach events and workshops ##of participants (summing all)	8 workshops with 500 people in total
Participation in external events	Ensure good visibility in the relevant communities	# of contributions to 3rd party events	20 external events
Website	Be the hub for communication activities; announce calls; promote successful cases; support the project visibility; inform and engage the community; unique entry point to access the infrastructures	# of website visits	≥ 500 visits per month after the first call
Newsletters	Provide an interested audience from all target groups with the latest news	# of subscribers to RISEnergy mailing list	700 people
Social media (LinkedIn and Twitter)	Inform and engage the community; support the visibility of the project and promote the calls	# of project related posts # of interactions (shares, likes, comments)	200 posts 1000 inter-actions in total
Policy briefs	Inform policymakers about the current state of RIs and the innovation needs of the energy-related research field and involve them to act on the identified needs	# of policy briefs	2 policy briefs
Press releases	Ensure the visibility of the project especially regarding a wider audience and citizens	# of press releases	3 press releases
Network/Pool of Users (champions)	Enhance the visibility and further uptake of the opportunities offered by the project by portraying successful cases with individual faces Learn additional practices to disseminate the project further and engage additional participants and bring new Users	# of champions	10 people

Strategy for the management of intellectual property

The creation of intellectual property (IP) is not one of the primary goals of the RISEnergy project. The core of RISEnergy is the provision of services to Users. In terms of IP generation, RISEnergy therefore takes a passive role; the scientific idea, which could later become protectable IP, is expected to come from the User. However, the level of support offered, especially to Users unfamiliar with the use of RIs, may lead to situations where the supporting scientist from the RI facility has made a significant and crucial contribution to the final result, which must then be treated as a joint result. Within the consortium, ownership of results, intellectual property rights, and rules in the consortium agreement will be governed according to the rules proposed by DESCA. The protection of the results and the filing of a patent is done at the level of the beneficiary, to which the owner or co-owner of the respective result belongs, and must be supported by the local patent office.

The situation is different when a result is co-owned by a User, as this person is not one of the signatories

of the RISEnergy consortium agreement. For this reason, the intellectual property rules are set out in a small document that essentially copies the relevant paragraphs of the Consortium Agreement. Acceptance of these rules is mandatory for each User.

#§COM-DIS-VIS-CDV§#

2.3 Summary (Key Elements of the Impact Section)

SPECIFIC NEEDS	EXPECTED RESULTS	D & E & C MEASURES
Provision of innovative, customised and efficient RI services enhancing and increasing society's long-term and consistent problem-solving capacity and evidence-based policy.	Succesful implementation of a proactive innovation management system, generating better research and innovation results. Generating a RI roadmap to prepare a long-term access options for Users.	**Dissemination towards the RI provider, policy makers and scientific community and industry**: Deliverable, management publication, usage of a further improved proactive management methods in new upcoming projects.
Enabling R&I to increase energy efficiency and foster a wider use of renewable energies, supporting the green transition on integrating renewable technologies in the energy systems.	Synergies between RIs, so that Users benefit. Introduction of a cross-RI service to enable Users to speed up innovation.	**Dissemination towards the scientific community and industry**: By documentation of the services, workshops, meetings and conferences
Wider access for academic and industrial researchers to enhanced and further integrated RI services in support of the green transition.	An RI ecosystem, that offers options to team up with all stakeholders.	**Dissemination towards the policy makers, RI providers, scientific community and industry:** Participating at conferences; Developing a platform of material compositions for industry; Participation at EC project portfolios to disseminate the results as part of a group and maximise the visibility vis-à-vis companies.
Cruss-cutting services	Data management scheme for proper curation, annotation, storage and (simple) access to a broadrange of experimental and simulation data for accelerating advanced materials development and integration.	**Dissemination towards all RI Users of RISEnergy:** A searchable database on metadata platforms/data repositories. A uniform metadata structureadhering the FAIR data principles (exchangeable with a wide variety of platforms).
<u>Specific technology needs (User targets):</u> Reduction of CRMs in catalytic materials of electrolysers.	Katalytic materials for electrolyser with less CRMs.	**Exploitation of the new product:** Patenting the new product

TARGET GROUPS	OUTCOMES	IMPACTS
Energy RI providers	Agree on a procedure for a unique entry point for Users.	More accomedated and efficient research for Users
Energy utilities/ infrastructure operators	Agree on a renewable RI roadmap.	Better planing of research and innovation actions resulting in a speed up of innovation.
power and system industry/manufactures	Improve understanding of the complex energy system. Get feedback on the acceptance of renewables.	Societal feedback is important for the successful introduction of new technologies.
Association and networks	Better co-operation between research and industry, by using RISEnergy cross-cutting service.	Larger research groups will work on the same challenges and be quicker to find solution.
Standardization bodies	Successfull proactive innovation management scheme	Accelerated innovation could greatly reduce the cost of an RES.
Policy makers	Better communication between policy makers, industry and RTOs	
Citizens	Tools to better communicate the complex problem of renewable energy supply to citizens	
Access Users in general	Succesful User projects in different technology areas	

#§IMP-ACT-IA§#

3. QUALITY AND EFFICIENCY OF THE IMPLEMENTATION #@QUA-LIT-QL@# #@WRK-PLA-WP@#

3.1 Work plan and resources

Overall structure of the work plan

RISEnergy is structured along 5 work packages:

- **Technical Work Packages**
  WP1 will develop a renewable energy RI ecosystem, including RI providers, Users and policy makers for discussing among others best practises, a general RI roadmap, and longterm persceptives for renewable RIs for supporting the energy transistion.
  WP2 will provide Users with free of charge access to world class RI.
  WP3 will p**rovide cross-RI services** to support and accelerate **renewable energy technologies and systems,** TRL progression & system integration, and fostering collaboration across technology disciplines and stakeholder groups.
  WP4 will foster innovation by supporting advising research inquiries, extracting industry needs and performing training and education.
- **Management and Coordination:**
  WP5 focuses on the effective execution of RISEnergy contract, the maintenance of the Consortium Agreement (**CA**), ethics, data management and technical coordination. WP5 also takes care of the technical aspects of the dissemination and exploration activities.

Pert chart

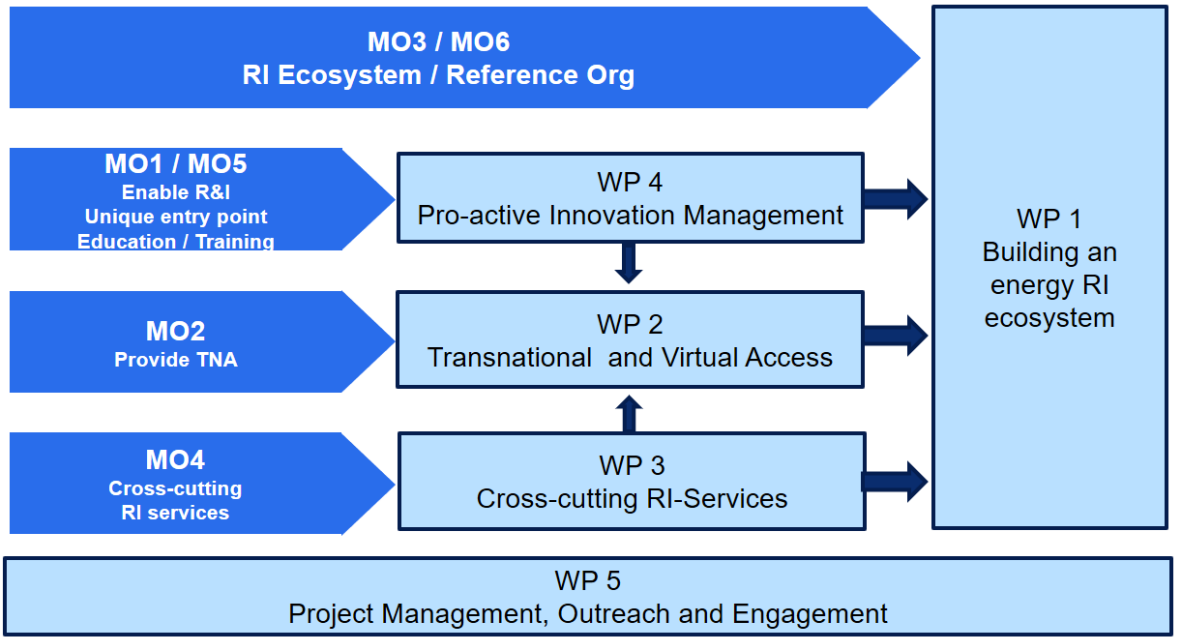

Figure 7 Pert chart RISEnergy: the relations between the 5 WPs

Timing of the work packages (Gantt chart)

	M1			M4			M7			M10			M13			M16			M19			M22			M25			M28			M31			M34			M37			M40			M43			M46			M49			M52			M54
WP 1 Building an energy RI ecosystem																			MS1																							MS2															
Task 1.1 Building an ecosystem on energy research infrastructures						D1.1																																																		
Task 1.2 Exchanging best practices with already existing RI networks																								D1.4																																D1.6
Task 1.3 Coordination with SET-Plan, EU and international initiatives on climate change										D1.2																																													D1.7
Task 1.4 Support for a RI services gap analysis for accelerating technologies and innovation																			D1.3																																				
Task 1.5 Analyse the landscape for additional ESFRI initiatives																																																				D1.5			
WP2 Transnational and Virtual Access to world-class Research Infrastructures						MS3	MS4																																			MS5															
Task 2.1 Management and Administration of Transnational Access...				D2.1		D2.3																																																		
Task 2.2 Provision of Transnational Access							D2.4																																																	
Task 2.3 Statistical analysis of Transnational Access Programme																				D2.6															D2.7																				D2.9
Task 2.4 Management and Administration of Virtual Access						D2.2													D2.5																	D2.8																			D2.10
WP3 Cross cutting and RES RI-Services to support technologies, systems and policy makers																			MS6				MS7																																	
Task 3.1 ICT enabled RES (WSN retrofit devices)																			D3.3																														D3.8						
Task 3.2 Framework for Digital Services and Digital twins												D3.1											D3.4																																
Task 3.3 Metadata service along the value chain												D3.2																	D3.6																										
Task 3.4 Decision making for sustainability and sociotechnical aspects																							D3.5												D3.7																				
WP4 Pro-active Innovation Management												MS8							MS9																																				
Task 4.1 Innovation Management																			D4.1									D4.3																							D4.6			
Task 4.2 Innovation Acceleration																			D4.2																											D4.4					D4.7		
Task 4.3 Innovation support from and for industry and policy stakeholders																																																						D4.8
Task 4.4 Training on cross-cutting services and innovation support																																														D4.5								
WP5 Project Management, Outreach and Engagement			MS10								MS11																																												
Task 5.1 Internal project management and coordination			D5.1			D5.2																																																	
Task 5.2 Monitoring and internal and external progress reporting											D5.5																																											D5.6
Task 5.3 - Dissemination, exploitation, outreach and engagement plan						D5.3			D5.4																																														
Task 5.4 - Ethics management																																																							

Figure 8 RISEnergy Gantt Chart: the timing of the different work packages and tasks

Detailed work description (table 3.1a)

WP n°	WP Title	Lead Part. n°	Lead Part. Short Name	PM	Start month	End month
1	Building an energy RI ecosystem	16	EERA	97	1	54
2	Transnational and Virtual Access to world-class Research Infrastructures	1	KIT	95	1	54
3	Cross cutting and RES RI-Services to support technologies, systems and policy makers	54	UCC	141,5	1	53
4	Proactive Innovation Management	42	EPL	135	1	54
5	Project Management, Outreach and Engagement	1	KIT	98	1	54

Work package description (table 3.1b)

Work package number	**1** (Lead: EERA)
Work package title	Building an energy RI ecosystem

Objectives: WP1 will set up an ecosystem by gathering relevant experts to foster discussions and provide feedback on various activities of the project. Additionally, best practices and lessons learnt from relevant initiatives and networks of RIs will be exchanged to make transnational access to energy RIs available and effective. In addition, this WP will identify technology and research gaps by analysing various roadmaps and documents and provide a foundation for future research efforts to address the challenges of the green transition. Eventually, options for potential new ESFRI RIs in the Energy area with focus on renewable energy will be analysed.

Description of work

Task 1.1 Building an ecosystem on energy research infrastructures (**EERA**, KIT, AIT, UCC, DERlab, CIEMAT, EU-SOLARIS) [M1-M54]

This task will define and establish the ecosystem bringing together experts (both from academia and industry) from different backgrounds and having complementary expertise to consortium partners to foster discussions and provide feedback on the activities and results of the project. The following experts will populate the ecosystem:

- Representatives of key EU and international initiatives (ETIPs, Industry platforms – e.g., KICs, EMIRI and Mission Innovation and IPCC) that define priorities and produce relevant documents (i.e. SRIAs and roadmaps) in the different sectors of particular interest for the project. They will provide feedback to the analyses of task 1.4 in defining future research needs to address the challenges of the green transition and/or participate in the activities of task 1.3.
- Participants of the selection panel to evaluate the proposals received in the calls organised in WP2.
- Networks of infrastructures (e.g. the DERlab community), European RI Consortia (ERICs like ECCSEL and EU-SOLARIS) and relevant projects (e.g. ERIGrid 2.0, StoRIES) that will participate in the knowledge-sharing activities sharing best practices and lessons learnt on the topics identified in task 1.2 and task 1.5.

Several organisations and initiatives have already shown interest in collaborating with the project (see RISEnergy's letters of support). This task will start with the selection and endorsement of experts within the first six months of the project. The main criterion for selecting experts will be their expertise and the ability of the overall group to cover the project's needs, guaranteeing a balance in terms of industry-vs-research. Experts will be selected based on a set of criteria defined by the corresponding task leader to which they will provide feedback. Once the experts are identified, the invitation to dialogue will follow. Once those experts agree to participate in the project, they will need to sign a letter of support in order to guarantee their willingness to participate in the project's activities. After the selection and endorsement of experts, the dialogue with those groups will be organised. The ecosystem will include meetings, roundtables and workshops at different locations, either physical and/or online (preferring the latter). EERA will organise, in coordination with the corresponding task leader, workshops and meetings with the external stakeholders, when applicable. For each experts' group, a working plan will be defined together with the corresponding task leader to which they will provide feedback. Task 1.1 will support the engagement of external initiatives to facilitate knowledge-sharing activities such as the organisation of meetings and targeted thematic workshops (e.g., materials and PV, hydrogen and ocean, grids and ICT, or corrosion RIs and biofuels, storage, offshore wind) for collaboration and discussion with consortium partners.

Task 1.2 Exchanging best practices with already existing RI networks (**CNR**, KIT, AIT, EPL, CEA, UCC, DTU, IMEC, ECCSEL, TNO, ENEA, DERlab, EU-SOLARIS) [M1-M54]

This task aims at identifying pitfalls and sharing best practices and lessons learnt from the initiatives and networks of RIs, identified in collaboration with task 1.1, by leveraging synergies for the respective technological community. The objective of the task is to supply to task 1.5 a comprehensive overview of the best practice for making transnational access to energy RIs available and effective. The task will contribute to enhancing and improving the experiences of infrastructure hosts, Users and operators, whose activity addresses outcomes at very different TRLs, on topics such as:

a. Practices

- Collect previous RI network experiences and initiatives. RI providers will be interviewed in order to collect previous experiences on national and trans-national access procedures applied during other networking (research project selection, access by industries, specific agreements, training service).
- Internal webinars. Consortium partners that are active in initiatives and projects such as DERlab, EnABLES or SFERA-III will be invited to present their practices to the partners, affiliated and third parties RI providers.
- Forum. Considering lessons learnt from the EIRIE platform, RI stakeholders will be invited to discuss on how sustaining an integrated approach to energy RIs.

The outcomes (records, final recommendations) will be supplied to WP4.

b. Technical, administrative and legal aspects of physical and/or virtual TA to RI infrastructures

- Member States and EU programmes will be analysed in order to assess if and how the different institutional logics can influence the RI final Users, destinations and sustainable exploitation.
- (Energy) RIs from the Roadmap of the Strategy Report documents on governance and operative aspects of virtual and physical transnational access to RI infrastructures will be collected, analysed and commented for establishing a comprehensive overview of best practices.

c. Discussion on how to better promote innovative ideas with RI.

The reports will be supplied to task 1.5.

Task 1.3 Coordination with SET-Plan, EU and international initiatives on climate change (**EERA**, KIT, AIT, EPL, IMEC, CIEMAT, CNR, ECCSEL, EU-SOLARIS, EnBW) [M1-M54]

The aim of this task is establishing contacts with relevant initiatives and stakeholders in order to provide valuable feedback and recommendations, especially the results and outputs of the analysis carried out in task 1.4 i.e. definition of future research needs to address the challenges of the green transition. The provided information will be useful to provide input to their funding programmes and R&I agendas, as well as to accelerate innovation and market uptake ensuring a better transfer of R&I into the real economy. The following initiatives have been already identified:

- Representatives of the EU Missions on Climate Change and Emission-free cities and the partnerships on Blue Economy, Hydrogen, Processes4Planet, CETP and Clean Steel
- Member states and Associate Countries (MS/AC) representatives, especially those involved in the SET Plan IWGs to ensure a continuous link and mutual flow of information between countries and/or national representatives and to discuss national priorities and facilitate common actions.
- EU R&I community through close collaboration with the respective ETIPs.
- International initiatives such as Mission Innovation and IPCC

At the inception, the connection with these initiatives will be carried out through the consortium partners and EERA members sitting in the governing bodies of the different initiatives. Afterwards, the terms of collaboration between the different initiatives will be defined to allow: 1. continuous exchanges of relevant information of the project; 2. prompt transfer of RISEnergy strategic outputs to the governing bodies of the above-mentioned initiatives; 3. alignment of R&I agendas to avoid fragmentation/duplications of policies/funding schemes and to create synergies between the different initiatives; 4. contribution of those stakeholders in the delineation of RISEnergy activities; 5. participation of EU13 countries that show low involvement in R&I. Eventually, participating initiatives will receive periodically targeted information on the activities and results of the project. Additionally, specific workshops, meetings, and other collaboration activities defined in the terms of collaboration will be organised.

Task 1.4 Support for a RI services gap analysis for accelerating technologies and innovation (**ENEA**, KIT, AIT, EERA, DTU, EPL, DERlab, CIEMAT, ECCSEL, EU-SOLARIS) [M1-M54]

The objective of the task is to improve access, interoperability and exploitation of research outputs for researchers

and innovation stakeholders, in order to reply to the question about how to accelerate the technology and innovation process. The main activities are related to a) the collection of the main roadmaps (i.e. Strategic Research and Innovation Agendas (SRIAs), ESFRI Strategic Report on RIs in Europe), relevant documents, papers, information of the main European projects of the different renewable energies technologies and systems, and also from the provided services for each investigated RI. The targeted mapping and gap analysis will make use in addition any valuation tools (maturity index tool hosted on the EIRIE platform) that quantify progress achieved through R&I on the selected technologies giving evidence of maturity reached and / or gaps and needs in R&I to be targeted through current or future work programmes. The research will be conducted both at RI system level and component's level with the aims to identify gaps to fill in terms of research analysis, methods and methodology applied, application field, and Users and stakeholders involved in the decision process. b) The analysis to classify the documents and avoid duplicities or overlapping. The results of the analysis provide indicators, identification of a priorities framework; c) the definition of future research needs to address the challenges of the green transition towards higher shares of renewable energy and a more decentralised and low-intensity energy supply. The obtained results will be interpreted directly from the participants of the consortium (in particular with WP3 and WP4), and indirectly shared by interviews, round tables, survey submitted with sub-groups of experts (researcher, national authorities, industries partner) will be identified in T1.1. The overall aim of the task will be a written report to communicate the identified technology and research gaps, to share the survey findings, and to provide a foundation for future research efforts. The roadmap will be the result of a continuous synergy and cooperation both with the other WP1 task leaders (in particular with the leaders of tasks 1.2 and 1.5), and with the other WP leaders (in particular with WP3 and WP4). For this reason, the targeted outcome will be issued in various editions targeted for months M18, M36 and M54.

Task 1.5 Analyse the landscape for additional ESFRI initiatives (**ECCSEL**, KIT, UCC, EU-SOLARIS) [M1-M54]

Objective of this task is to conduct a landscape analysis to consider options for potential new ESFRI RIs in the Energy area with focus on renewable energy.

Initially, input will be gathered from representatives of the ESFRI Strategic Working Group (SWG) on Energy either in a workshop or through a questionnaire. Aim is to identify current gaps on the ESFRI roadmap and to outline potentially relevant areas for new ESFRI RI's.

This will be presented to the extended network of RISEnergy stakeholder group established by this project which will then discuss and contribute to the landscape analysis to consider options for potential new renewable energy ESFRI RI's. Focus will be on the eight renewable energy areas covered by this project.

An important focus area is the innovation chain for advanced materials for energy and how to support accelerating the development from materials to devices.

This task will cooperate and take input from other tasks like task 1.2 and 1.3, taking input from the SET-Plan and other relevant EU and international initiatives.

- Assess the implementation of existing and upcoming Energy RIs including the potential energy applications in multi-disciplinary RIs,
- Identify new important RIs and research demonstrators of pan-European interest in the Energy area,
- Identify new potential implementation schemes of RIs specific to the energy domain,
- Provide guidance to plan their implementation as an ESFRI RI to help to accelerate the development of industrial prototypes in the Energy sector and their interactions with RIs and research demonstrators.

The outcome of this task will also be provided to the ESFRI Energy SWG.

Work package number	**2** (Lead: KIT)
Work package title	Transnational and Virtual Access to world-class Research Infrastructures

Objectives

WP2 will provide industrial and academic researchers with free transnational access to a selection of the best European and international facilities in the fields of photovoltaics, CSP, biofuels, offshore energy (wind and ocean energy), energy storage, hydrogen, materials, ICT and integrated grids. It will cover research and innovation activities in all the above areas carried out by Users who will be granted access to research facilities on the basis of common modalities and a peer review process for the selection of User projects. In addition to the visiting grants for transnational access, RISEnergy also provides free-of-charge access to virtual data and services and widely used resources needed for research that are openly and freely available through communication networks. Virtual

Access should offer casual access with minimal administrative overhead to attract new Users as well as simulation services are made available freely to a broader audience. This WP will address all tasks necessary for the management of transnational access under RISEnergy. The modality under the proposal, as well as outreach to new Users and review procedure under the proposal are the same for all RI and described in Description of Work.

Provision of access to the following TA infrastructures:

TA01 KIT Helmholtz Institute Ulm (HIU)

Location (town, country) of the infrastructure: Ulm, Germany

Web site address: https://hiu-batteries.de/en/

Annual operating costs: ca. 0.75 million Euro (not incl. personnel cost)

Description of the infrastructure: HIU is a highly integrated research unit that provides excellent experience in the battery research, including battery active and inactive materials, cell components, and the assembly of coin cells and pouch cells. It offers multi-purpose operando and in/ex situ characterization techniques for battery materials and lab-scale cells.

Services offered by the infrastructure: HIU offers one of the most comprehensive research platforms for electrochemical energy storage devices, including (accelerated and semi-automated) materials synthesis and characterization, electrode preparation (up to a pre-pilot-line level), cell assembly and testing, as well as a great variety of advanced in/ex situ and operando characterization techniques.

Support offered under this proposal: The infrastructure is currently in operation and available for scientific research and the access will be available free-of-charge. The infrastructure will be available to the researchers under the supervision of the responsible scientific personnel and technicians, the supervision will be charged.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: HIU is one of the worldwide leading battery research institutes with about 50% of non-German employees, additionally hosting several visiting scientists and students coming from EU and extra-EU universities.

TA02 KIT Energy Lab

Location (town, country) of the infrastructure: Eggenstein-Leopoldshafen, Germany

Web site address: https://www.elab2.kit.edu/english/

Annual operating costs: Approx. 11,5 M€ (2023)

Description of the infrastructure: Energy Lab is the research platform on TRL 5-6 to support the energy transition and the technologies for the “net zero economy”. It allows the scale-up of promising technologies to semi-industrial scale (Lab to Fab) and for validation of system models and technology recommendations for the overall system in sense of the European Green Deal. The Energy Lab consists of three interlinked elements: (1) Smart Energy System Simulation and Control Center (SEnSSiCC) implements a wide range of topologically variable microgrid experiments using real power system components and connects the microgrid directly to real-time simulated networks of real power systems to form a hardware-in-the-loop setup. (2) PtX Lab, a modular research facility designed for PtX technology validation in a semi-industrial environment to support the successful transfer of promising developments from the lab into application. (3) Carbon Cycle Lab is a research platform for scale-up, demonstration and transfer to application of key enabling technologies intended to close the anthropogenic carbon cycle based on complex feedstocks.

Services offered by the infrastructure: The units Energy Lab allows the testing of new technologies in a semi-industrial environment, supported by tools for simulation at the scale of the system and the units and subunits in stationary and dynamic operation. The Energy Lab is designed to utilize "technical" raw materials and transform them into relevant quantities of products that allow application tests.

TA03 KIT Karlsruhe Liquid Metal Laboratory (KALLA)

Location (town, country) of the infrastructure: Eggenstein-Leopoldshafen, Germany

Web site address: https://www.ites.kit.edu/english/140.php

Annual operating costs:1450 €/day

Description of the infrastructure: Different liquid metal test loops are available: (1) for hydrogen production from methane or biogas (at > 1000°C), (2) for testing thermal energy storage materials and measuring devices in contact

with liquid metal (up to 400°C), (3) for component testing (valves, pumps, measuring devices) in liquid metal flows (up to 700°C), from 2024.

Services offered by the infrastructure: The infrastructure enabled researchers in various research fields dealing with liquid metal to new findings. For example, the test of a first-of-its-kind heat storage system or the production of solid carbon and oxygen from CO2 from air realizing negative emission for the first time this way.

Support offered under this proposal: The Users can have access to the various liquid metal test loops of the infrastructure; this includes instruction, consulting and supervision by the experts of the infrastructure and the possibility to perform tests in the KALLA labs. The access costs depend on the type of experiment and its duration.
Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: KALLA is unique regarding the broadness and variety of different liquid metal loops and applications fields, combined with more than 20 years of operational experience.

TA04 KIT-DBFZ Research biogas plant (FBGA)

Location (town, country) of the infrastructure: Leipzig, Germany

Web site address: https://www.dbfz.de/en/research/research-infrastructure/research-biogas-plant

Annual operating costs: Highly depending on the experimental layout approximately 420,000 €

Description of the infrastructure: The DBFZ's research biogas plant (FBGA) complements the spectrum of our application-oriented research. The dimensioning of the biogas plant allows for experiments to be carried out on a semi-industrial and industrial scale (50-190 m³ digesters), therefore ensuring good transferability of the results into practical application. The FBGA was planned and built to be technically flexible and open for the addition of up- and downstream aggregates, e. g. for substrate pre-treatment or digestate processing. Being extensively equipped with online measuring probes and accompanied by analyses in DBFZ´s own analytical lab, proper process control can be assured.

Services offered by the infrastructure: The research biogas plant (FBGA) has proven to be a valuable asset in past projects on national and European level, partially with involvement of industry partners. Examples include the effects of enzyme addition to the process for increased biomethane yields, which were possible due to the two identical main stage digesters. Other projects investigated flexible energy provision by timed feedstock supply, which is possible due to the high degree of automation of the FBGA.

Support offered under this proposal: All practical experiments can be accompanied by comprehensive lab analyses, reaching from substrate characterisation and BMP tests to e. g. elementary analyses. The experienced researchers at DBFZ can support research projects in all stages, from planning to analysis and evaluation. Also, experience in conception of plants for the utilization of biomass and organic waste is pre-existing.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The primary aspect making the DBFZ research biogas plant unique is the scale close to industrial practice. Also, the availability of comprehensive measuring probes and sampling ports at the plant and the close vicinity to the analytical lab allow for an exceptionally extensive process monitoring.

TA05 KIT-DBFZ Hydrothermal Processing and Biomass Disintegration (HTP)

Location (town, country) of the infrastructure: Leipzig, Germany

Web site address: https://www.dbfz.de/en/projects/hydrothermal-processes-htp/equipment

Annual operating costs:2,000–4,600 € per day / experimental run depending on scale

Description of the infrastructure: Hydrothermal processes including hydrothermal carbonization (HTC) in 0.5 to 100-L-scale and hydrothermal liquefaction in 0.02 to 0.5-L-scale with a wide range of process parameters (T = 150–350 °C, t = minutes to hours, stirring) applicable. All hydrothermal reactors are operated in batch mode. Additionally, reaction calorimetry of HTC reactions in 1-L-scale is unique and starting operation by mid of 2023.

Services offered by the infrastructure: HTP offers a very controlled environment with most actual safety standards for processing biomass and waste biomass hydrothermally at high temperatures and pressures. All the hydrothermal experiments are accompanied by comprehensive feedstock and product analyses. HTP also makes use of actual approaches by means of design of experiments and supports modelling of underlying reactions with close-meshed sampling and computational methods.

Support offered under this proposal: Potential Users will benefit from the vast experience of hydrothermal processing at DBFZ. Potential Users will be supported in their experimental planning and conducting as well as

evaluating the experiments further discussing the results. Depending on the scientific progression of potential Users, mentoring at certain stages of their scientific career will be included yielding the best and promising results and getting them published adequately.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The scaling possibilities of HTP are extraordinary due to the wide range of reactor sizes. Further, reaction calorimetry at 1-L-scale allowing for the use of actual biomass is also unique.

TA06 KIT-DHI Deep Water Ocean Basin (DHI DWOB)

Location (town, country) of the infrastructure: Location: Horsholm, Denmark

Web site address: DHI Deep Water Ocean Basin – Test Facilities

Annual operating costs: EUR 368,979

Description of the infrastructure: The DeepWater Ocean Basin at DHI is a large test facility (30 m times 20 m, being 3 m deep with a 12 m deep pit) where realistic multi directional sea waves can be generated by a 60-segement flap wave maker. The facility is equipped with a wind generator that can generate wind speeds up to approx. 2 m/s thus enabling a unique testing facility of floating offshore wind.

Services offered by the infrastructure: DHI Deep Water Ocean Basin offers a unique large-scale facility, however still flexible and agile for tests of floating structures in deep water, from FPSO, energy converters and floating wind, with and without wind forcing. The basin allows for testing and measuring response, loads and mooring forces for all kinds of floating structures.

Support offered under this proposal: The Research Activities in the physical test installations require extensive assistance which will be provided by experienced DHI scientists and experts. The necessary instrumentation, amplifiers, and computers for data logging are provided. DHI's staff will assist in connection with the planning of the testing and execution.

TA07 KIT-ECN/CSTB Climatic Wind Tunnel Facility (JVCWT)

Location (town, country) of the infrastructure: Location: Nantes, France

Web site address: http://www.cstb.fr/en/test-facilities/jules-verne-climatic-wind-tunnel/

Annual operating costs: between 600k€ to 1M€ depending on the wind tunnel considered and the energy cost.

Description of the infrastructure: CSTB has been operating the Jules Verne Climatic wind tunnel in Nantes since 1990. This facility includes two wind tunnels with climatic control (from -30 to +50°C, wind velocity up to 140 km/h or 280 km/h). This large facility allows simulating severe climatic conditions either cold or warm combined all kind of precipitation.

Services offered by the infrastructure: The JVCWT can reproduce at full scale, the different atmospheric parameters; laminar and turbulent wind, rain, dust, sand, in the Dynamic Unit SC1, and wind, fog, rain, snow, solar radiation in a thermally controlled environment of the Thermal Unit SC2. The control of the different climatic variables permits fine parametric studies of their influence, which is not possible in the real outdoor conditions. Many applications linked to environmental, building and transport issues or safety can thus be rapidly studied.

Support offered under this proposal: The test programmes achieved in the JVCWT are set-up in close collaboration with the visiting Users of the facility. The various and high level of qualification of the JVCWT staff is a guarantee for the Users who can rely on it in the field of aerodynamics, climatic or thermal sciences and also for more technical matters such as measurements, instrumentation, electronics and computer sciences.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Among the largest facilities with high speed (up to 70m/s in the 30m2, aerodynamic test section), and severe climatic conditions (temperature from -32°C to +55°C and controlled relative humidity from 30% to 100% in a test chamber with a cross section of 70 m²).

TA08 KIT-HMU Research Center (HMU-RC)

Location (town, country) of the infrastructure: Heraklion, Crete, Greece

Web site address: https://i-emerge.hmu.gr/ , https://ieecc.hmu.gr/

Annual operating costs: ~500k€

Description of the infrastructure: HMU-RC will offer access to two of its installations: Institute of Emerging

technologies (i-EMERGE) and Institute of Environment, Energy and Climate Change (IEECC). i-EMERGE leads the Energy Generation activities of the FET- Graphene Flagship initiative, while participates in the newly established European RI "Emerging Printed Electronics and Photonics", EMERGE. The mission of the IEECC is to conduct contemporary research and manage a high-level RI in the field of energy systems, renewable energy technologies (wind parks, photovoltaics, micro-grids, storage, vehicle to grid, dispersed generation, etc.) and environmental assessments.

Services offered by the infrastructure: The i-EMERGE team is one of the founding partners of RI EMERGE. Within EMERGE, i-EMERGE offers various TAs covering a wide range of installations on flexible PV devices and beyond. i-EMERGE's open air lab supporting infrastructure includes power electronics and automatic data acquisition systems for the continuous monitoring of the performance of PV panels that can provide a better understanding of their reliability and benchmarking with conventional PV technologies. . i-EMERGE has access to numerous parks in Crete as well as act as technical advisor of the largest Greek Energy Community, Minoan Energy. IEECC developed laboratory infrastructure can be utilized for: testing of control and metering devices in low voltage microgrids, different low voltage microgrids configurations, novel control approaches for HVDC interconnections and DFIG wind turbines, testing of SCADA and EMS systems realization for smart grid scenarios, rapid control prototyping platform for single-phase inverters, prototyping platform for three-phase inverters (grid-connected or parallel), for DC/DC converters and for motor drive applications.

Support offered under this proposal: The two RIs of the HMU-RC can be offered both as stand-alone or integrated, thus combining their capabilities for the testing of ICT enabling technologies in the area of power and energy systems. Specifically, HMU-RC offers TAs targeting low power IoT sensors retrofitting onto smart buildings/infrastructures allowing energy efficiency or condition monitoring or characterisation of various assets including PV and wind turbines.

TA09 KIT-MARIN Offshore Basin (OB)

Location (town, country) of the infrastructure: Wageningen, Haagsteeg 2 The Netherlands

Web site address: www.marin.nl

Annual operating costs: 1 million Euro

Description of the infrastructure: The Offshore Basin offers a number of unique possibilities for the modelling of current, waves and wind. The basin measures 46 m x 36 m and has a movable floor, which is used to adjust the water depth. The maximum water depth measures 10 m at model scale. The basin also has a deep pit, with a maximum depth of 30 m. The current generation system consists of 6 separate layers, each equipped with its own pump. Current can be generated over the full depth of 10 m. The water is re-circulated through a system of channels outside the basin, in order to avoid re-circulation in the basin itself. This current generation system enables the adjustment of vertical current profiles. Next to that a high-quality wind generation system has been installed in the model basin, which makes the basin unique in the world.

Services offered by the infrastructure: MARIN offers model tests in the offshore wave basin to assess the performance of the floating wind turbine design. The model tests results are used for an independent verification of the design. After the model tests the results will be used for tuning the numerical model reducing the uncertainty of numerical simulation such that the tool can be utilized to assist in design tasks. Design variations such as floater and mooring system design can be easily incorporated in the model to quantify the design improvements. At the moment MARIN performs 5-10 model tests for different floating wind turbines a year. Furthermore, multiple research projects have been performed for EU horizon 2020 project, and project's in the ARPA-E tenders from the USA, like the Atlantis project. Besides model testing floating wind, the OB is also used to tests; Floating PV, Floating storage and hydrogen plants and ocean energy

Support offered under this proposal: MARIN can deliver the following support during the model tests:

Perform hydrodynamic numerical simulations to define the correct test setup and type of tests, Model construction, Deliver and install the measurement instrumentation, Execution of the model tests, with dedicated basin technicians, Data analyze of the model tests.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Fully coupled model tests, in wind, waves and current

TA10 KIT-UNIHannover Coastal Research Centre -Forschungszentrum Küste (FZK)

Location (town, country) of the infrastructure: Hannover, Germany

Web site address: https://www.fzk.uni-hannover.de/en/

Annual operating costs: 808,000 €

Description of the infrastructure: The Coastal Research Centre (Forschungszentrum Küste, FZK) is a joint scientific institution of Leibniz University Hannover and Technische Universität Braunschweig. FZK is operating the Large Wave Flume (Großer Wellenkanal, GWK) to which access will be offered. Currently GWK is out of operation for a major upgrade, which will be finished in Spring 2023. With about 300 m length, 5 m width and 7 m depth, wave heights up to 3 m, currents up to 20 m³/s and a deep section up to 13 m depth, the "new" GWK+ will then allow for unprecedented testing capabilities particularly for offshore wind and ocean energy systems as well as floating PV.

Services offered by the infrastructure: The long-time experience of the FZK staff and the scientific surroundings of the technically oriented universities provide ideal conditions for high quality research. This has been proven through lots of successful projects in GWK carried out by international research teams over the last three decades, among them Transnational Access within the HYDRALAB projects and MaRINET 2.

Support offered under this proposal: Projects in GWK are always 100 % supported technically and scientifically from the preparation to the implementation and evaluation of the tests. This includes free accessibility of all available measurement devices, materials, machinery and workshops as well as provision of office space, computer and communication systems.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The huge dimensions of the Large Wave Flume GWK+ and the ability of generating up to 3 m high waves and simulating complete tidal cycles including current and water level changes continuously are probably not available anywhere else and make FZK a unique infrastructure for model tests in the realm of offshore wind, ocean energy and floating PV.

TA11 KIT-NRCanNRC Centre for Accelerated Materials Discovery and Innovation (CAMDI)

Location (town, country) of the infrastructure: CAMDI is a Canadian federal infrastructure investment in unique laboratory space for accelerated materials discovery in 1) Hamilton, ON, with ~200m2 in a 15,000 m2 lab and, 2) Mississauga, ON, opening Apr 2024, with ~450m2 in a 6,200m2 lab dedicated to self-driving or autonomous laboratories, jointly delivered by Natural Resources Canada and the National Research Council

Web site address: CanmetMATERIALS (canada.ca), Advanced materials research facility - National Research Council Canada

Annual operating costs: Hamilton: ~10M€

Description of the infrastructure: The RI includes custom designed laboratory space for Materials Acceleration Platforms1 (MAPs) – self-driving or autonomous lab programme development and delivery; supported by a high performance (CPU/GPU) computing data centre, mechatronics and automation, dedicated AI/ML studio, and backed by conventional laboratory facilities. Several self-driving labs for energy materials are already under development for thermoelectric materials, electrical conductors, electrocatalysts, corrosion with additional platforms being considered for batteries, plating, electrolysis, cement production and 3D printing.

Services offered by the infrastructure: The RI will offer collaboration space, access to operational MAP (self-driving lab) systems and on-site computation, training opportunities (especially workflow development, mechatronics/automation, AI/ML development) and possibly industry engagement opportunities. It will be offered in a government facility requiring access controls. As an emerging discipline for materials discovery and innovation, it is building to deliver comparable science to the AMANDA platform at FZJ / HI-ERN2or the BIG-MAP at HIU3.

Support offered under this proposal: Predominantly the RI is offering access and collaborative working space to those interested in training, development and problem solving using MAP technology and techniques. Opportunities could include deployment of MAP assets in solving specific materials problems, predominantly in the field of energy materials. The multidisciplinary team includes materials and computational scientists, engineers and technologists to develop automation/controls, AI/ML methods, simulation and modelling that informs coupled, in-situ synthesis and characterization of materials and devices.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Access to a diverse set of MAP workflows and equipment within a custom designed laboratory environment and teams.

TA12 KIT-NREL National Renewable Energy Laboratory (TCPDU)

Location (town, country) of the infrastructure: Golden, Colorado USA

Web site address: https://www.nrel.gov/bioenergy/tcpdu.html

Annual operating costs: $1M (USD)

Description of the infrastructure: NREL's thermochemical R&D facility includes lab-scale batch and semi-batch, bench-scale continuous (500 g/h), and continuous integrated pilot-scale facilities for research on biomass gasification and pyrolysis and upgrading of biomass-derived syngas and bio-oil.

Services offered by the infrastructure: Facilities for R&D and scale-up of biomass thermochemical conversion systems and pathways. All systems are highly instrumented to provide high-quality data and are operated by trained professionals. Certain facilities provide unique characteristics for study of reactor environments and feedstocks that cannot be found elsewhere in publicly available laboratories.

Support offered under this proposal: All work is managed and carried out by professional scientists and engineers who are skilled in the art. Extensive analytical capabilities are also available for analysis of reaction intermediates and products and to facilitate closure of mass balances to a high degree of accuracy.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: NREL's capabilities in thermochemical conversion of biomass feature processing in two sophisticated one-of-a-kind pilot plants. Both features coupled riser reactor/regenerator systems integrated to product collection that can process up to 20 kg/h feedstock including direct feeding of biomass and bio-oil vapours to the riser. These capabilities are unique to NREL and will be offered to our EU partners as part of this project.

TA13 KIT-RE-CORD Thermochemical experimental facility (RECPARK)

Location (town, country) of the infrastructure: Scarperia e San Piero, Italy

Web site address: www.re-cord.org

Annual operating costs: 220 k€

Description of the infrastructure: The infrastructure hosts PDUs and pilot units for hydrothermal liquefaction, slow and intermediate pyrolysis, biomass pretreatment, chemical leaching, and micro gas turbines; fields of research include bioenergy, biochar production, functionalization and applications, raw materials and carbon recycling from waste or by-products, waste optimization and chemical-physical char upgrading for end-of-waste. Services offered by the infrastructure: Single conversion test on selected feedstock (within 1 shift); long-duration conversion tests (overnight or over multiple shifts, up to 5 days); Supporting measurement and analytical services for products characterization for all the conversion processes available at RECPARK. Design, construction and commissioning of PDUs and troubleshooting during operation by dedicated personnel.

Support offered under this proposal: The host institute (RE-CORD) can provide a full range of support actions for the Users, spanning from technical services such as design and troubleshooting of pilot unit/PDU/experiments to scientific support to experiments, from conceptual design all the way up to analytical determinations in laboratory or online measurements on pilot unit.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Vertically integrated approach to experimental activities (from concept design to process validation)

TA14 AIT Energy Labs

Location (town, country) of the infrastructure: Vienna, Austria

Web site address: https://ait.ac.at, https://erigrid2.eu/ait and https://www.storiesproject.eu/item-database-research-institutes/thermstore

Annual operating costs: With the financial accounting system of AIT, it is not possible to determine the exact annual operating cost for the AIT Energy Labs. Only personal costs and consumables for performing the User projects as well as costs for hosting the Users are charged to the project

Description of the infrastructure: The provided energy laboratory cluster at AIT offers a unique landscape for (integrated) development and validation of energy technologies enabling the transformation of global energy supply systems and related infrastructure, including PV modules and inverters, electrolysers, fuel cells, battery systems, e-charging infrastructure, heat pumps, and power electronic components.

Services offered by the infrastructure: As part of the RISEnergy TA infrastructure, AIT provides smart grid and energy system and DER-oriented expertise and validation and testing activities, characterization of thermal storages (power, energy capacity, energy losses) and heat exchangers (power, fluid flow), storage component simulation and system simulations, and energy systems and technology long-term test services and quality assessment to TA User groups.

Support offered under this proposal: With more than 250 experts from science and engineering, the AIT Center for Energy offers innovative and applied research services to customers and partners such as industrial companies, energy suppliers, technology providers, cities, and municipalities as well as research institutions

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Parts of this energy systems and technology infrastructure cluster were already accessible in the context of the EU projects DERri (FP7), SOPHIA (FP7), ERIGrid (H2020), ERIGrid 2.0 (H2020), StoRIES (H2020), VIPERLAB (H2020), and Metabuilding Labs (H2020). More than 350 access days to about 50 Users in over 25 TA projects have been provided so far by AIT via the aforemen-tioned RI projects.

TA15 AIT-AIST Smart Grid R&D platform in Fukushima Renewable Energy Institute (FREA)

Location (town, country) of the infrastructure: Koriyama, Fukushima, Japan

Web site address: https://www.aist.go.jp/fukushima/en/

Annual operating costs: about 1.7 million euro

Description of the infrastructure: It is possible to conduct integrated R&D at a megawatt-scale to test individual components, systems, and strategies required to safely increase DER penetration in power grids. The laboratory provides different types of Digital Real-Time Simulators (DRTS) for testing power electronics devices with power systems. It is also possible to investigate cybersecurity aspects in line with IEC standards

Services offered by the infrastructure: The laboratory provides a platform to develop, test, and evaluate new power electronics solutions located at the grid edge, such as novel inverter control logic and microgrid devices. The platform is registered with the IEA ISGAN Smart grid International Research Facility Network (SIRFN) and is roughly used for five international projects per year.

Support offered under this proposal: We offer discussions with AIST researchers and testing support by the engineers. In addition, AIST will assist with the transportation of equipment, setup of the test environment, and packaging. Moreover, support and advice on general corporate services (e.g., internet access), accommodation and transport can be provided

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Ability to test and verify novel smart grid solutions, such as grid-forming inverter capabilities using power hardware-in-the-loop and controller hardware-in-the-loop environments.

TA16 CEA High Throughput Elaboration and Characterization Hub for the Fast Discovery of Innovative Materials (FASTinMAt)

Location (town, country) of the infrastructure: Gif sur Yvette, France

Annual operating costs: 1.178.964 € (unit access cost: 1.637 € / day)

Description of the infrastructure: FastInMat enables the synthesis of a very wide range of nanoparticles or nanostructured films by Flame Spray Pyrolysis coupled to a co-deposition tool (and LIBS to come in 2023), and liquid-phase reactor (to be automated in 2023) coupled to a SAXS platform. Specific characterizations means are available: nuclear microprobe (chemical mapping with emphasis on light elements), electron linear accelerator for accelerating aging phenomena, NMR (MRI with 3D printed operando insert, MAS NMR, operando battery NMR).

Services offered by the infrastructure: FastInMat takes advantage of its location within the CEA center at the heart of Université Paris-Saclay research cluster. Strengthened by many collaborations within the university, FastInMat provides Users with a top-level research environment and possible collaborations whatever the investigated energy field.

Support offered under this proposal: Users will be trained by the supporting local team so they can use most of the different setups on the facility. Nevertheless, they will be accompanied by at least one expert member of the local host to assist them for the experiment (definition of measurement strategy, experimental guidance on the setup). Some of FastInMat setups already regularly host external groups, and members of the laboratory act as local contacts.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Coupling FSP and co-deposition device to elaborate, in a single step in a safe-by-design way, nanocomposite layers is, to our knowledge, a unique achievement in EU. Associated to real-time characterization, it paves the way to a faster development of advanced nanomaterials for energy-related research and devices.

TA17 CIEMAT Plataforma Solar de Almería (PSA)

Location (town, country) of the infrastructure: Almería, Spain

Web site address: https://www.psa.es

Description of the infrastructure: The Plataforma Solar de Almeria (PSA) is recognised as a Major European Scientific Facility by the European Commission and is also the largest and most complete R&D centre in the world dedicated to Solar Thermal Concentrating Systems, Solar Desalination and Photochemistry. It is a privileged place for the development, evaluation, demonstration, and transfer of solar concentrating technologies, both for thermal applications and for chemical processes. It offers researchers a location with insolation and climate characteristics similar to those of the developing countries of the equatorial belt with the advantages of owning the largest scientific facilities among European countries. Available facilities in RISEnergy: SOLFU, CESA-1, MOSA, DESAL, SolWATER, HyWATOx

Services offered by the infrastructure: Services offered by these installations would range from thermal, processing of materials at high temperature, testing and characterization of volumetric and tubular receivers, characterization of heliostat prototypes, accelerated aging thermal cycles, to assessment of the feasibility of materials for sensible and latent TES Systems, characterization of equipment and components for molten salt loops, two-tank molten salt storage system for simulation models validation, including solar photocatalytic treatment and disinfection of urban and industrial wastewaters, and solar thermal desalination by Multi-Effect Distillation (MED) or Membrane Distillation (MD), among many others.

Support offered under this proposal: Depending on the installation operation, on the project complexity, on safety issues and on the Users' experience, the Users' status may vary from "permanently assisted" (by technical and/or scientific local staff) to as "independent" as local researchers. In any case, they will undergo a short training of the installation operation and safety requirements in addition to practical information on the RI, and on the activities of the installation where applicable. Users of the RIs will be welcomed into a vibrant research community. They will enjoy scientific and technical support from a cohesive and strongly motivated team in a working environment that nurtures the development of innovative solutions for the studies to be carried out. This RI is comprised of staff with a focus on research and development.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The set of concentring solar thermal installations is unique in the word, both in terms of quantity and performance.

TA18 CIEMAT Infrastructure of Hybrid Energy Generation and Storage for Grid Integration CEDER-HEGSINT

Location (town, country) of the infrastructure: Soria and Madrid, Spain

Web site address: http://www.ceder.es/

Annual operating costs:795.260 €

Description of the infrastructure: It accounts for a 4.2km 15kV power line arranged as a ring, feeding 7 transformation centres (400V). A decoupling power converter (1MVA) allows for emulating grids with different P/f and U/Q responses. 230kW of distributed wind and solar PV generation are installed, together with pumped-hydro, Li-ion and Pb-acid batteries, a flywheel, supercapacitors and an electrolyser.

Services offered by the infrastructure: Characterization, modelling and validation of energy generation and storage technologies in operational environment (up to TRL7, 1MW and 15kV); adjustment of operation parameters and control strategies of energy storage systems to fulfil the grid codes of an electric grid whose dynamics can be emulated; dimensioning of energy storage according to grid conditions.

Support offered under this proposal: A team comprising 5 people provides support to the use of the facility (1 Ph.D., 2 M.Sc. and 2 technicians). Moreover, the operation of the microgrid and the integration of equipment, components and new control and monitoring strategies, is supported by a larger group of another 6 engineers (4 Ph.D. and 2 M.Sc. in electric and electronic engineering).

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: It allows

for demonstrating the behavior of energy generation and storage equipment and control strategies (up to TRL7), operating in power conditions (up to 1MW and 15kV), facing the desired P/f and U/Q grid.

TA19 CNR Test Center for thermal energy storage and conversion technologies Seakeeping Tank "Emilio Castagneto" (CT-ST)

Location (town, country) of the infrastructure: Rome, Italy

Web site address: http://www.inm.cnr.it/labs/emilio-castagneto-seakeeping-tank/

Annual operating costs: 2.692.500,00 €

Description of the infrastructure: The ST facility features a 220 m long, 9.0 m wide, 3.5 m deep wave tank routinely used for testing Marine Renewable Energy (MRE) devices. Waves, winds can be generated using a single flap wave maker and a wind tunnel, currents can be simulated by towing models. A full range of measuring and data acquisition systems is available and all of them can be easily interfaced with Users'hardware.

Services offered by the infrastructure: The ST lab has attracted Users (academia and industry) from Europe and outside and has been widely used in the framework of collaborative research projects. Tests aimed at providing new knowledge and expertise in current challenges in MRE technologies can be performed. Devices can be tested under combined wave, wind and current forcing conditions, also in complex multi-device platform configurations. Tank dimensions allow to realise platform components at a scale suitable for an accurate characterization of relevant physics.

Support offered under this proposal: A team of researchers and technicians having long-term experience in model testing in CNR-INM large facilities and in the use of state-of-the-art measurement and processing techniques is allocated depending on the scope, complexity and duration of model tests. Background experience includes testing, modelling and design of MRE systems for waves, currents, wind and hybrid.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Facility dimensions allow for testing large-sized models of conventional and unconventional MRE devices with negligible flow confinement effects in highly controlled and repeatable conditions. Thorough assistance during pre-access and access phases is provided by skilled and motivated researchers and technicians.

TA20 CNR Italy Materials Alliance (IMA)

Location (town, country) of the infrastructure: Faenza and Roma and Trento and Firenze, Italy

Web site address: https://www.istec.cnr.it/en/research/lines-of-research/materials-for-extreme-applications/ https://www.tn.ifn.cnr.it/ https://www.ism.cnr.it/en/diathema-lab.html https://www.ino.cnr.it/?page_id=16599&p=a6

Annual operating costs:1052503.20€ (642 days of access)

Description of the infrastructure: Custom-made hybrid Spark Plasma Sintering with induction; further special furnaces; X-ray, SEM, thermo-mechanical properties, oxidation. 2: PLD, RF sputtering, Electron-beam evaporation, CVD, Raman, AFM, Vacuum/Temperature Electronic tests, Solar Furnace, fs-laser processing, Prototyping. 3: 2-targets RF sputtering; Sol gel deposition, thermal/CO2-laser processing. 4: Reflectance, transmittance, absorbance (UV to Far-IR), Homemade setups for: Thermal emissivity, Optical scattering, Nonlinear transmittance. Spectrofluorometer. Nanofluids lab (DLS-ζ-potential).

Services offered by the infrastructure: Unique platform for development & full characterization of a wide materials class. Facilities run by experienced staff. Wide international network. 1-2-4: 10+yr collaboration & international access programmes. 1: international private/public contracts to manufacture novel ceramics. Our unique hybrid SPS will attract many Users for super-fast sintering of diverse materials. 2: solid-state components fabrication/testing for ultra-high temperature. 3: glasses/nano-/glass ceramics fabrication & multi-technique characterization. 4: 10+yr experience, 100+ papers in materials' optical properties. Access providers under CA15119. Extra-wide spectral range; temperature-dependent characterization.

Support offered under this proposal: Facilities run by specialized personnel. Accommodation available at 3. Days reserved for the project: 1&4: 180; 2: 150; 3: 132.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: 1: whole development chain from design to TRL5 for new materials for high temperature/harsh environment; unique facilities for sintering. 2: whole production chain from material fabrication to prototype for new solar/optoelectronic devices for high temperature/harsh environments. 4: whole spectral range from UV to Far-IR,

original characterization methods, creation of homemade setups & original methods for particular needs.

TA21 CNR Experimental Test Buildings (I-ZEB and DEC)

Location (town, country) of the infrastructure: Milan, Italy

Web site address: www.itc.cnr.it

Annual operating costs: 60k€

Description of the infrastructure: The two facilities are: i) the I-ZEB laboratory, a building recently retrofitted in the zero-energy perspective, equipped with a heat pump, photovoltaic and thermal solar panels and energy storage system and ii) A multi-storey test building for the testing of large BIPV system, under different configurations and orientations

Services offered by the infrastructure: the multi-storey test building and the I-ZEB lab, ones of the few experimental zero energy buildings in Italy, can be equipped with dedicating a monitoring systems and devices allowing the evaluation of energy and environmental performance of building products and the buildings themselves under real conditions. The buildings are used for scientific aims as well as booked by companies to test the energy behaviour and durability of their construction products under real conditions.

Support offered under this proposal: Quality, energy efficiency, energy and environmental sustainability and acoustic performance of buildings are topics of special interest to the Institute that include technological transfer and training to external Users among its routine activity.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Specific assessment and measurements can be collected simultaneously (e.g. energy consumption, indoor comfort etc). Capability to evaluate the influence of building products in different domains (thermal, energy, visual, acoustics, environmental)

TA22 CNR Research infrastructure services for renewable energy technologies and systems ITAE Test-Centre (TC)

Location (town, country) of the infrastructure: Messina, Italy

Web site address: http://www.itae.cnr.it/en/2019/03/20/testing-rig-for-thermal-and-hybrid-chillersheat-pumps/

Annual operating cost: 45.000 €/year (€)

Description of the infrastructure: The testing centre for thermal energy storage and conversion technologies provides a full chain of characterization from materials up to system level. The RI consists of a material laboratory, a testing rig for water-to-water components and small-scale storage and heat pumps prototypes characterization and a testing rig for water-to-water large-scale storage and heat pumps units.

Services offered by the infrastructure: The access to the infrastructure requires the sign of a cooperation agreement. The thermal energy storage and conversion infrastructure can help testing innovative materials as well as support the development of prototypes and pre-commercial technologies in the field of storage and heat pumping.

Support offered under this proposal: ITAE is a reference in Italy as testing laboratory. The high qualified personnel of the ITAE institute will provide a full support during test design and execution. ITAE can offer a multi-disciplinary approach based on a mixture of basic and applied research, filtered by the environmental and economic relevance that the market penetration of the technology requires.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: ITAE has long proven experience in environmentally friendly production, storage and use of energy. It has been contributing to development and penetration of technologies related to energy saving, low polluting energy production, renewable energy sources, hydrogen and fuel cells in Italy and Europe since the early 80's.

TA23 CNR Test Center for thermal energy storage and conversion technologies Towing Tank "Umberto Pugliese" (TT-ST)

Location (town, country) of the infrastructure: Rome, Italy

Web site address: http://www.inm.cnr.it/labs/umberto-pugliese-towing-tank/

Annual operating costs: 2.530.000,00 €

Description of the infrastructure: Towing Tank (TT) is the largest EU infrastructure used for testing Marine Renewable Energy (MRE) devices. It is 470 m long, 13.5 m wide, 6.5 m deep. Tank section and carriage

dimensions are suitable to test very large turbine scale models (up to the full scale) as well as combinations of models in arrays. The facility is equipped with a full range of traditional and advanced measuring systems.

Services offered by the infrastructure: Facility features as large dimensions, operability, quality and range of equipment make possible model testing at the highest standards over a full range of device operating conditions. The facility has an adequate environment to perform dedicated tests aimed at providing new knowledge and expertise in current challenges like, e.g., site turbulence simulations and tidal array development and optimization.

Support offered under this proposal: CNR-INM staff has a wide expertise in working on renewable energy devices. Background experience includes testing, modelling and design of MRE systems for waves, currents, wind and hybrid. Know-how has been matured under partnership within national and international research projects as well as consultancy to developers.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Facility dimensions allow for testing large-sized models with negligible flow confinement effects in highly controlled and repeatable conditions. Equipment provides a comprehensive framework for testing energy conversion systems under currents and wind.

TA24 CNR Green-H2-lab

Location (town, country) of the infrastructure: Messina, Italy

Web site address: http://www.inm.cnr.it/labs/structural-dynamics-diagnostics/

Annual operating costs: 65.000€

Description of the infrastructure: The facility will support the European Hydrogen Strategy aiming to develop a test environment to scale up renewable and low carbon hydrogen supply and requests for a climate-neutral economy. The Centre provides stations and laboratories to test prototypes and systems for hydrogen technologies. The mains testing facilities: (a) H2 production by electrolyser at low temperature; (b) Fuel cells testing stations; (c) Hydrogen and e-Fuels Production Plants; (d) Biomass gasifiers and syngas purification lines; (e) Cogeneration and trigeneration systems; (f) Electrolysers connected to wind turbines or photovoltaics systems; (g) Battery testing systems.

Services offered by the infrastructure: Studies and testing activities in the fields of green hydrogen generation and storage by the means of Electrolysis, Fuel Cell, Catalysis and Green Chemistry. procedures and measurement methodologies for the performance assessment.

Support offered under this proposal: The ITAE Test-Centre provides to both learning and working activities. The staff has achieved a consolidate experience in the fields of H2 production utilization and storage, addressing the research activity to the development of sustainable manufacturing processes by achieving modern models of energy supply and storage.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Modern laboratories equipped with innovative testing facilities, properly designed for the validation of materials and processes in conditions approaching “real” industrial applications.

TA25 NTUA Electric Energy Systems Lab, ICCS-NTUA (EES-Lab)

Location (town, country) of the infrastructure: Athens, Greece

Web site address: http://www.ece.ntua.gr , http://www.smartrue.gr

Annual operating costs: 460k€

Description of the infrastructure: EESL infrastructure of ICCS-NTUA is an advanced testing facility for modern power and energy systems. It includes clustered single-phase and three-phase microgrids with advanced control and protection platforms, supporting the optimal operation and monitoring of the microgrids. Moreover, the testing of prototype control and power hardware is possible through the elaborate CHIL/PHIL facility comprising of real-time digital simulation platforms, 2 power amplifiers and flexible power electronic devices. Indicative additional equipment includes residential wind turbines, axial flux generators and a micro-CHP unit. Moreover, EESL has access to a test site/living lab, the Meltemi, a few kms from Athens.

Services offered by the infrastructure: * Testing DG components within the Microgrid’s operation. * Distributed control (Multi Agent Systems) testing using HIL simulation. * Rapid prototyping of power electronic converters (Triphase converters). * PV inverter testing according to standards (MPPT, LVRT, etc.). * PHIL testing of DERs using the two power amplifiers of the lab * CHIL/PHIL testing of converter’s controllers, protection relays/PMUs

and smart grid controllers * Power curve measurement and testing of generators of Residential Wind Turbines.

Support offered under this proposal: ICCS-NTUA has been participating in the full series of DERlab NoE, DERri, ERIGrid and ERIGrid 2.0 projects and is a founding member of the DERlab association. EESL has until now successfully provided 319 access days through the support of 42 Users for the implementation of 22 Transnational Access projects, leading also to highlighted success stories. The experienced team of researchers support the access provision throughout the implementation, starting with introductory meetings for scheduling the activities, continue with preparation of a test procedure on the basis of the User's requests, support the realization and finally assist in the data processing and analysis.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: EESL is amongst the first research groups who conducted PHIL experiments in Europe back in 2011 (owning an RTDS simulator since 1997) and has advanced the HIL testing concept by conducting combined PHIL/CHIL experiments. EESL supports industrial communication protocols (e.g. DNP3, IEC 61850) and controllers.

TA26 RWTH Real-time Laboratory (RTlab)

Location (town, country) of the infrastructure: Aachen, Germany

Web site address: http://www.acs.eonerc.rwth-aachen.de

Annual operating costs: 200.000€

Description of the infrastructure: RTlab offers infrastructure to support fast prototyping of control systems and derisk new control architectures for application in power systems. This is achieved through a set of real-time (RT) simulators and hardware interfaces, both commercial and in-house development as results of advanced research at the edge between power systems and ICT.

Services offered by the infrastructure: RTlab offers a large amount of real-time simulation capacity provided by commercial and in-house developed power system simulators. A special feature of the lab is the ability to interconnect commercial RT simulators to local and remote testbenches. The in-house developed VILLAS framework provides FPGA-based cross-vendor co-simulations and integration into HPC clusters.

Support offered under this proposal: The Users will get exposed to a vibrant scientific environment performing cutting-edge research at the border of modern power systems and advanced ICT, providing an interdisciplinary research experience in the area of modern smart grids, supported by a state-of-the-art laboratory facility. RWTH researchers will guide the visitor regarding the use of the available assets.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Very large installations of RT simulation equipment, interconnection to outside laboratories, advanced automation solutions and within a Linux Foundation Energy project.

TA27 TUS Power System Stability Laboratory of Technical University of Sofia (PSSlab)

Location (town, country) of the infrastructure: Sofia, Bulgaria

Web site address: www.tu-sofia.bg; https://www.researchgate.net/lab/Power-System-Stability-Laboratory-at-Technical-University-of-Sofia-Rad-Stanev

Annual operating costs: 350.000 €

Description of the infrastructure: Due to its unique structure and state-of-the-art equipment the PSSlab at TUS offers access to both its "pure laboratory environment" and its "real-life" environment. The "pure lab" allows, analytical modeling using STATUS, Neplan and Matlab software, and physical modelling of AC and DC micro, mini and nanogrids and components including PHiL and PHHiL testing. The real- life lab allows realistic research in >10 representative remotely controlled pilot sites.

Services offered by the infrastructure: A high-quality research in the field of Voltage, Angular and Frequency Stability, AC, DC and AC+DC Smart Grids (SG) with DER, Autonomous, Micro and Mini Grids, Generation Prediction of DER, PS Automation and Control, Modeling and simulation of SG, Human and PS interaction and behaviour is offered and already performed with more than 15 Users from Europe conducting research on different topics.

Support offered under this proposal: A full scientific, technical and logistic support during and after the performance of the experiments is offered to the Users. The team is highly skilled in providing such support which was already routinely provided to external Users such as TSOs, DSOs, ICT companies, Universities, Academies etc.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: A unique option for Power Hardware and Human in the loop (PHHiL) experiments in real life environment is offered.

TA28 UPB Advanced measurements and distributed renewable resources laboratory at University Polytechnic of Bucharest (MicroDERlab)

Location (town, country) of the infrastructure: Bucharest, Romania

Web site address: https://www.microderlab.upb.ro/ , public profile at https://eeris.eu/ERIF-2000-000Y-0883

Description of the infrastructure: MicroDERlab is a Laboratory and Research Group at the University Politehnica of Bucharest reunites different installations like A mobile Synchronized Measurement laboratory composed of 6 mobile PMU racks and a datacenter, a DC ring operational at 230V, a Typhoon HIL402 with all the tools for testing power electronics controllers, multiple high-performance hardware servers, an Energy Router (3kW static converter/modular platform), a DC flexible Microgrid with a rated voltage of 230 V and a PV system; fuel cell; a variable DC power supply and a 250 Ah storage unit, a network of high reporting rate state-of-the-art smart meters

Services offered by the infrastructure: Access to the installations (DC microgrid, Synchronized measurement units, power system emulator, Typhoon HIL, Smart metering network) and access to historical database with data from the PMUs and the smart meters. In the last couple of years, the infrastructure was used for research as part of several H2020and ERA-NET projects.

Support offered under this proposal: Being an academic laboratory, the infrastructure is commonly used only by students, researchers as part of public and private grants and not third parties. Participants would receive full cooperation and support (academic and logistic) from the team.

TA29 DTU PowerLabDK SYSLAB and DTU-DTEC Wind-Based Hybrid Power Plant at Risø Campus (SYSLAB+RisøHPP)

Location (town, country) of the infrastructure: DTU Risø Campus, Roskilde, Denmark

Web site address: www.powerlab.dk

Annual operating costs:1,2 Mio € + HPP 1,8 Mio € (estimated, recently upgraded facilities)

Description of the infrastructure: SYSLAB consists of highly configurable parallel electrical and district heating distribution networks (~4km length) with >40 distributed energy resources in 5-150kW scale (incl. storage, buildings, EVs, grid emulator), featuring a very high degree of laboratory automation. The Risø HPP facility is a new 1000kVA installation (fully operational in 2024), incl. 3x 225kW wind, 300kW PV, hybrid storage (1000kWh/250kVA LiIon battery), as well as P2X, and grid and load emulators at scale.

Services offered by the infrastructure: SYSLAB and RisøHPP together offer a range from residential scale (1-5kW) to demonstrator scale of 1 MVA. SYSLAB first time demonstrated at scale fully distributed peer-to-peer voltage control; enabled system-testing of commercial of tap-changing transformer with coordination controller. RisøHPP targets HPP concept validation and commercial-grade plant controller validation.

Support offered under this proposal: Scientific: Assistance in experiment planning and design; mapping experiment to available infrastructure and configuration; modeling, guidance; remote interfacing of test equipment (data) or real-time simulators. Technical and logistic: Training on software and infrastructure use; integration of external equipment in test bays; on-site plant configuration and troubleshooting; data access

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: SYSLAB: parallel configurable full scale electricity and heat distribution grids with unique automation; RisøHPP: flexible and configurable HPP with multiple MW scale units

TA30 DTU Materials Lab at DTU Wind (MaterialsLab)

Location (town, country) of the infrastructure: Roskilde, Denmark

Web site address: https://wind.dtu.dk/

Annual operating costs:305 000 €

Description of the infrastructure: The MaterialsLab is the DTU Wind infrastructure established to perform research and consultancy on materials more specifically around composites and metals relevant for wind turbines. It is equipped with state-of-the-art manufacturing capabilities for infusion, press molding, cure monitoring, permeability, and 3D printing. Characterization of materials is also key and access to ESEM or optical microscope

is available under this facility. Regarding material testing, several machines are available under Testlab and Bearinglab for both composites, metals and bearing tests. Having all this under the same umbrella is unique.

Services offered by the infrastructure: As mentioned above, the different labs under MaterialsLab can offer a broad range of services with a strong focus on wind energy application. These services are divided into two main categories, contribution to research projects as part of consortium and commissioned work for the industry. Regarding commissioned work, the labs are delivering results for companies all over Europe, both material supplier and blade manufacturers (ca. 10 different).

Support offered under this proposal: For composites, accredited testing will be available to the Users as well as manufacturing and characterization techniques. To do so, experienced research technicians, development engineers and scientist will be direct supports. Linking experimental activities to modelling is already one of the specialty in DTU Wind and this would benefit directly the Users.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The uniqueness of the infrastructure resides in the coupling of all the above mentioned competences under the same roof. This allows to perform research on several aspects linked to the wind sector. Moreover, linking the different length scales will enable the future development of wind turbine blades.

TA31 UKRI UK Geology Observatory Glasgow (UKGEOS)

Location (town, country) of the infrastructure: Glasgow, UK

Web site address: https://ukgeos.ac.uk/glasgow-observatory

Annual operating costs: €44.8000 (estimated full economic cost, just moving to operational stage)

Description of the infrastructure: UKGEOS Glasgow provides scientific and engineering infrastructure for investigating shallow geothermal energy and thermal storage resources available in abandoned and flooded coal mine workings. Final commissioning is due at March 2023. It comprises 12 boreholes from 16-199 m deep including two abstraction and two re-injection mine water boreholes; a heat centre with three types of heat exchanger; a 200kW output heat pump/chiller; a sensor logging system and state-of-the-art downhole fibre optic and geoelectrical sensors. There is no equivalent RI in Europe open to Users.

Services offered by the infrastructure: UKGEOS Glasgow infrastructure is flexible for researchers to come and use for their investigations into underground thermal storage research in a real, at-scale urban setting. For example, research into resource size, heat transfer efficiency, development of new techniques. There is not currently an international User base because it is in final commissioning stages.

Support offered under this proposal: Currently, Users design their own experimentation. Under trans-national access, the British Geological Survey can support Users to turn ideas into a realistic, deliverable investigations. Support can also be in the form of knowledge transfer in how borehole and geothermal infrastructure works, and to assist in coordinating multi-disciplinary experiments.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: This infrastructure is at the scale of a mine water heating/cooling/storage scheme in an extremely well characterised and monitored underground space, with a growing body of time-series sensor and monitoring data. In an urban setting with a complex land use history, it provides realistic challenges for deployment of technologies towards emission-free cities, where thermal/cooling demand is greatest.

TA32 SOTOCARBO X-to-Liquids Plant (XtL)

Location (town, country) of the infrastructure: Carbonia, Sardinia (Italy)

Web site address: https://eccsel.org/catalogue/79

Annual operating costs: not available – recently upgraded facility

Description of the infrastructure: The X-to-Liquids plant is designed to test processes for liquid fuel production from captured CO2 and hydrogen (from renewable sources), and from plastic waste/biomass syngas. The system also allows to perform catalyst screenings. The XtL plant is made up of a bench-scale fluidized-bed gasifier for syngas production from biomass and/or plastic waste, a purification section of the syngas and a highly flexible section for syngas or CO2 conversion into liquid fuels. Represented technology: bioenergy, hydrogen.

Services offered by the infrastructure: The facility is located in a laboratory of the Sotacarbo Research Centre. All the services, instruments and the other facilities of Sotacarbo are therefore available in support of the research activities performed at the XtL Pilot, such as: biomass characterization, biomass preparation, liquid fuel analysis,

etc.

Support offered under this proposal: Full scientific, technical and some logistic support is offered to the Users. This is routinely provided to all external Users.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Full scientific, technical and some logistic support is offered to the Users. This is routinely provided to all external Users.

TA33 IEES Centre of competence ‘’ HITMOBIL’’- Technology and Systems for Generation, Storage and Utilization of Clean Energy (CC HITMOBIL)

Location (town, country) of the infrastructure: Sofia, Bulgaria

Web site address: https://hitmobil.iees.bas.bg ; https://www.iees.bas.bg

Description of the infrastructure: CC HITMOBIL is a newly built RI for development, testing, optimization and implementation of modern systems for renewable energy storage and mobility, unique at national and regional level, that provides up to date facilities to carry out breakthrough and underpinning research in the field of whole “green” energy cycle: RES– Storage– Conversion and Consumption.

Services offered by the infrastructure: Internationally open infrastructure which offers transfer of innovations, spreading of knowledge and training of highly-qualified experts for the successful transition towards an economy of zero carbon emissions, especially in the light of the Green Deal of the EU.

Support offered under this proposal: possibilities to work with the high-quality research environment; expertise in the topical clean energy fields combining fundamental scientific knowledge and focused applied research; friendly work atmosphere, assistance for accommodation and the everyday life needs of the visiting researchers

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Unique infrastructure for Balkans region which offerc most modern equipment facilities for the development, testing, optimisation and industrial implementation of modern systems for mobility and accumulation of renewable energy with focus on advanced batteries and electrochemical hydrogen technologies.

TA34 CRES 100m mast with Lidar at complex terrain (Lid100ct)

Location (town, country) of the infrastructure: Lavrion, Greece

Annual operating costs: 85.000,00 (€)

Description of the infrastructure: The mast is located at CRES test station, approx. 50 km SE of Athens, 1km from shore, on a (mild) complex terrain. The met mast is fully instrumented at 5 levels (cup, vanes, ultrasonics, thermometers, etc). A lidar completes the instrumentation providing further measurements up to 200m heights. This facility was among the first where discovered (and explained) the LIDAR’s systematic bias in complex terrain.

Services offered by the infrastructure: The facility aims to become a test-bench platform for comparing forecast predictions, necessary today for the Day-Ahead Energy Market, against online data available with web technologies (HTTP JSON/XML requests). Additionally, met mast-LIDARs dataset serves to verify and optimize CFD solvers in complex terrains, by evaluating the lidar bias error per direction and per height.

Support offered under this proposal: The facility is regularly monitored and maintained by CRES personnel. Evaluation of forecast accuracy is already an on-going activity, using several global/mesoscale models. Support to new Users is intended by sharing the measured wind conditions and by common research to identify the optimum ML/AI techniques, when transferring the conditions generated at the model grid (generally few km away) at the met mast location. Round-robin blind tests could also be organized.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Tall met mast, with web-enabled technologies for on-demand data, operating in complex terrain and near shore (1 km distance from the shore).

TA35 CTC Marine Corrosion Test Site “El Bocal” (MCTS El Bocal)

Location (town, country) of the infrastructure: Santander, Spain

Web site address: https://centrotecnologicoctc.com/en/mcts-marine-laboratory-el-bocal/

Annual operating costs:~52.000 €

Description of the infrastructure: The MCTS "El Bocal" is a marine laboratory to test samples and components subjected to real offshore environment. Commissioned in 2015, is placed in open water. By this reason the corrosion and biofouling conditions are quite similar to the ones any material faces along its life cycle in a marine environment. The designed setup allows to cover a wide range of corrosion and biofouling environments. Four exposure conditions can be studied: submerged, tidal, splash and atmospheric.

Services offered by the infrastructure: The main service offered by MCTS El Bocal is the exhibition of materials and/or components in real marine environment. Several National and European research projects have used this facility showing good feedback from the market. Private companies and research centres have used this facility due to the high similarities with the real environment of static structures to validate behaviour of components or materials in harsh environment. 338 weeks of access have already been allocated. An average of 4 international access per year are granted.

Support offered under this proposal: The Users will have fully access to the infrastructure in two ways: face-to-face or virtual access (access to data if available). The typical testing period is 12 months and the estimated number of days spent by the User at the infrastructure per access is 2. A project manager and project leader will support during proposal writing. A project manager and a laboratory technician will be available during accessing this infrastructure. If needed, CTC can provide support to the Users with logistic or other activities related with the exposure of samples at MCTS El Bocal.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The MCTS El Bocal is the only open bottom-fixed offshore facility in Europe to study degradation effects in materials and components. It was included in the European project MARINET2 being one of the most demanded installations in the Project.

TA36 DIFFER Large scale research infrastructure for energy materials processing and characterization at DIFFER (EnergyMaterials@DIFFER)

Location (town, country) of the infrastructure: Eindhoven, the Netherlands

Web site address: https://www.differ.nl/facilities

Description of the infrastructure: EnergyMaterials@DIFFER consists of a combination of large scale, in-house build RI for materials processing and characterization * Magnum PSI – linear plasma generator (14 m) for studying plasma-wall interaction in fusion reactors and nanostructure processing * PLD4Energy (2023-28) – vacuum cluster with small and large area pulsed laser deposition chambers incl. multiple, unique in-situ diagnostics for process upscaling, materials screening, and component fabrication * Ion beam facility – ion beam analysis and ion beam irradiation, 3.5 MV singletron, 4 beam lines; * home-build plasma set-ups with multiple diagnostics for e.g. CO2 dissociation studies (1 kW to 10 kW).

Services offered by the infrastructure: All infrastructure of EnergyMaterials@DIFFER are home-build and one-of-a-kind allowing to process and characterize materials under realistic operating conditions. Example: Magnum-PSI exposed tungsten wall components to the equivalent of a full year of high-power fusion operation in the future ITER reactor; 50 times more than previous records; only 18 h to complete, showing its unique capability to investigate materials under a sizeable part of their lifetime in ITER.

Support offered under this proposal: All infrastructures are/will be operated as User facilities, such as Magnum-PSI known in EuroFusion, including support by highly-trained and specialized technicians/ scientists, individual training, project management structure, software acquisition system enabling data transfer, administrative support. Smaller scale, content-wise connected infrastructure @ DIFFER can be made available for externals as well. DIFFER located on the campus of the Technical University of Eindhoven, in Brainport Eindhoven region, is well-integrated in academic and industrial surrounding.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Collection of unique, home-build large scale RI (and in combination with small scale infrastructure) to process and characterize complex energy materials - close vicinity and entire value chain of processing and characterization

TA37 Fraunhofer IWES DemoCenter BladeMaker

Location (town, country) of the infrastructure: Bremerhaven, Germany

Web site address: https://www.iwes.fraunhofer.de/

Annual operating costs: 126.600,00 (€)

Description of the infrastructure: The DemoCenter includes a gantry with fife axes with a maximal load bearing of 400kg, and a parallel guided platform system (up to 4to). We work with two component mixing equipment and a cutting table. We also work on issues like pultrusion. For the process evaluation we use force measurement, 3d coordinate measurement as well as confocal microscopy systems.

Services offered by the infrastructure: Illustrating state of the art production-related processes like milling, grinding, cutting or resin infusion and adhesive applications as well as fibre composite component production. Data recording and evaluating using appropriate sensor technology.

Support offered under this proposal: We work with well-known rotor blade manufacturers and suppliers. We offer the possibility of carrying out certified tests in our in-house technical centre. We offer the use of infrastructure for research and demonstration purposes. We provide assistance in the production of fibre composite components. We are interested in related topics such as sail technology for sustainable maritime mobility.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: With our mould sets and our infrastructure, we are able to cover almost the complete production of a rotor blade. With direct mould construction, we can also quickly produce scaled prototypes.

TA38 Fraunhofer IIS

Location (town, country) of the infrastructure: Nuremberg, Bavaria, Germany

Web site address: www.iis.fraunhofer.de

Annual operating costs: €191M

Description of the infrastructure: Conducts world-class research on microelectronic and IT system solutions and services. 1100 employees with 14 locations in 10 cities. 75% financed by contract research projects.

Focus on Wireless self-powered sensors and actuators in IoT &Industry 4.0 for applications like condition monitoring predictive maintenance, transportation, logistics, building automation, safety, wearables, etc. Ref

https://www.iis.fraunhofer.de/en/ff/lv/iot-system/tech/energy-harvesting.html

For Renewable Energy the infrastructure offers an electronic lab with a focus on small electronic devices in the ultra-low power range related to energy harvesting and wireless power transfer and WSN protocols.

Services offered by the infrastructure: Characterization of energy harvesters and power management circuits in low-power range: measurement devices (e.g. shakers) and test stands can generate ambient conditions (e.g. climate chambers, solar simulation) & measure output characteristics. Data from use cases & environmental studies are available. Customization of technology platforms of energy harvesting systems, micro-power management modules and self-powered wireless sensors: hardware and software can be adapted to work with modules and components from Users, e.g. dc-dc converters customized to different harvesting modules (PV, TEG); wireless radio modules to be combined with harvesters to build real-world use cases and conditions.

Support offered under this proposal: Leverage experience RI project EnABLES (www.enables-project.eu) where IIS did 15 TAs. Involved in projects related to harvesting and self-powered IoT sensors in large networks of industrial and scientific partners, e.g. KDT project LoLiPoP IoT (Long Life Power Platforms for Internet of Things), German BMBF projects GreenICT@FMD and EIOTI (Self-powered IoT infrastructure). The User is stimulated by parallel projects, available demonstrations, workshops with partners and customers and discussions with peers.

TA39 Fraunhofer IMS

Location (town, country) of the infrastructure: Duisburg, Germany

Web site address: https://www.ims.fraunhofer.de/en.html

Annual operating costs: €30M

Description of the infrastructure: Development and pilot production of innovative microelectronic circuits, systems and applications in Health, Industry, Mobility and Space & Security, supported by specific labs and equipment Labs and measurement equipment - Fraunhofer IMS. Semiconductor cleanrooms for 200 mm wafers that enable MEMS processing for post CMOS-integration. Can develop miniaturised PV and ASICs for applications such as ultralow power sensor readout circuitry and wireless front ends. Fraunhofer-inHaus-Center is a system level demonstration, test and open-lab-facility for various application e.g. decentralized use of renewable energy and

bidirectional charging of EVs

Services offered by the infrastructure: FhG-IMS offers several ways to support partners with services and use the facility: •the classical research and development contract services,•research workgroups consisting of customers, external experts and Fraunhofer IMS researchers, located in Fraunhofer IMS in designated office and lab spaces and •experimental labs (Makerspaces), where Users can share labs and equipment by support of Fraunhofer IMS technicians for the build-up of own ideas.

Support offered under this proposal: •Studies and concepts of ICT-solutions for the integration of renewable energy sources,•Embedded AI application center: (ZaKI.D = Zentrum für angewandte KI in Duisburg) for applications such as event detection, condition monitoring, predictive maintenance, etc.,•RF harvesting in IoT design & test lab: support design, simulation, simulation-environment, realization,•Thermoelectric Generators (TEG) Testbed: A multiple hydraulic circuit testbed supported by data capture equipment for testing, characterization and evaluation of TEG harvester

TA40 Fraunhofer Center for Silicon Photovoltaics (CSP)

Location (town, country) of the infrastructure: Halle (Salle), Germany | Schkopau, Germany

Web site address: https://www.csp.fraunhofer.de

Annual operating costs: 6,500k EURO (in 2020)

Description of the infrastructure: Fraunhofer CSP is your partner für applied research in the field of silicon module fabrication and module design. Further research at subtopic like cell interconnection, encapsulant material and module efficiency are provided as well as research services for module characterization, defect diagnostics, element analytics and fem-simulations.

Services offered by the infrastructure: In Detail the following research services and equipment are provide. Solar cell string manufacturing devices (Soldering/ Electrically Conductive Adhesive) as well as laminators for modules and laminates for all current panel sizes are offered for tests and process optimizations. Electroluminescence, photoluminescence, IV-curve Measurement, accelerated climatic tests (Weathering tests of materials, coupons, and mini modules, standard modules) and mechanical testing for module characterization were performed for customer. Target preparation, light microscopy and REM analysis for defect diagnostic and root-cause of defects analysis are offered. Material analytics of raw materials (cells, ribbons, cross connectors, encapsulation materials, backsheets and glass) as well as additive analytics: new and after aging are part of the research. Concomitant to this the determination of adhesion properties as function of materials and application process can offered. Multiple servers for simulation (mechanical, thermal, electrical) to link material properties, module design and failure modes are running at Fraunhofer CSP. Process data analysis are also performed on the servers.

Support offered under this proposal: Users will offer previous projects discussions to identify research challenges and create a solution for each demand. Development and research as well as reporting and sample handling are done professionally (confirmed by valid ISO 9001:2015 certification) and individually for each costumer starting with the first contact and ending by User satisfaction.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Not available at other facilities is the covering of all PV topics of the entire process chain. Detail and defect analysis utilizing a multi-scale characterization approach that is available only at Fraunhofer CSP. In addition, a powerful characterization tool MFI (magnetic field imaging) as well as process equipment like the Electrically Conductive Adhesive (ECA) cell stringer for lead free manufacturing for standard and shingle cell layout and the 3d Lamination process are provided by the Fraunhofer CSP.

TA41 HZB Energy Materials In-Situ Laboratory (EMIL)

Location (town, country) of the infrastructure: Berlin, Germany

Web site address: https://www.helmholtz-berlin.de/forschung/quellen/corelabs/emil/index_de.html

Annual operating costs: 1.9 Mio. € (2021)

Description of the infrastructure: EMIL at BESSY II uniquely combines industry-relevant deposition tools that are in-system connected to off- and on-synchrotron analytics providing a complementing set of photon-in – electron-out and photon-in – photon-out spectroscopies that make full use of EMIL's "two-color" beamline, allowing for 'depth-dependent' characterization of thin-film layer stack samples using photons from the soft (80 eV) to the hard (10.000 eV) X-ray energy regime.

Services offered by the infrastructure: Recently, EMIL's UHV-based analysis setup was equipped with the required auxiliary infrastructure to allow for the characterization of optoelectronic devices while applying a BIAS and/or application of illumination, paving the way of operando studies of PV materials and structures. Additionally, the recently commissioned OÆSE endstation enables operando studies of energy storage and hydrogen producing systems with the potential to also enable in-situ studies of corrosion processes relevant for heat storage used in CSP plants.

Support offered under this proposal: Available services include mail-in/out or on-site activities, off- or on-synchrotron analytics with or without deposition activities. Experiment and operando cell design, deposition, measurement, data management, and evaluation support is routinely offered. Synchrotron experiments have to go through the bi-annual GUP process of BESSY II.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: (1) EMIL offers a suite of complementary X-ray spectroscopic analytics. (2) The "two-color" EMIL beamline provides X-rays in the soft and hard X-ray regime. (3) EMIL combines unique analytics with industry-relevant preparation. (4) EMIL allows the study of materials under operating conditions relevant for PV, energy storage, and hydrogen producing systems.

TA42 IREC Energy SmartLab (IREC Energy SmartLab)

Location (town, country) of the infrastructure: Sant Adrià de Besòs, Barcelona, Spain

Web site address: https://weblab.energysmartlab.com/home/ ; www.irec.cat

Annual operating costs: 120.000€/year

Description of the infrastructure: This laboratory provides unique emulation and testing facilities which operates a number of configurable units (which can work as energy generators, storage, loads), also real storage (flywheel, super-capacitors and batteries), wind turbine emulators (SCIG, DFIG as well as 3-ph and 9ph-PMSG), and EV charger. There is a grid emulator allowing different grid faults and configurations. Finally, the laboratory includes a Line emulator and OPAL-RT and TYPHOON-HIL for rapid-prototyping, HIL and Power-HIL. A descriptive video can be found in the following link: https://youtu.be/VgWzPUcAVAk

Services offered by the infrastructure: The Energy Smart Lab offers the following services: Grid code validation; Pre-certification testing and proof of concept development and experimental testing; Grid integration testing, immunity to grid disturbances, grid quality (harmonics and flicker); Endurance and performances tests for grid components; Battery testing and characterization, validation, testing of 2nd life batteries; Testing of EVs chargers; Development of gateways; Cybersecurity vulnerabilities and risks. Several EU projects and industrial companies use the Lab for their validations and demonstration

Support offered under this proposal: Full team development and support, prior to visits for test preparation and hosting stages on research will be given. A team of laboratory technicians and project researchers are actively on the laboratory duties.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: It is certified by the Spanish Ministry of Defense to handle EU restricted data.

TA43 NTNU Recyclable and Efficient Silicon Ingots and Wafers (RESIW)

Location (town, country) of the infrastructure: Trondheim, Norway

Web site address: www.ntnu.no

Description of the infrastructure: The RESIW infrastructure will focus on recycling of silicon ingots and wafers, the fundamental aspects of silicon refining and ingots crystallization as well as the role of impurities and defects in the, e.g. recycling process. RESIW consists of the following laboratories and tools: i) Recycling, Refining and Crystallization of Silicon; ii) Characterization of ingots and wafers.

Services offered by the infrastructure: The services offered consist of: i) equipment and tools to study the fundamental aspects of recycling with focus on the role of defects and impurities on the silicon ingots quality; ii) online training on the use of crystallization furnaces of silicon ingots; iii) refining furnaces for silicon; iv) crystallization furnace for silicon ingots; v) highly qualified scientific and technical personnel.

Support offered under this proposal: The Users are provided with an initial health-safety-environment (HSE) course followed by a dedicated training for the specific tool that they are going to use. For each laboratory we have a technical responsible and a scientific responsible.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The tools are state-of-the art equipment and are run from high qualified personnel and top scientists. Very few laboratories in the world have access to the types of refining and solidification furnaces that we have at NTNU. High level publications are expected as outcome of this cooperation.

TA44 OFFIS Energy Laboratory (OFFIS eLab)

Location (town, country) of the infrastructure: Oldenburg, Germany

Web site address: https://www.offis.de/en/applications/living-labs/sesa.html

Description of the infrastructure: OFFIS eLab offers large-scale multi-domain experiments on smart energy systems under realistic conditions to facilitate innovative solutions and new components integration by providing main features such as real-time communication, mosaik co-simulation, cyber security platform, big data, agent-based management, SCADA, and smart meter gateway.

Services offered by the infrastructure: OFFIS eLab has experience in providing services to academic and industrial Users in Europe for accessing infrastructure physically and virtually. A real-world laboratory environment is provided for investigating ICT communication and interface as well as cybersecurity investigation.

Support offered under this proposal: OFFIS eLab helps Users before actual access throughout the access period to ensure the experiment planning and execution process. A special feature of the OFFIS eLab infrastructure is the topology-free allocation which provides remote access to external Users for software-based simulations with the possibility of coupling industrial OT devices in the laboratory.

TA45 PLOCAN Test Site

Location (town, country) of the infrastructure: NE Gran Canaria, Canary Islands (Spain).

Web site address: https://www.plocan.eu/en/test-site/

Annual operating costs: 235.000€/year

Description of the infrastructure: PLOCAN provides a 23km2 offshore test site with a maximum depth of 600m for a wide range of marine technologies, with access to a unique ecosystem with deep-sea observation systems in real conditions, to accelerate the development of knowledge, sustainability and responsible use of the marine environment following the Sustainable Development Goals (SDGs). The Test Site is equipped with an electrical and communications infrastructure, consisting of two medium-voltage (5MW each) submarine cables, for connecting technologies that use natural resources to generate electricity. These cables supply the generated energy to the island's power grid. PLOCAN test site is under the support and control of PLOCAN Marine Platform.

Services offered by the infrastructure: Extraordinary scientific aspects/possibilities of the infrastructure not available at other ones, as it can be used all year around due to the marine and climate conditions of the Canary Islands. A mean of 4-5 international Users access the infrastructure annually and a similar number of national Users do it too. Hosting devices at the Test Site could be:

A) Not connected to the electric grid: Allowing research and development of devices related to renewable energies, as well as other offshore technologies (e.g. installation of aquaculture devices, wind and wave systems, launching devices, mooring observation devices, etc.). Capacity is limited to the space and depth available within the reserve area managed by PLOCAN.

B) Connected to the electric grid: Allowing research and development of devices related to renewable energies, as well as other offshore technologies, by means of possible connections to electrical and communications infrastructure (REDSUB). There are two 5 MW / 13.2Kv connections available.

Support offered under this proposal: PLOCAN offers access to its facilities on land and offshore in order to promote Research, Development & Innovation in the marine-maritime sector, providing specialized services such as testing and demonstration of technologies, consulting, integrated management and training.

Several scales/levels of testing are offered: fixed and floating experimental devices, special structures, testing of components in the marine environment, operational testing in operation of marine technologies, optimization of equipment at sea and, in general, any test of technologies, concepts or experimental services in the marine environment.

TA46 RSE Multi Energy Test Facility (METF)

Location (town, country) of the infrastructure: Milano, Italy

Web site address: https://www.rse-web.it/

Annual operating costs: 236.188,45 €

Description of the infrastructure: RSE Multi Energy Test Facility focuses on the integration of different energy vectors, namely electricity, heat, natural gas and hydrogen. It will be composed of three main subsystems: the electrical smart-grid (DER-TF, currently available), the heating/cooling network (available in 23H2) and the gas network (including natural gas and hydrogen blends, available in 24H2). Finally, a Power Hardware In the Loop system will be installed in 23H2.

Services offered by the infrastructure: RSE Multi Energy Test Facility allows to test both single-domain related components, monitoring and control systems, as well as the integration of multiple energy vectors, testing control and management strategies for the whole energy system. The electrical subsystem was already accessible in the context of the EU projects DERri (FP7), ERIGrid and ERIGrid2.0 (H2020), for a total of 11 hosted projects and 90 access days provided to external researchers.

Support offered under this proposal: Various RSE research groups work in the Multi Energy Test Facility. Researchers and technicians with electrical, process, control and ICT skills can support external Users during various phases of their projects, from the detailed test design to interfacing with the field, executing the tests and analysing the results. Joint scientific papers are then often produced.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The integration of a different energy vectors in the same experimental facility makes it possible the validation of complex energy management systems.

TA47 SINTEF Norwegian National Smart Grid Laboratory (NSGL)

Location (town, country) of the infrastructure: Trondheim, Norway

Web site address: https://www.sintef.no/en/all-laboratories/smartgridlaboratory/

Annual operating costs: approximately 50k€ Description of the infrastructure: The infrastructure is tailored to conduct HIL and PHIL tests on electrical system and components up to 400 V ac, 700 V dc and 130 kVA power. The facility integrates state-of-the-art components in a very versatile electrical infrastructure for testing smartgrids solutions and integration of renewables in the power system.

Services offered by the infrastructure: Services offered by the NSGL lab include: Characterization testing of components and control systems, compliance to grid codes or standards, assessment of impact of renewables on the grid. NSGL normally hosts between 5-10 external accesses per year.

Support offered under this proposal: SINTEF ER has been routinely providing support to external Users for planning and conducting laboratory experiments in the NSGL. This normally involves presence of SINTEF staff for supervision of the activities in the laboratory during the access. Results from external access have been published in scientific papers.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The facility offers a state-of-the-art integrated environment where HILand PHIL experiments can be conducted on a cyberphysical representation of a power system including converters, generation units and communication infrastructure.

TA48 TECNALIA Offshore Materials, Components and Equipment Lab (HarshLab)

Location (town, country) of the infrastructure: Bizkaia, Spain

Web site address: https://harshlab.eu/en/

Annual operating costs: 300k€

Description of the infrastructure: HL is a unique offshore floating laboratory fully dedicated to testing of materials and components for offshore sector. Connected to BIMEP's submarine grid by an umbilical cable (end '23), main dimensions are 8,5m diameter, 7m high, 120m2 deck and a total weight of 120t. Sensing and modelling of floating structures are highly demanded by our customers and partners, including the validation of umbilical cables, behaviour of PV panels for floating industry, etc. HL is a truly cross-cutting and flexible infrastructure.

Services offered by the infrastructure: HL can perform research on anticorrosion and antifouling coatings and materials in atmospheric, splash and immersion zones, supported by a small ROV. The bottom hull is equipped with two available 755 mm connectors for testing of umbilical cables. Research from both European (MARINET2,

NEMMO, NEWSKIN, …) and private interdisciplinary projects has been performed since 2018. Meteoceanic reports are provided for each access including data from HL meteorological station and external sources (oceanographic buoys and meteorological stations nearby).

Support offered under this proposal: Due to BIMEP's safety requirements, only researchers with GWO certifications are allowed to operate onboard. Tecnalia has already trained a multidisciplinary team of researchers capable of access and operate in HL. More than 4 years of accesses to the laboratory provided us with the expertise required for taking go/no-go decisions, contacts with local boat services and with Bimep's personnel.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: HarshLab offers open ocean conditions at a 10' navigation from the nearest port and grid connection (end 2023), which makes this infrastructure unique for testing umbilical cables and connectors in operation.

TA49 TUBITAK Marmara Research Centre Biomass Thermochemical Conversion and Upgrading Laboratory (TU-BIOTHE)

Location (town, country) of the infrastructure: Gebze –Kocaeli, Turkey

Web site address: https://mam.tubitak.gov.tr/en

Annual operating costs: (€)633.600

Description of the infrastructure: TU-BIOTHEC has pyrolysis, torrefaction gasification, batch scale chemical looping combustion/gasification, fluidized bed combustor and hydrothermal carbonization/liquefaction reactors for biomass conversion studies. The infrastructure is capable of studying catalytic processes and catalyst development for bioenergy applications as well as chemical looping and CO2 utilization bio-fuel upgrading and chemical synthesis for different value chains. Studies with complete line-ups such as pyrolysis to sustainable aviation fuels or gasification to advance materials synthesis, CO2 capture and conversion to energy carriers, and Biomass to hydrogen including hydrogen purification and storage are possible as well as separated research on units. Solar and fuel cell integrated research is available with pyrolysis, hydrothermal and gasification setups.

Services offered by the infrastructure: TU-BIOTHEC offers a skillful laboratory beside research setups such as biomass characterization, ICP-OES, XRF; Gas Chromatographs, Online gas analyzers, Thermogravimetric analyzer, Surface and Catalyst Characterization, Intelligent Gas Sorption Analyzer, Grindability analyzer, etc. The location is close to one of the airports in Istanbul and a wide variety of accommodation opportunities. Recently a complete system is established and tested on biomass torrefaction to methane synthesis including gas cleaning and conditioning. A pressurized oxy-combustion system is completed and tested with torrefied biomass including CO2 capture and utilization. Biomass to hydrogen line, including a fluidized bed gasifier with catalytic tar cracking, gas cleaning and PSA unit.

Support offered under this proposal: Researchers will work with the support of the permanent staff of the laboratory Fifteen researchers (two Associate Professors, nine PhDs) and four technicians. The researcher will have access to RI as well as the facilities and connections. TU-BIOTHEC offers a variety of software capacities for modeling and simulation studies.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The infrastructure is located inside a big campus with different expertise (material science, biotechnology, computer science, etc) and analytic equipment open for access which makes it unique for extraordinary research capacity.

TA50 UNIBologna Carbon recovery, regeneration and recycling technologies for the production of advanced materials and the energy transition (ZEROCARBON)

Location (town, country) of the infrastructure: Bologna, Italy

Web site address: https://centri.unibo.it/frame/it

Annual operating costs (€):120.000 €/year (excl. investment costs and personnel)

Description of the infrastructure: Laboratories for low-carbon foot print technologies for the production of advanced materials and the energy transition: FIP-WE@UNIBO: Lab on Waste Valorisation and Future Energy Supply, Enercube Lab: Knowledge transfer in electrochemical energy storage/conversion technologies, HC-hub-ER: Lab on Hydrogen and Carbon use from Renewables Energy.

Services offered by the infrastructure: FIP-WE@UNIBO: transformation of residual biomasses for energy purposes and production of functionalized carbons for effluent treatments with recovery of nutrients and critical materials, and for carbon sequestration. Enercube Lab: development and prototyping of batteries, supercapacitors

and fuel cells. HC-hub-ER: sustainable production of hydrogen and carbon capture.

Support offered under this proposal: FIP-WE@UNIBO: TRL-4 pyrolizer and instrumentation for the chemical and physical characterisation of bio-fuels and carbons from pyrolysis, Enercube Lab: main facilities for electrochemical studies of cells and components of batteries and supercapacitors, fuel cells, inert environments (Drybox, Dry room under setting), HC-hub-ER (under setting) rapid scale-up of processes addressing carbon capture and utilization

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: ZEROCARBON brings together interdisciplinary skills, including materials science, chemistry, mechanical and chemical engineering.

TA51 UNIChalmers Chalmers wind turbine (Chalmers WTG)

Location (town, country) of the infrastructure: Björkö at Skarviksvägen, 20 km west of Göteborg, Sweden.

Web site address: https://www.eawe.eu/site/assets/files/downloads/committees/twtc/TWTC-chalmers-twt-facilities.pdf

Annual operating costs: 30.000 €

Description of the infrastructure: Chalmers wind turbine has variable speed operation with a direct driven generator and a frequency converter. The wind turbine has a rated power of 45 kW and rated speed of 75 rpm. The unique wooden tower is 30 m high; the blades of carbon fibre are 7.5 m long, and the turbine diameter is 15.9 m. Chalmers with its partners have designed and erected the wind turbine, with full insight into design, drawings, hardware, and software. Turbine simulation models have been developed in FAST, Ashes and Vidyn. Services offered by the infrastructure: The wind turbine can be used for both smaller investigations, for example checking tower eigenfrequencies, or larger ones about for example lifetime estimation of pitch bearings due to frequency control or wake development in complex terrain. There can also be projects regarding the wind turbine's role in a micro grid and how control of the voltage in the grid can be done by reactive power control from the converter. Recent research conducted at the turbine is frequency control of the wind turbine. Different services for frequency control have been tested such as Fast Frequency Reserve and Frequency Containment Reserve as well as continuous frequency control. A coming project will continue the frequency control research and include black start capability as well as island operation with energy storage.

Support offered under this proposal: Simulation models of the wind turbine are available. All wind turbine measurement channels are sampled every 10 ms and stored in a file server, meteorological data every second. All data is available for research partners. The wind turbine is operated by a research technician who have written the control code, therefore is it possible to update/test new control code for different research project. The technician supports the researchers with operation of the wind turbine, updates of the control code, further improvements and calibration of measurements signals as well as data management.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The researchers have the possibility to apply self-developed code for the control of the wind turbine. All mechanical data of the wind turbine is well known, and simulation models have been verified against measurements

TA52 UniCyprus Distributed energy resources to Grid Smart Facility Infrastructure (DGSF)

Location (town, country) of the infrastructure: Nicosia, Cyprus

Web site address: http://www.pvtechnology.ucy.ac.cy/DER-GRIDSmartFacility.html

Annual operating costs: €36.000

Description of the infrastructure: The DER-GRID Smart Facility is a flexible and scalable research and development (R&D) facility that comprises of a state-of-the-art solar photovoltaic (PV) indoor and outdoor test infrastructure and a nanogrid, aimed to demonstrate renewable integration concepts. The facility operates as a Living Lab and uniquely exposes researchers to real-life scenarios of future renewable-powered grids.

Services offered by the infrastructure: The infrastructure provides solar characterisation services and qualification testing of renewable integration technologies in smart grids. Access is further provided to high-resolution data streams acquired from the test-bench systems, enabling scientists to perform high-quality research. Currently, the facility is used by >5 Users/year and services are provided to >20 companies/year. Support offered under this proposal: The facility involves 10 top-level researchers, 5 infrastructure technicians and 2 administrative members dedicated to support the activities of the Users. This support is already routinely provided to external Users.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The facility provides complementary indoor and outdoor PV testing possibilities and advanced test-beds for testing grid integration technologies at an actual nanogrid environment.

TA53 UNIEdinburgh FastBlade (FastBlade)

Location (town, country) of the infrastructure: Rosyth, KY11, UK

Web site address: https://www.fastblade.eng.ed.ac.uk/

Annual operating costs: € 694.624,81 inc 25% indirect costs

Description of the infrastructure: FastBlade offers structural fatigue testing of tidal turbine blades and other large composite structures. We have 4 unique state of the art digital displacement hydraulic pumps, which offer the ability to recover up to 80% the energy used during fatigue testing. This allows for both fast and cost-effective testing of full-scale components.

Services offered by the infrastructure: Static Testing: General testing of composite structures to understand performance and failure modes. Fatigue testing: FastBlade offers accelerated fatigue testing at rates of up to 1 Hz for full scale tidal tests and up to 5 Hz for component testing. Certification: FastBlade aims to offer testing as a certified ISO 17025 test centre by 2024. Analysis: Fastblade offers analysis services pre and post testing, Support offered under this proposal: Fastblade can offer machine time to carry out structural testing, access to personnel with expertise in structural testing, composite design and manufacture, ocean loading, and data analysis. The results from testing at FastBlade can offer new insights into the performance of marine/tidal structures which are not possible to observe through ocean deployment.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Regenerative fatigue testing with up to 80% energy recovery at 1Hz and above. Load capacity up to 3MN and 15MNm. Bespoke data acquisition and control system. Access to world renowned academics.

TA54 UNIPadova Laboratory of Fluid Machines and Energy Systems (TES Lab)

Location (town, country) of the infrastructure: Padova, Italia

Web site address: https://research.dii.unipd.it/tes/facilities/

Annual operating costs: about 210.000€.

Description of the infrastructure: The lab has state-of-the-art Francis, Kaplan and Pelton turbine test rigs and a pump test rig to conduct research activities in the hydropower field (optimal design and performance of hydraulic machines). The TES Lab can be adapted for innovative experimental campaigns on the hybrid storage system (hydropower + other storage systems (to be provided by the User).

Services offered by the infrastructure: The TES lab represents a key infrastructure for the development and optimization of design and operation strategies and for studies on off-design and flow field instabilities. The TES group has received awards for research activities focusing on the hydrodynamic instability in pump-turbines and on the flow condition and cavitation behaviour of Pelton turbines, is coordinating the H-HOPE Horizon Europe project, and has important on-going collaborations with international players and companies.

Support offered under this proposal: Technical support will be provided by the Department of Industrial Engineering (DII) for the commissioning of the RI . Facilities set-up will be under the responsibility of the DII which will provide turnkey service. Training activities will be available to ensure a safe and fruitful use of the test rigs.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The TES Lab represents one of the five European centres fully equipped for conducting experimental activities in the hydraulic machines and hence is an excellence in the field.

TA55 UNIPerugia Electrical energy Storage and Hydrogen Lab (e-StorHy Lab)

Location: (town, country) of the infrastructure: Perugia, Italy

Web site address: www.unipg.it

Annual operating costs:130.249,15 € (considering 215 working days)

Description of the infrastructure: The e-StorHy Lab consists of two sections: 1) Energy storage: a test bench for reactive metals steam oxidation on small powder amount is offered for hydrogen production tests via reactive

metals. 2) Fuel cells and electrolyzers: a SOFC/SOE/rSOC square single-cell test rig is offered to Users; potentiostat/ galvanostat equipment with EIS tool and related booster is available.

Services offered by the infrastructure: Investigation and optimization of the steam oxidation process (at T up to about 900°C) of reactive metals exploited as energy storage carriers. The interest in reactive metals for electrical mid- and long-term energy storage recently increased for their extremely high vol. energy densities, availability and circularity. Investigation of H2 use in SOFC, under conditions typical of production via reactive metals steam oxidation. Also, SOE/rSOC tests can be executed.

Support offered under this proposal: Identification of testing and modelling/post-processing techniques to be adopted to reach the required results, definition of the test setup, design of the test campaign including sensitive analysis on operating parameters (e.g. temp, particle size, steam/metal ratio, GHSV etc.), tests execution, data processing and reporting. Experience of UNIPG personnel enhances the collaboration for achieving high-quality scientific research.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The infrastructure allows to investigate the innovative steam oxidation reactive metals process, aiming to the realization of CO2-free, fully circular, sustainable energy storage loops, enabling the power-to-X framework.

TA56 UNIStrathclyde Kelvin Hydrodynamics Laborator (KHL)

Location (town, country) of the infrastructure: Glasgow, UK

Web site address: https://www.strath.ac.uk/engineering/navalarchitectureoceanmarineengineering/workingwithbusinessorganisations/ourfacilities/kelvinhydrodynamicslaboratory/

Annual operating costs: €417.427

Description of the infrastructure: The tow, wave tank has working dimensions of 76m x 4.6m x 2.5m, equipped with a towing carriage. The carriage has computer-controlled drive giving a speed up to 5m/s, at steady and unsteady speeds with accelerations to 1m/s2. Vertically movable absorbing wavemakers are computer-controlled generating regular or irregular waves 0.5–1.2m height. The wind tunnel is a recirculating, open jet with a working section of 1.6m diameter. The working velocities range from 0.2m/s – 25m/s.

Services offered by the infrastructure: Performance quantification and testing of a range of marine and wind based renewable technologies, sub-systems and support structures. Accessed by Commercial and Research clients to undertake product development and performance quantification; and research studies into fluid-structure interactions, dynamics of rotor operation, and the impact of wave-current interactions. Typical International access includes 8 access periods during the year.

Support offered under this proposal: This includes test unit installation, commissioning, and decommissioning. Mechanical workshops, lightweight prototyping and CNC machine shop technician resource are available at €560/ day. Capabilities include instrumentation, data acquisition, data processing, analysis, report writing and presentation.

TA57 UNITomasBata Lab-scale pouch cell assembly line for Li-ion battery (LiPCAL)

Location (town, country) of the infrastructure: Zlín, Czech Republic

Web site address: https://uni.utb.cz/en/structure/; http://cps.utb.cz/en/science-research/research-team/energy-and-composite-materials

Annual operating costs: 983.500€

Description of the infrastructure: The design of energy storage devices at the Tomas Bata University (TBU) in Zlín is carried out within the University Institute centres: Centre for Technology Transfer (CTT) and Centre of Polymer Systems (CPS), which obtained the HR Award HRS4R granted by the EC to excellent research institutions. The energy storage research is developed in five directions related to Li-ion batteries and supercapacitors. Moreover, as a sixth direction, the relationship between the energy systems, environment and society is being examined from the multidisciplinary viewpoint.

Services offered by the infrastructure: Services offered include development and testing of energy materials for batteries and supercapacitors in five research directions + socio-economic aspects of energy: 1. Electrochemical performance of energy storage devices including prototype development and fabrication. 2. Flexible, asymmetric and hybrid supercapacitors 3. Sodium-ion, lithium-ion, lithium-sulphur and lithium-potassium batteries 4.

Environmentally friendly compositions and self-healing properties 5. Solid-state lithium-based batteries 6. Life cycle sustainability assessments, socio-economic aspects of energy.

Support offered under this proposal: Users will be trained to use equipment in the assembly line. Cell design and simulation will be advised according to the requirements of Users such as desired capacity and power. Technical details of assembly such as electrode density, P/N ratio and electrolyte amount control will be provided. For an example, we are developing an LFP pouch cell battery using this assembly line for a company, helping them to prepare new electrolytes and to apply SiOx materials in anode. It has a capacity of 750 mAh with long cycle life (>80% for 1000 cycles, at 25°C).

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The infrastructure offers the assembly of pouch cells Li-ion batteries and provides the test of their performance in a large range of temperatures. Researchers can use it to evaluate their developed materials in a prototype level.

TA58 ENEA Gasification and syngas upgrading (PRAGUP)

Location (town, country) of the infrastructure: Rotondella, Italy

Web site address: www.trisaia.enea.it

Annual operating costs:1.320.000 €

Description of the infrastructure: The infrastructure comprises different rigs wich are functional to the study of thermochemical conversion. The mains is the pilot Gasifier PRAGA (uPdRAft Gasifier) whose nominal input is 30-40 kg/h of feed with a maximum plastic content of 15%. The produced gas (roughly 80 Nm3/h) or part of it is draft to feed one tar reforming section is composed of a catalytic fixed bed operating between 400°C- 800 °C fed by the stream of syngas (1-5 Nm3/h). Different catalyst can be tested in the reactor that is of modular design. The gas cleaning section is composed by a biodiesel scrubber and two coalescer filters in series. Two hydrogen enrichment sections are available. One in train with the gas cleaning section of the gasifier and based on water gas shift (catalytic). The other, is mounted on a skid and is based on Pd/Ag membrane reactor can treat up to 0.25 Nm3/h of syngas.

Services offered by the infrastructure: The installation allows evaluating at significant pilot scale the gasification and several downstream process, like tar reduction, gas cleaning, catalytic upgrading. The plant it is extensively automated and remotely controlled with in field flow-meters, pressure and temperature measurements the datasets are available. A full equipped chemical lab support the tests in online and offline works, such as feedstock and process stream analysis.

Support offered under this proposal: The infrastructure is located in one of the largest centre of South Italy having 1 km2 of area. The bioenergy unit carries out RIA and DEMO research. The infrastructure has been included in the of BRISK 1and 2, having provided tens of Transnational Accesses, in research projects submitted by researchers from Europe, Asia, Africa. Synergies with agroindustry technologies and energy material are possible on site.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: In the infrastructure the production of syngas and pure hydrogen from biomass and other carbon-based feedstock through gasification can be tested at pilot scale. Moreover, cleaning and upgrading technologies, also catalytic can be tested and upgraded.

TA59 CENER's coating, structuring and characterization laboratory (COATLAB)

Location (town, country) of the infrastructure: Sarriguren, Spain

Web site address: https://www.cener.com/

Annual operating costs: 133.455€

Description of the infrastructure: CENER puts at the service of the consortium its coating, structuring and characterization infrastructure. This infrastructure consists of several techniques for the deposition of thin films, for the nano and micro-structuring of different surfaces, lasers for ablation and thermal processes and the characterization set-ups for optical, surface and electrical properties. The infrastructure is devoted to the development of new materials and surfaces for energy applications. CENER makes use of this infrastructures mostly for research projects but also for commercial projects. Research areas usually supported by the infrastructure include: quantifying the impact of structured materials in Si PV technology, deposition of advanced perovskite materials (with up-conversion and protection sheath), the application of luminescent materials into PV

technology, integration of Si PV into architectural and lightweight components.

Services offered by the infrastructure: This infrastructure allows depositing thin film materials and also structuring surfaces, which can be of interest in many energy-related research topics, ranging from spectrally selective materials, used for solar technologies, development of new electrolyser materials for green hydrogen production, or characterization of composites for several technologies

Support offered under this proposal: The User will find a mature and dynamic research community formed by young and senior researchers who will strongly stimulate the research and create new bonds which will facilitate the collaboration between institutions and therefore, a faster development of the technology.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: This infrastructure combines deposition and structuring capabilities, together with the necessary equipment of their characterization, which can be applied to many different renewable energy technologies. The support of senior researchers, involved in research and commercial projects, is also of key importance for an adequate guidance.

TA60 CENER CENER Simulation Environment for Solar Energy Systems (SESES)

Location (town, country) of the infrastructure: Sarriguren (Navarre), Spain

Web site address: https://www.cener.com/

Annual operating costs: The yearly cost of the license of commercial software related to the RI is 4.240 €; this annual cost covers the software licence expense but excludes the cost of support of research scientists.

Description of the infrastructure: The infrastructure includes a group of software packages for the simulation and integration of any kind of solar energy systems. In this access the User:

- TONATIUH is open source software for the simulation of optical systems by the ray tracing method.
- CSTLibrary, CENER's in-house Modelica library for the ST, CSP and storage simulation.
- High temporal and spatial resolution long-term timeseries and representative yearly datasets.
- CENER's in-house simulation tool of the performance of complex PV systems.

Services offered by the infrastructure: In the context of the current energy transition towards increasing share of renewables, SESES provides the simulations of relevant solar energy components and systems, including the environmental operating conditions. Depending on the confidentiality and license restrictions, Users may be also able to do the modelling and simulation by themselves with the support of CENER's staff.

Support offered under this proposal: High profile scientific environment and User access: Highly qualified technicians and researchers used to R&D activities who could assist Users on the definition and development of their simulations using the RI available. Simulation support by expert Users of software packages provided.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The combination of the simulations from the available RI enables very detailed simulations considering real operating conditions and accurate representation of the solar energy systems being simulated.

TA61 CENER CENER Solar Energy Technologies and Storage Department's modelling capacity (SIMPV)

Location (town, country) of the infrastructure: Sarriguren (Navarre), Spain

Web site address: https://www.cener.com/

Annual operating costs: the license's cost of commercial software related to the RI is 2.240 €. This annual cost covers the software licence but excludes the cost of support of research scientists.

Description of the infrastructure: The following software and simulations tools can be accessed: • Climatological datasets: synthetic high frequency long-term climatological timeseries adjusted to the specific climatological and geographical conditions of the location of interest. And synthetic yearly timeseries such as Typical Meteorological Years and Plausible Years. •TONATIUH: open source programme based on ray-tracing simulations, which can be applied for the detailed estimation of the available solar resource at complex terrains and configurations. •SIMPV: in-house simulation tool of the performance of PV systems without restrictions on configuration or composition, based on high time resolution simulations and detailed models of the complete PV power plant and components.

Services offered by the infrastructure: Long term or representative (yearly) climatological datasets for simulating operating outdoors conditions, including high spatial and temporal resolution data of solar radiation (including ray-tracing) and other variables like wind or ambient temperature. And detailed simulation of the performance of

PV systems considering, if needed, different orientations and configurations like fixed and tracked systems simultaneously.

Support offered under this proposal: High profile scientific environment to assist Users on the definition and development of their simulations using the RI available.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The combined simulations from the available RI allows very detailed simulations considering real operating conditions and accurate representation of the systems being simulated.

TA62 CENER Accredited PV components testing laboratory, indoor and outdoor testing in moderate climate (SOLPVLAB)

Location (town, country) of the infrastructure: Imarcoáin, Spain

Web site address: https://www.cener.com/

Annual operating costs: 317.459 €

Description of the infrastructure: CENER offers access to its IEC-accredited testing laboratory for the application of specific protocols for characterization and aging of PV components (modules, trackers, inverters…). Besides, CENER also offers access to a tailored designed set-up for the quantification of soiling and damage of cleaning systems onto PV modules. Finally, CENER offers its outdoor testing field, which consists of more than 600 m2 for outdoor testing of PV components (PV modules, trackers, inverters, etc…). Services offered by the infrastructure: CENER's SOLPVLAB is a worldwide recognized testing laboratory, and has participated in approximately 80 research projects, since 2003, and in all of them, the capacities of the testing laboratory have been proven essential. Besides, the annual number of commercial projects, providing testing services mostly to the European PV industry is of about 60, proving a clear interest of European Industry in the testing activities.

Support offered under this proposal: The User will receive support from the researchers working in both, research and commercial projects, related to PV technologies, within a committed and mature PV research community formed by senior researchers, with more than 15 years of experience, and young students carrying out PhD and master projects. For sure, this environment will strongly stimulate the research, sharing knowledge and creating new bonds which will result in a faster development of the technology.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: This infrastructure combines state of the art accredited testing capabilities, indoor and outdoor, together with unique infrastructure, such as the automated soiling/abrasion impact assessment onto whole modules.

TA63 CNRS PROMES

Location (town, country) of the infrastructure: Odeillo and Targasonne, France

Web site address: www.promes.cnrs.fr

Annual operating costs (€): 750 k€ (including 600 k€ staff costs)

Description of the infrastructure: PROMES-CNRS operates a world unique set of exceptional solar facilities with very high concentration and usage flexibility, since 1949. Experiments typically range from TRL2 to TRL6, process/experiment size from <1 cm to >10 m. Researches includes: new materials synthesis, material characterisation, electricity production from various heat transfer fluids, thermal energy storage, thermochemistry, metallurgy, energy storage, solar pumped laser Available facilities: Mega Watt Solar Furnace: the largest solar furnace on Earth, delivering up to 1000 kWth on a 1 m wide disc, with peak of 10000 kW/m2 and 3500°C thanks to its 63 heliostats and 1800 m2 parabola. Usually for TRL 2 to 6, setups size from 50 to 1000 kW; THÉMIS solar tower: solar tower with 117 heliostats, 2 focal points: one up to 4500 kW, the second up to 450 kWth; Medium and Small Solar Furnaces (MSSF, Odeillo): 11 solar furnaces and 5 heliostats, available power from 1 to 6 kWth, from 6000 to 16000 kW/m2 allowing to reach 4000°C, 1-10 cm. Numerous experimental setups available under air or controlled atmosphere. Fast shutters available for fine temperature and experimental control, thermal shocks or dynamic processes; MicroSol'R (Odeillo): complete 220 kWth parabolic trough with oil loop (300°C), steam generator, dual tanks and thermocline storage with easy filler materials replacement, ORC generator.

Services offered by the infrastructure: Since 1997, several Access projects and numerous R&D projects by PROMES-CNRS and our partners have allowed 10 to 50 international Users each year to use our solar facilities. Recent past Users include: NASA, ESA, Stellantis, Total, EDF, Arkem. Applications can be those requiring high temperature/high flux or those to exploit concentrated solar energy in a targeted commercial way.

Support offered under this proposal: All facilities are equipped with state of the art or locally specially developed instrumentation and experimental setups or Users can bring their own. Scientific and technical assistance is provided for User experiment design. Experimental activities can be conducted by the Users when suitable once trained, or together with PROMES-CNRS qualified staff.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The set of concentrated solar facilities is world unique, both in quantity and performance. As numerous Users are always present, past experience has shown it fosters discussions and can lead to new collaborations and new research projects.

TA64 CYI Polygeneration and hybridization of Distributed Energy Systems (POLYRES)

Location: (town, country) of the infrastructure: Pentakomo, Cyprus

Web site address: www.cyi.ac.cy , https://energy.cyi.ac.cy/facilities/proteas/

Annual operating costs: (€)561.513

Description of the infrastructure: The POLYRES Infrastructure, located at PROTEAS Facility is devoted to research, development and testing of Renewable Energy Sources with emphasis on Concentrating Solar Power (CSP), coupled with other renewable technologies like Photovoltaics (PVs) and Wind Power. The aim of this infrastructure is to advance the research on Distributed Energy Systems (DES) and support the concept of the energy communities while in parallel bridging the gap between fundamental research and industrial needs.

Services offered by the infrastructure: Modelling of poly- generation systems:

Modelling, design and optimization at technical system level: Detailed modelling, design and optimization of energy systems including a variety of storage systems and a variety of energy inputs, using state of the art open-source tools. Modelling and simulations using software like TRNSYS. Characterization / Testing of micro-grid and micro-grid components; Testing of new technologies and innovative concepts: • A fully instrumented infrastructure that can be used for integration of new components like hybrid inverters, new batteries, new technologies related to CSP, PVs and Wind; •Testing of controlling and operating strategies of both on grid, and off-grid systems; Controls, real-time monitoring, signal processing related to micro-grids: •Design, develop and integrate Virtual Interfaces to the Main control system and Database and Data Acquisition systems. These services are also offered under the European projects Sfera III and StoRIES

Support offered under this proposal: Users will be supported with all the logistics. Furthermore, the scientific and technical personnel of the Facility will be providing support to the Users.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: POLYRES-CYI incorporates a unique micro-grid utilising several renewable components like Solar Stirling Dishes, Solar Thermal Tower, PV and Wind, coupled to a hybrid molten salt and batteries storage. This is a unique infrastructure providing a range of potential applications and services.

TA65 CYI Platform for Research Observation and Technological Applications in Solar Energy (PROTEAS)

Location (town, country) of the infrastructure: Pentakomo, Cyprus

Web site address: www.cyi.ac.cy , https://energy.cyi.ac.cy/facilities/proteas/

Annual operating costs: (€)561.513

Description of the infrastructure: The PROTEAS Facility is the largest RI in Cyprus and the only one of its kind in the Eastern Mediterranean. It is devoted to research, development and testing of Renewable Energy Sources with emphasis on Concentrating Solar Thermal (CST), Thermal Energy Storage (TES) and thermal Desalination of Sea Water (DSW) technologies for bridging the gap between fundamental research and industrial needs.

Services offered by the infrastructure: > Storage Modelling in regional/national energy systems > Modelling, design and optimization at technical system level: * Detailed modelling, design and optimization of energy systems including a variety of storage systems and a variety of energy inputs, using state of the art open-source tools. * Modelling and simulations using software like Tonatiuh ++, TRNSYS, ray tracing simulations. > Characterization / Testing of components, testing of new technologies and innovative concepts: > Instrumentation, monitoring and controls: Integration of new components and systems to PROTEAS control using LabVIEW. These services are also offered under the European projects Sfera III and StoRIES

Support offered under this proposal: Users will be supported with all the logistics. Furthermore, the scientific and technical personnel of the Facility will be providing support to the Users.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The unique location of the Facility creates the ideal demonstration/ testing Facility for renewable energy technologies and components. PROTEAS is located about 150m from the sea, therefore the components are validated in conditions related to humidity, corrosion, and winds coming from sea. Furthermore, the geographical location of Cyprus offers a unique opportunity for testing and evaluating components and technologies in the region.

TA66 DLR CSP facilities Juelich (DLR-CSP)

Location (town, country) of the infrastructure: Jülich, Germany

Web site address: https://www.dlr.de/sf/en/desktopdefault.aspx/tabid-8560/15527_read-44867/, Synlight - The world's largest artificial sun - Synlight (dlr.de)

Annual operating costs: 2,07M€

Description of the infrastructure: The DLR operates five large research facilities on the site in Juelich, Germany: the high-flux solar simulator Synlight, the Solar Tower Power Plant Jülich (STJ-PP), the Solar Tower Research Platform (STJ-RP), the Solar Tower Heliostat Field (STJ-Helio) and the Multifocus Tower (MFT). Depending on the facility from 300 kW (Synlight) up to 2 MW thermal power can be provided. For testing, additional power and water supply is available as well as flux and IR measurement systems and ethernet connectivity. Video surveillance can be used for test observation.

Services offered by the infrastructure: Main service offered is the irradiation of test rigs with the specified flux and/or total power either at reproducible lab conditions or with a heliostat field. All facilities can provide a variety of flux profiles, at STJ the complete power plant system can be used as well as the heat storage infrastructure for particles and molten salt.

Support offered under this proposal: The local research personnel can provide support with the planning of experiments, the design of the test rigs including radiation shields as well as with flux, IR and other measurements. Minor simulations of the expected flux distribution (ray tracing or other numerical approaches) as well as thermal simulations of the flow inside the radiation shields can also be performed.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: DLR-CSP offers a unique infrastructure suitable for full-scale CSP/PV testing in a solar simulator and with heliostats in a single location.

TA67 DLR Coating Laboratory for thin film deposition (TFCL)

Location (town, country) of the infrastructure: Oldenburg, Germany

Web site address: https://www.dlr.de/ve/desktopdefault.aspx/tabid-12467/21446_read-49442/

Annual operating costs (excl. investment costs) of the infrastructure (€): 900.000,00 €/year

Description of the infrastructure: Combined inline coating systems for developing processes and prototypes at near-industrial scale is designed for a substrate size up to 30x30 cm². It includes the following systems: glass cleaning, PECVD, magnetron sputtering, and lamination unit. An additional system for rapid prototyping and development of new functionalities and material combinations consists of a cluster tool with six process chambers for substrates up to 10x10 cm².

Services offered by the infrastructure: The DLR coating laboratory serves as a modular R&D production line for the manufacturing of novel thin film technologies. The primary goal is the system and material innovation in energy conversion, novel PV applications, radiative cooling, H2 technologies and CSP. The laboratory is used for the development and analysis of coatings and functional surfaces and their integration into prototype devices like PV windows, Photo Electrochemical cells, Fuel Cells and highly efficient and durable mirrors for CSP Heliostats.

Support offered under this proposal: In addition to the supply of an up and running lab infrastructure, technical and logistic support for preparing, developing, manufacturing, and characterisation samples can be offered to the Users. The scientific and technical stuff is well trained and has experience form several national and international R&D projects with industry and research partners.

TA68 IMDEA IMDEA Energy (IME)

Location (town, country) of the infrastructure: Móstoles, Spain

Web site address: https://energia.imdea.org/en/instalaciones/

Annual operating costs (€) of the infrastructure (€): 22.750 €

Description of the infrastructure: Three installations are offered:(i) High Temperature Processes Lab. (HTPU-LAB), equipment and tools for materials synthesis, characterization and testing. (ii) 42kWe High Flux Solar Simulator (KIRAN42), 7 Xenon short-arc lamps (doped tungsten electrodes) with ellipsoidal reflectors (total available radiation power, 14 kW, radiation peak flux, 3.6 MW/m2) (iii) Very High Concentration Solar Tower (VHCST), customized 250kWth solar field that have the most recent develop-ments on small size heliostats and a tower with reduced optical height (15 m) to minimize visual impact.

Services offered by the infrastructure: Services on reflectors and concentrators, heat transfer fluids, thermal energy storage, solar chemistry, and material testing and qualification. Scientific achievements have been reached in the framework of research stays in other R&D programmes funded by EU, national and regional entities. Currently 6-9 international Users use the IME's installations per year.

Support offered under this proposal: Design, simulation, optimization, testing and control of concentrating solar thermal technologies and other complex thermal systems: receivers, reactors and energy storage systems. Expertise on very-high solar concentration technologies focused on sustainable production of energy carriers and raw materials. which are of special interest in materials development and high-temperature applications.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Dedicated experimental installations covering TRL up to 6. Unique facilities able to achieve very solar high concentrations in a wide range of total power (from 1 kW up to 250 kW). Available facilities are highly flexible and manageable that allows fast experimental implementation in a wide range of operation conditions.

TA69 LNEG Lisbon Solar Thermal Energy facilities (Lx-STE)

Location (town, country) of the infrastructure: Lisboa, Portugal

Web site address: www.lneg.pt

Annual operating costs (€) of the infrastructure (€):420.000€

Description of the infrastructure: The National Laboratory for Energy and Geology (LNEG) carries out research, testing and technological development related to activities in the areas of Energy and Geology. Its mission is the promotion of technological innovation focused on science and technology, competitiveness, and sustainable economic progress. LNEG has testing facilities transversal to many research areas within the field of renewable energy which have proven to be relevant in the field of CSP. LNEG's infrastructure available to the project CSP activities is composed by three main facilities: Solar Energy Laboratory; High-Performance Computing Cluster, Solar Tower Testing Facility.

Services offered by the infrastructure: A) Solar Energy Laboratory: i) Optical characterization of reflectors, absorbers, anti-reflective coatings and other collector components; ii) Solar radiation measurement and analysis; iii) Solar collector testing. B) High-Performance Computing Cluster: i) Computer fluid dynamics (CFD) simulation; ii) Simulation of transient systems (including CST plants and components); iii) Optical simulation of solar concentrating systems using ray-tracing; iv) Computing time for User developed software. C) Solar Tower Testing Facility: i) Heliostat beam characterization; ii) Heliostat tracking accuracy characterization; iii) Operation and maintenance procedures testing (e.g.: field control software and procedures, cleaning procedures, etc.); iv) Air receivers testing.

Support offered under this proposal: Access to experimental and computational facilities with support from in-house researchers and technicians. Logistical and administrative support to access activities.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Possibility of synergy with other renewable energy research activities that are also developed at the same Campus (e.g. materials, hydrogen, bioenergy, wind power, ocean energy, grid integration).

TA70 LNEG Materials for Energy (UME)

Location (town, country) of the infrastructure: Lumiar/Lisboa, Portugal

Web site address: www.lneg.pt

Annual operating costs (€) of the infrastructure (€):110.000€

Description of the infrastructure: LNEG_UME carries out research, testing and technological development of materials for CSP, energy storage, hydrogen, PV and ocean energy. LNEG/UME's infrastructure comprises four main facilities: Laboratory of Materials and Coatings (LMR), accredited by EN ISO 17025 standard; Hydrogen

(H2LAB); Batteries and Recycling (BatLAB) and Material's Characterization (MaCLab).

Services offered by the infrastructure: LMR - Detection, study and prevention of corrosion; Corrosion with Molten Salts; Durability of solar absorbers/reflectors; Specification and validation of anticorrosive protection systems/coatings; Corrosion tests; Durability of materials/coatings. H2LAB - Production of hydrogen by electrolysis, photocatalysis from waste waters and co-electrolysis from water and CO2; Synthesis and characterization of materials for electrolysers and fuel cells; Monitoring, control and optimization of green hydrogen production systems. BatLAB – Battery and electrode characterization: electrochemical characterization, cyclability, charge and discharge capacity; cathode, anode and electrolyte development and synthesis; cell thermal stability test; recycling processes for end-of-life products. MaCLab – Microstructural and crystallinity analysis, Bulk and depth profiling elemental chemical analysis; simultaneous thermal analysis, thermal conductivity, thermal electric analysis, dynamic elastic moduli, and tensiometry analysis.

Support offered under this proposal: Our scientific and technical staff will provide all required assistance to external Users, whilst LNEG's Management and Organization Department shall take care of logistic support prior and after their stay at our facilities in accordance with customary practice.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Easy access to all facilities of the infrastructure in LNEG's campus at Lumiar/Lisbon and the possibility of synergy with other research groups. Unique facilities available include thermoelectric measurements and elemental chemical depth profiling analysis and outdoor exposure testing sites for exposure test samples with permanent monitorization of environmental corrosivity.

TA71 LNEG Biomass and Bioenergy Research Infrastructure (LNEG-BBRI)

Location (town, country) of the infrastructure: Lisbon, Portugal

Web site address: https://www.lneg.pt/en/infrastructure/bbri-biomass-and-bioenergy-research-infrastructure-2/

Annual operating costs (€):1.500 k€

Description of the infrastructure: The BBRI RI is belongs to the Portuguese Roadmap of RIs. The main goal of BBRI is a development of biomass processing technologies at pilot scale facilities for sustainable bioenergy and bioeconomy. The BBRI is compromised by: i) Biomass Deconstruction (100 accesses), ii) Fermentation (50 accesses), iii) Thermochemical (25 accesses), iv) Microalgae Biorefinery (80 accesses), v) Agro-industrial Wastewaters (50 accesses) and vi) The Solar Tower Testing for solar fuels studies (60 accesses).

Services offered by the infrastructure: BBRI offers activities focused on Hydrothermal Liquefaction (HTL), Hydrodeoxygenation, Pyrolysis, Gasification and gas cleaning, Biomass Fractionation and Pre-treatment, Fermentation Technology, Enzymatic Technology, Downstream Processing, Microalgae Technology, Biomass assessment potential, Certification of Biofuels, Biomass and Biofuels Analytical Service, Capacity building.

Support offered under this proposal: The access is granted on pro bono pay-per-use basis including R&D activities. Such scheme is aimed at sustainable financial model for BBRI. BBRI offers the Users access to top infrastructure and work in the international, from Europe (either high-scientific level countries or widening) and Worldwide, environment in the centre of Lisbon. In addition, in 2017-2021, BBRI offered 91 advanced training and International Advanced Courses and 3 Summer School.

TA72 UNIÉvora Renewable Energies Chair (UEVORA-REC)

Location (town, country) of the infrastructure: Évora, Portugal

Web site address: https://www.catedraer.uevora.pt/

Annual operating costs (€):≈ 500.000,00€

Description of the infrastructure: Located in the heart of the region in Portugal with the highest direct normal irradiation (DNI), UEVORA-REC develops research along the main vectors defining the role of solar energy technologies as a solution for the Energy Transition: PV or CSP power generation; thermal or electrical energy storage; solar energy for energy supply to Industry and Agriculture; solar resource and Energy system integration strategies. The infrastructure presents unique conditions for the testing and validation of novel concepts. In particular, the Évora Molten Salt Platform (http://www.emsp.uevora.pt) has unique conditions for the testing of solar concentrators with molten salts both as HTF and storage media, targeting electricity production as well as process heat or even thermochemical processes via pyrolysis/gasification of biomass.

Services offered by the infrastructure: a) testing of solar concentrators with thermal oil and molten salts; b) R&D

in solar concentrated driven systems modelling; c) Solar Thermal energy storage; d) Direct normal radiation measurement and statistics; e) Agricultural water and solar energy research through novel applications of PV end modern irrigation; f) Solar collectors for wastewater treatment.

Support offered under this proposal: The UEVORA-REC has a team of +20 persons (researchers, technicians, administrative) highly trained and capable to provide support in all activities that take place in the infrastructure. Several campaigns of access already took place (Transnational Access programmes, joint campaigns, etc.) demonstrating the ability of the team to give the necessary support.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: 1) High DNI values; 2) scientific and administrative support/background from the University of Évora; 3) Possibility of local demo-pilots

TA73 FZJ Cloud Lab for Catalyst Ink Fabrication (JULIO)

Location (town, country) of the infrastructure: Juelich, Germany

Annual operating costs:164.000€ (estimated)

Description of the infrastructure: Semi-automated self-driving lab (SDL) for development of catalyst ink formulation with optimized properties. Platform consists of a) Liquid handling unit to prepare ink formulation of up to 5 components in 3 different solvents and B) in-line analytics of up to 6 different ink formulations over 24h with measurements every 2 hours by means of Dynamic Light Scattering for qualifying ink stability (particle sizing) and Rheology for characterizing ink viscosity.

Services offered by the infrastructure: JULIO will enable scientist from all over the world to rapidly explore the chemical space and potentially develop catalyst ink formulations with optimized properties either by coming physically to the lab or via remote access.

Support offered under this proposal: JULIO offers the equipment for performing the User experiments as well as technical support in the lab. Precursor materials and ingredients of the ink has to be provided by the Users.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: This unique facility provides virtual and on-premise services to materials labs and component development companies within H2 industry for high throughput and accelerated ink formation. The service will increase development time by 100x, cell/device integration success rate by 10x while lowering the overall cost of new ink formulation significantly. The facility can be easily modified and re-purposed for other use cases, including battery slurry electrodes as well as new electrolyte for flow batteries.

TA74 FZJ Living Lab Energy (LLEC)

Location (town, country) of the infrastructure: Eggenstein-Leopoldshafen, Germany

Web site address: https://www.fz-juelich.de/de/iek/iek-14

Annual operating costs:1,1M€

Description of the infrastructure: ICT research platform for building and district energy systems, low temp. district heating network with HPC waste heat integration, high energy and high-power batteries (first Megapack in Germany), PV testbed for module characterization and aging (solar walkway test field), high eff. 400 kW electrolyser, LOHC reactor system and storage facility (FOAK worldwide) coupled to CHP plant, FIWARE based ICT platform for building and district energy systems (open source).

Services offered by the infrastructure: agile, decentralized energy environment both in hard- and software for researchers, technicians and teachers, large scale testbed for technology transfer towards industry ("fast track to technology implementation"), benefits from existing large cooperation network, energy systems are widely equipped with data loggers and accessible via cloud services (in German and English).

Support offered under this proposal: FZJ is one of the largest research facilities in Europe, people will benefit from support provided by several scientific teams in different research areas and by a dedicated infrastructure team ("Intelligent Campus") recently founded, a lot of demonstrators are FOAK and parts of industry cooperations. Services are already provided to partners (e.g. to PTB) with respect to metrology studies of new energy systems or industry partners in the field of hydrogen research.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: LOHC reactor system and storage facility (FOAK worldwide) coupled to CHP plant, FIWARE based open-source ICT platform (model predictive control) for building and district energy systems.

TA75 IMEC EnergyVille PV Lab (EV PV lab)

Location (town, country) of the infrastructure: Genk, Belgium

Web site address: https://www.energyville.be/en/lab

Annual operating costs (excl. investment costs) of the infrastructure (€):1,2 Mio€

Description of the infrastructure: The IMEC PV group has dedicated state-of-the-art processing facilities (1500 m²) in EnergyVille for fabrication and characterization of thin-film, silicon and tandem solar cells and modules. A perovskite assembly line, combining slot die coating, vacuum thermal evaporation and high throughput linear sputtering allows to process modules up to 30x30cm² on 35x35 cm2 substrates. The above-mentioned processing tools can also be used for perovskite top cell development in perovskite-silicon or full thin-film tandem. The infrastructure also accommodates tools for wafer-based metalization and advanced interconnections, module lamination and encapsulation. These unique combinations enable full tandem module processing for both 4- and 2-terminal concepts as well as the newly explored 3-terminal tandems.

Services offered by the infrastructure: The EV PV lab is open for use by all our partners with whom we have a collaboration agreement. From the time that the EV PV lab became operational in 2018, we already had many Users from companies and institutes from outside Belgium using our facilities to work in our lab on perovskite, silicon and tandem solar cells and modules. For short-term visits, our scientific and technical staff will conduct the tool operations to prepare samples according to the specifications/recipes as agreed with the external researchers. For longer term visits, the external researchers can get relevant trainings on our developed baseline processes and materials/device characterization methods to execute these processes by themselves, under supervision of our staff.

Support offered under this proposal: The external researchers will be offered full scientific and technical support by a highly skilled team of experienced researchers and trained technical staff from IMEC to advise, operate, assist and train in activities from materials research up to module processing in the fields of perovskite and tandem cell and module fabrication and characterization. The necessary scientific and technical background information will also be provided. When needed, relocation support can be offered by IMEC' HR services

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Perovskite module, and consequently also the tandems, can be processed up to 35x35cm2, which is a size that isn't readily available in other R&D lab facilities.

TA76 IMEC-UNIAnkara Center for Solar Energy Research and Applications (ODTÜ-GÜNAM)

Location (town, country) of the infrastructure: Ankara, Turkey

Web site address: www.odtugunam.org

Annual operating costs: 3,5 Million (€)

Description of the infrastructure: ODTU-GUNAM was founded in 2009 as a research center of Middle East Technical University and was promoted to the status of the national solar energy technologies RI of Turkey in 2021. The Silicon Photovoltaic Technologies Division (SiPV) is the largest division of ODTU-GUNAM. The division has a pilot scale solar cell production facility (GPVL) which has 600 m2 production area with 200 wafers/h manufacturing capacity is mainly capable of producing PERC/TOPCon/PERT/PERL/IBC type industrial size (M2/G1) silicon solar cells. SiPV also has an additional metallization laboratory and separate clean rooms equipped with crystalline Si and Si-based thin-film production tools and wet chemical processing and photolithography equipment.

Services offered by the infrastructure: Fabrication of PERC, TOPCon, PERT, PERL and heterojunction solar cells on M2/G1 Si wafers. Half finished cells for material and process testing. Testing and application of new materials for solar cell fabrication. Performing almost all chemical processes used in Si based solar cell fabication such as; texturing, single side etching, surface polishing, etc. in a clean cleanroom environment or with industrial devices in the PV pilot line. Single side or symmetrical Phosphorus (P) and Boron (B) doping, Silicon dioxide (SiO2) layer growth, and Low and high temperature (up to 1000°C) annealing. Phosphorus (P) and Boron (B) implantation on M2/G1 Si wafers for homogeneous or local emitter formations. Plasma processes; silicon nitride (SixNy), silicon oxynitride (SiOxNy) deposition. Alumina (Al2O3) coating by ALD. Support offered under this proposal: All processes described above are offered to external User. All proposed processes will be carried out under the supervision of expert researchers or engineers from ODTU-GUNAM. These services with scientific and technological know-how will be offered under this proposal.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: ODTU-GUNAM PV RI not only allows laboratory-scale studies, but also offers the opportunity to do experiment with

fully industrial-scale devices in the PV pilot production line. Since our pilot line is not in continuous production, we have the opportunity to work independently with each industrial system.

TA77 TNO Biofuels Laboratory (SBT)

Location (town, country) of the infrastructure: Petten, The Netherlands

Web site address: https://www.tno.nl/en/technology-science/labs/biofuels-lab-making-transport-more/

Annual operating costs:1.439.239 €

Description of the infrastructure: The lab consists of gasification, dust removal, tar removal, water quench, compression, hydrodesulfurization, sulphur removal, steam methane reforming, CO2 scrubbing, compression and high-pressure fuel synthesis with product recovery. In the setup the integration with hydrogen can be simulated by injected additional hydrogen at various locations. The setup is extremely versatile and unique in Europe, allowing Users to convert feedstock (biogenic residues) into MeOH, FT or any other fuels.

Services offered by the infrastructure: Extensive feedstock research has already taken place on the gasifier with multiple visits per year. The supporting analytics is state of the art making it possible to derive accurate mass and energy balances. The fuel allows for all kind of interesting research to be performed, for instance the line up of various unit operations, new sorbents or catalyst to be tested and varying the operating temperature and pressure for the different processes.

Support offered under this proposal: For the operation of the complete line up we offer 3 operators and 2 analyst, which are needed to manage the whole process. If the focus is more on the front end or back end this can be reduced. A scientist can be provided with a specialty on the front end (gasification/gas cleaning) or on the back end (syngas production and fuel synthesis). The team has over 25 years of experience in this particular field and we have ben part on the development of protocols and standards based on our work. For instance the tar protocol is such a widely used protocol.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Having the complete line-up available in a highly integrated and flexible setup is offering unique scientific possibilities for biofuels development.

TA78 TNO SWITCH Laboratory (SWITCH)

Location (town, country) of the infrastructure: 8219 PH LELYSTAD, The Netherlands

Web site address: https://www.tno.nl/en/sustainable/renewable-electricity/system-integration-wind/wind-energy-system-integration/

Annual operating costs: 3.394/day

Description of the infrastructure: A scaled hybrid power plant facility of TNO and Wageningen University Research (WUR) that consists of:•Installed power generation: 60kW from 6 Wind turbines and 40 kW from a PV system;•Installed storage capacity: 50 kW battery system (LiFePO4 batteries) and a 25kW single PEM stack electrolyser (5 Nm3/hr);•Energy Management System with an Experiment Control System.The Switch lab is in build-up phase and operational in Q2/Q3 2023 for the solar, wind and battery systems. The electrolyser will be operational in Q4-2023.

Services offered by the infrastructure: Scenarios for any renewable energy system can be simulated in models and the results can be validated on the connected Switch hardware infrastructure. Scientists are able to collaborate and work with international researchers from both TNO and WUR. Set-up and access to the Switch lab experiments can be done on a remote basis making use of digital dashboards.

Support offered under this proposal: The laboratory supports the research and innovation to increase energy efficiency and foster a wider use of renewable energy, and the coupling with other new technologies emerging and scaling up in the Energy System.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The field data obtained from the experiments at SWITCH will enable a thorough validation of the dynamic models, and help optimize the performance of the integrated system.

TA79 UCC Lir National Ocean Test Facility (Lir NOTF)

Location (town, country) of the infrastructure: Ringaskiddy. Co. Cork, Ireland, P43 – C573

Web site address: www.lir-notf.com

Annual operating costs: €570.737

Description of the infrastructure: Lir NOTF consists of state-of-the-art wave tanks and electrical test infrastructure that allow scaled testing of marine technologies and their integration to the grid in a controlled environment. The scale and scope of testing facilities cannot be found in a single location elsewhere.

Services offered by the infrastructure: Lir-NOTF is a multi-faceted infrastructure that can cater for offshore renewable energy (**ORE**) technology development needs up to TRL4. The range of test tanks provides options to technology developers on the scale and type of testing that they can carry out and ensures that that their development pathway best suits their needs rather than being restricted by infrastructure constraints.

Support offered under this proposal: The Lir NOTF infrastructure and trained staff are available to support the TA programme. All ancillary equipment and services required with receiving a physical model, preparing it for testing, setting it up in the tank, carrying out the testing and recording all the relevant data will be provided. Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Lir NOTF aligns with national and international research programmes to continually develop and improve testing methodologies for ORE technologies

TA80 UCC UCC-Tyndall (UCC-Tyn)

Location (town, country) of the infrastructure: Cork city, Ireland

Web site address: https://tyndall.ie

Annual operating costs:~€35M Tyndall only, not UCC

Description of the infrastructure: Access to facilities for materials, device and system integration experiments pertaining to long battery life WSN (wireless sensor network) modules & systems for RES (Renewable Energy Systems) applications for 'ICT enabled' Condition Monitoring (CM) and Energy Efficiency Management (EEM). Nano and micro Materials & Structures, Materials & Device Processing. Full Si CMOS, MEMS Wafer Semiconductor fabrication facilities. Development of battery life/energy simulation tools. Novel processing for 'More than Moore' offerings serves for miniaturization and integration.

Services offered by the infrastructure: 'ICT enabling' access services

(i) At system level: Tools and expertise to optimize WSN modules for RES CM & EEM. This can be applied to RES generation & storage as well as inter-operability with equipment on the load (demand) side.

(ii) At device level: Advanced characterization & prototype assessment of micro-power energy harvesting, storage and power management materials and devices; Development of Smart materials, devices, test structures and simulation tools; On-site deployment testbed to do real-life experiments.

Support offered under this proposal: Leveraging experience as co-ordinator and TA provider in the EnABLES 'power IoT' RI www.enables-project.eu Tyndall will manage the ICT enabling related TA enquiries, provide access ourselves or select and assign other partners/subcontractors to provide the service. We shall share best practices for access management (e.g. enquiry funnel management, selection and review process.)

TA81 UCC-EMEC The European Marine Energy Centre (EMEC)

Location (town, country) of the infrastructure: Orkney, Scotland

Web site address: https://www.emec.org.uk/

Annual operating costs (€) of the infrastructure (€): Fall of Warness (€2.329.370), Billia Croo (€2.179.270), Scale sites (€358.164), Hydrogen and energy systems (€343.848)

Description of the infrastructure: Operating since 2003, EMEC has 20 years of operational and technical experience hosting ocean energy technologies demonstration. The full-scale sites offer grid-connected cable berths. The facilities include real-time monitoring via SCADA system, and wave, tidal and environmental baseline data. The scale sites offer test facilities for earlier stage technologies, alongside a specially designed test support buoy with a microgrid for electricity and remote communications. EMEC has also been exploring new areas of research to demonstrate green hydrogen production and energy storage using battery technologies.

Services offered by the infrastructure: EMEC offers deployment support and environmental monitoring expertise, as well as consenting and planning support. It has also diversified to provide services in the development of hydrogen projects. The nature of the open sea test sites enables the collection of metocean, environmental and

technological data, which has been applied to +400 R&D and industrialprojects. Through our test sites, EMEC has hosted 34 marine energy devices, spanning 11 countries, as well as a range of hydrogen related assets on site.

Support offered under this proposal: EMEC will offer the use of its testing infrastructure, supporting marine energy developers to deploy their technologies at site. EMEC's in-house consenting team will offer necessary support to developers in order to comply with regulatory requirements, as well as provide scientific and technical support for the deployment.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: EMEC is the longest established centre for testing marine energy technologies in the world. It is an accredited test laboratory (ISO 17025) and inspection body (ISO 17020) and only holder of a Renewable Energy Testing Laboratory (RETL) status for the marine sector, the highest international designation for marine energy test laboratories by IEC.

TA82 UCC-IFREMER IFREMER Wave and Current Flume Tank (WaCuTa)

Location (town, country) of the infrastructure: Mer, France

Web site address: https://manchemerdunord.ifremer.fr/en/Marine-technology

Annual operating costs (€): 250.000

Description of the infrastructure: operated by the Marine Hydrodynamic Lab. to test renewable energy systems in controllable marine environment: in-situ characteristics can be reproduced in terms of velocity profile, turbulence characteristics, combined wave and current solicitation, inflow orientation variations. Unique capabilities for scaled testing and the recreation of complex flows: 18m long, 4m wide, 2m deep, flow up to 2.2m/s. A 6 motion generator system available to reproduce dynamics of floating platforms.

Services offered by the infrastructure: complete service for hydrodynamic force and moment measurements on fixed and moving devices, behaviour and performances characterisation in a range of wave and current conditions, non-intrusive velocimetry measurement systems (PIV, LDV) and time-resolved flow analysis, data acquisition and analysis through dedicated software. Test protocols and fully instrumented turbine models have been developed through projects carried out in recent years (> 35 types of technology).

Support offered under this proposal: complete technical support for experiments set-up and instrumentation, including an in-house workshop, CAD capacity and ad hoc Users' training. The Ifremer team of experts has a long-term experience in marine renewable energy model testing and data analysis.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The WaCuTa team scientific knowledge on the wave/current/bathymetry/structure interactions (tacking into account the industrial feedback and needs) is unique and worldwide recognized.

TA83 UCC-VGA VGA Testing Laboratory (VGA TL)

Location (town, country) of the infrastructure: Deruta, Italy

Web site address: https://www.vgasrl.com/test-fac/

Annual operating costs: 558.000 € (assuming 240 working days)

Description of the infrastructure: The VGATL is an infrastructure including two different platforms: the DHIL test platform (ready from Q1 2024) including two test rigs: one for powertrains and another for structural components. The Assembly and Qualification (AQ) test platform (ready from Q2 2024) to test prototypes in compliancy with ECSS standards. The platform includes an ISO8 clean room and a climatic chamber.

Services offered by the infrastructure: The VGA Testing Laboratory addresses two key activities within the research environment: *testing services for the development of ocean energy technologies to increase their maturity by measuring key performances indicators (efficiency, reliability and survivability). * R&D activities, fostering the collaboration between academia and industries.

Support offered under this proposal: Identification of the testing and modelling techniques to be adopted to reach the required results, definition of the test setup, definition of the risk assessment, agreement on the test plan, execution of test campaign, data processing and reporting. The knowledge of VGA personnel and their deep roots in R&D activities enhances the collaboration for achieving high-quality scientific research.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Test subsystems / components of WECs (whole drivetrain, mooring system, control system, power cable, parts of the prime mover and structural interfaces), covering up to the 75% of the device LCOE.

TA84 UCC-UNIGhent Offshore Basin (OB)

Location (town, country) of the infrastructure: Wageningen, Haagsteeg 2 The Netherlands

Web site address: Coastal & Ocean Basin Ostend (Belgium) — Department of Civil Engineering — Ghent University (ugent.be)

Annual operating costs (€):1 million Euro (estimated operational cost excluding project or investment costs)

Description of the infrastructure: The COB is a state-of-the-art wave tank (L 30 m x W 30 m x H 2.3 m), in which a unique combination of waves (up to 0.55 m in 1.1 m water depth) and from Q3 2023 onwards currents (up to 0.4 m/s) are generated in any relative angle with each other. The measurement portfolio also features an advanced 6 DOF motion tracking system (above and under water) from Qualisys. The COB accommodates testing of offshore renewable energy, coastal and offshore engineering scale models.

Services offered by the infrastructure: At COB, a unique combination of wave and current characteristics (waves and currents in any relative angle with each other) can be generated, which provides an excellent medium to test and develop innovative designs related to offshore (floating) wind turbines, wave energy converters, floating PV, as well as offshore jacket, dike, harbour and breakwater engineering structures. COB is part of MARINERG-I as well as OWI-Lab and will facilitate in 2023 its first European testing campaigns within WECfarms, WECANet, SOIL-TWIN, WINDSOIL projects.

Support offered under this proposal: A scientific team comprised of experts (Prof., postdoc, PhD level) from Ghent University, KU Leuven and Flanders Hydraulics Research supports in planning, supervision and analysis of the 3D physical experiments. A technical team of three staff members assists to construct and instrument the model. The wave generator, pumping system and main data acquisition is operated by this technical team as well. The facility itself provides a 6t portal crane and a 1.5 t forklift truck.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: Unique COB features are: generation of wave and current at any relative angle; covering wide range of TLR levels; new facility open to many sectors, new research practices and cross cutting topics.

Provision of access to the following VA infrastructure(s):

VA01 AIT EnergySim Lab

Location (town, country) of the infrastructure: Vienna, Austria

Web site address: https://ait.ac.at and https://smartest-sim-lab.erigrid2.eu/

Annual operating costs (excl. investment costs) of the infrastructure (€): With the financial accounting system of AIT, it is not possible to determine the exact annual operating cost for the AIT EnergySim Lab. Only personal costs and consumables for supporting VA Users are charged to the project.

Description of the infrastructure: The AIT EnergySim lab provides a comprehensive computing cluster infrastructure with different simulation tools for analyzing complex smart grid and smart energy systems scenarios. This virtual infra-structure provides an environment for co-simulation based on the FMI++ Python Interface, which has been specifically designed to support the features offered by the FMI specification. Together with Jupyter Lab, this environment provides a flexible platform that allows to configure and execute co-simulation setups in an easy way. This platform is made available to virtual access Users via a web interface to reduce time for the creation and setting-up of complex co-simulation scenarios.

Services currently offered by the infrastructure: As part of the RISEnergy VA infrastructure, AIT provides web-based co-simulation environment for analysing different aspects of smart energy systems, real-time and co-simulation of smart energy systems, and FMI-compliant simulations.

Support offered under this proposal: With more than 250 experts from science and engineering, the AIT Center for Energy offers innovative and applied research services to customers and partners such as industrial companies, energy suppliers, technology providers, cities, and municipalities as well as research institutions.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: This virtual infrastructure was already accessible in the context of the EU project ERIGrid 2.0 (H2020). Several VA Users have been supported so far by AIT via the aforementioned RI project.

VA02 RWTH Vlab

Location (town, country) of the infrastructure: Aachen, Germany

Web site address: http://www.acs.eonerc.rwth-aachen.de

Annual operating costs (excl. investment costs) of the infrastructure (€): 200.000€

Description of the infrastructure: RWTH provides a web-based simulation platform integrating existing simulation tools for providing Simulation-as-a-Service to a broader audience. This platform is built upon JupyterHub and integrates tools such as DPsim, a real-time capable solver operating in static & dynamic phasor (DP) and EMT domains and VILLAS, a flexible gateway for co-simulation interface data.

Services currently offered by the infrastructure: Web-based simulation of electric power systems (Electro Magnetic Transient (EMT) simulation, Dynamic Phasor (DP) simulation, Static Phasor / Loadflow (SP) simulation) and scriptable scenarios using Python, Web-based and graphical editing and preview for CIM network topologies as well as their export, Web platform for online management of lab experiments, simulations.

Support offered under this proposal: The Users will get exposed to a vibrant scientific environment performing cutting-edge research at the border of modern power systems and advanced ICT, providing an interdisciplinary research experience in the area of modern smart grids, supported by a state-of-the-art laboratory facility. RWTH researchers will guide the visitor regarding the use of the available assets.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The offered simulation suite composed of DPsim, VILLASframework etc. are unique developments of RWTH. Though available as open source, the User benefits from the developers' expertise.

VA03 FZJ XR4MAT

Location (town, country) of the infrastructure: Jülich, Germany

Web site address: Available on meta quest

Annual operating costs (excl. investment costs) of the infrastructure (€): 175.000€

Description of the infrastructure: The energy materials analytics and mixed reality visualization, designed and developed at FZJ-IEK-13, is an integrated mixed reality data visualization platform with capabilities in modeling, simulation and testing data acquisition, data augmentation and data visualization. It is currently specialized for hydrogen and fuel cell testing data, analysis of performance data and connecting to materials acceleration platforms and robotics labs for ink and catalyst coated membrane preparations. The virtual environment is also supported by tools and data for creating digital twins at the cell and stack levels production.

Services currently offered by the infrastructure: (1) Immersive big-data visualization at cell and stack level, (2) Data augmentation for remote lab access, (3) Digital twins, and (4) Integration to self-driving labs and automated orchestration software and full visualization of the data.

Support offered under this proposal: (1) Working with unique facilities for training purposes, (2) High quality data visualization and testing physical models, and (3) Supporting immersive experience to remotely run and orchestrate self-driving labs for fabrication of components and cells for electrolysers and fuel cells.

Extraordinary scientific aspects/possibilities of the infrastructure not available at other infrastructures: The only end-to-end software and data visualization mixed reality environment which is already deployed immersive XR facility dedicated to H2 technologies.

Description of work

With the Transnational and Virtual Accesses activities industrial and academic researchers are targeted, providing them with the best environment to conduct research, validate, test and further improve their research results.

Task 2.1 Management and Administration of Transnational Access (KIT, AIT) [M1-M54]

Task 2.1 will be preparing and launching the calls (6 in total, M7, M13, M19, M25, M31, M37, M43) for access and handling the pre-screening and selection of the User projects according to the EC's rules specified for integrating activities.

Pre-screening: The pre-screening of proposals submitted by the applicants requires an independent technical appraisal. The purpose of the pre-screening is to analyse the type of activity the applicants will undertake and the ability of the facilities to meet the technical requirements specified by the applicants. In doing so, this task will undertake a quality assurance check with the Access Provider by independently matching the technical capabilities of the facility requested to the objectives of the work planned by the applicants.

Selection of proposals and allocation of the facilities: This will be managed by the Selection Panel (SP, 69 members of RISEnergy and extern) chaired by the project coordinator. The evaluating Committee will consist of up to 5 SP experts providing the expertise in the application filed. The SP membership will be ratified by the Governing Board at the Kick-Off Meeting (D2.1) and on demand during the project. Evaluation of the TA project proposals will be made in accordance with the Commissions principles (scientific quality, relevance, and uniqueness) and the selection criteria developed at the beginning of the project implementation (General Rules for TA, D2.2). The (SP) will ensure that the goals of objectivity, transparency, impartiality and quality are met. The review process for each call will be documented (D2.4, D2.5, D2.6) and the outcome communicated to the applicant. For rejected applications, reasons and feedback will be given to the applicant. If it is accepted, an invitation for access, detailed instructions and documents are provided to the applicant four weeks ahead of the scheduled access according to the General Rules for TA.

The selection panel will consider a **fast-track access** procedure for Ukrainian researchers from government-controlled areas for special visits (beyond 3 months) and extended ad hoc training.

The TA web page (where applicants will find facility descriptions, locations and contact details, and instructions for applying for access) will be launched at the RISEnergy website (MS11, M6). This as well as the promotion of the calls to attract potential Users and outreach to potential Users will be managed in collaboration with WP5.

The TA budget will be held by the project coordinator and distributed according to actual RI use for TA during the project. Some facilities would potentially not be used while others could be used multiple times. Therefore, it is important to consider that the TA budget will be distributed by the coordinator to the partners, affiliated partners and subcontractors based on which RIs have received a TA visit. Totally 8.5Mio€ is planned for provision of access and 425 000€ for the covering of travel and accommodation costs of the TA Users.

Task 2.2 Provision of Transnational Access (KIT, All) [M7-M52]

The project will provide easy and seamless access to the best scientific infrastructures and services in the field of renewable energy technologies in Europe. Users will have on-site or remote access to 84 infrastructures originating from 61 different organisations and 22 countries, including affiliated institutions and subcontractors. Each entity providing RI access to RISEnergy will receive 1 PM (or 8000€ in the case of subcontractors) to set up procedures for RISEnergy access, provide the necessary information and communicate with WP2.

Task 2.3 Statistical analysis of Transnational Access Programme (EU-SOLARIS, KIT, AIT, CIEMAT) [M12-M54]

Each User that is granted access to RIs in WP2 and the corresponding RIs will be asked to fill out a questionnaire and a project report, which will be collected and aggregated. These documents will be made available to WP1, WP3 and WP4 and WP5 in order to improve the quality of services supported by the infrastructures, the promotion strategy of the programme and support the development of new strategies to improve the TA. In addition, some statistics of TA granted will be analysed periodically (per installation and RI) on the basis of: a. Amount of access offered vs access actually granted. This would help to detect any difficulty related with poor performance of a facility or insufficient promotion of the access programme b. Demand (number of proposals received) vs amount of access offered per installation and RI. This will help in the assessment of the interest for a specific RI. c. Success

rate of proposals per installation and RI. This will help to detect any eventual problem in the process of prior filtering/assessment of proposals d. Assess the satisfaction of applicants (successful or not) with the whole selection/access process. Last but not least, it is an overall assessment of the TA experience. e. Statistics about Users' countries and gender. The study of the evolution of these parameters along the project lifetime will help to identify eventual problems in both the promotion of the access programme or in the support given to tentative applicants, thus helping the project management to apply the necessary strategies to improve the performance of the activity, which is one of the critical targets of this 'scientific service' activity. Also, under this task, the TA access reports will be collected and submitted for the consideration of the innovation management secretariat in order to proceed with task 4.1 'Innovation Management', for the undertaking of a detailed technical review of such access reports. This will give us the chance to understand what was achieved and how the potential benefits can be maximized.

Task 2.4 Management and Administration of Virtual Access (**AIT**, KIT, FZJ, RWTH) [M1-M54]

This task will be preparing and offering the VA services according to the EC's rules.

Simulation tools and databases are provided "as-a-Service", without the need of proposal submission, independent evaluation, and project reporting by the Users. Administrative issues will become simpler since there is no physical visit to installations; no individual support or supervision is offered. Due to the special characteristics and conditions, this specific task will deal with the management of VA activities. The management and organisation of the VA will comprise:

- Create an online form and registration process for new Users and their identification.
- Preparation of a binding VA terms-of-service document.
- Supervision of VA training activities.
- Control of VA provision and associated operating/technological support.
- Interaction with the "external board" (RISEnergy Advisory Board) for periodic assessment of the VA service provision (every year: Month 18, Month 36, and Month 54).

The VA web page (where applicants will find facility descriptions, locations, and contact details, and instructions for applying for access) will be launched at the RISEnergy website at the project start (MS3, M6). This will be managed in collaboration with WP5 as well as the promotion of the calls to attract potential Users. The outreach to potential Users will be also addressed in WP5.

The VA budget will be held by the project coordinator and distributed according to actual facility use for VA during the project. Some facilities would potentially not be used while others could be used multiple times. Therefore, it is important to consider that the VA budget will be distributed by the coordinator to the partners, and affiliated partners based on which facilities have provided VA access.

Provision of Virtual Access (**Lead AIT**, FZJ, RWTH) [M7-M54]

The project will provide easy and seamless access to the best scientific infrastructures and services in the field of renewable energy technologies in Europe. Users will have on-site or remote access to 3 virtual infrastructures coming from 3 different organisations and 2 countries, including affiliated institutions. The VA has one hour as unit and the costs are defined in actual and unit costs taking the different specifications of the RIs into account.

Statistical Analysis of the Virtual Access Programme (**AIT**, KIT, FZJ, RWTH) [M12-M54]

This task will compile and assess the VA activities performed in RISEnergy from the administrative point of view; the analysis will be carried out based on "project-wide level" metrics and not paying attention to specific technical results or conclusions obtained in the individual realization of the accesses. The metrics for the assessment of the VA Programme performance are different and will be based on web page analytics, number of registered Users, total page hits, average usage duration, User geographical location, etc. These VA statistics will be provided to the EC and to the advisory board for the periodic VA assessment. Voluntary User feedback will be also collected by means of online surveys. Finally, suggestions for improvements of the VA provision in future projects will be proposed based on the problems found and lessons learned.

Work package number	**3** (Lead: UCC)
Work package title	Cross cutting and RES RI-Services to support technologies, systems and policy makers

Objectives

Create cross-RI services to support and accelerate RES TRL progression & system integration, fostering collaboration across technology disciplines and stakeholder groups.
Supporting TA & VA activities (WP2), and closely coupled with innovation & training (WP4), as well as dissemination & outreach activities (WP5), this encompasses

- Identifying ICT enabling technology platforms, promoting and exemplifying their application usage
- Offering a framework for digital services, systems and digital twins incorporating DaaS (data as a service) & SaaS (simulation as service) connected to the EOSC paradigm, underpinned by FAIR open data management
- Creation of metadata services along the value chain from materials (macro and ICT) to devices and systems to help Users find the most suitable metadata schema
- Decision making support incorporating sustainability KPIs and sociotechnical aspects, recommendations for future research, exploration of potential acceptance aspects for selected technologies, and enable derivation of common benchmarks for each technology.

Description of work

Task 3.1 ICT enabled RES (WSN retrofit devices) (**UCC,** AIT, EPL) [M02-M53]

Identify ICT enabling technology platforms, promoting and exemplifying their application usage across multiple cross-cutting RES fields (e.g. PV, wind). Most of the focus is on the disruptive value proposition of retrofitting WSN devices on, in or near equipment and infrastructure bringing the following benefits:

- Condition and energy efficiency monitoring of equipment
- Interoperability for EDM, SES, DER, EEB optimization, etc.

A major portion of the effort will be dedicated to

- Autonomous/Long battery life solutions (energy harvesting, power management)

A major impediment to ICT adoption is that WSN devices need significantly longer battery life than is commercially available for them to deployed at large scale. This requires a combination of better batteries, micro-power energy harvesting as well as WSN device collaborative eco-design amongst stakeholders based on the real-life sensing and data processing requirements as well as exploiting the ambient energies available.

Activities in the task relate to identifying specific examples of the potential benefits of WSN devices with project partners across various fields and creating a portfolio of ready-made examples (specifications and use cases). Similarly, assessments of typical real-life ambient energies and the potential to use them to extend battery life will be undertaken. This material will be used not only to exemplify the value proposition but will also attract TAs and VAs in WP2. The data from task 3.3 can be leveraged as converted from material to system level metadata. This will be closely coupled with the repositories, simulation tools and digital twins. Task 3.2 giving potential adopters guidance, tools and methodologies to co-develop and install optimized ICT enabled RES solutions. Such material & outputs will also be used in WP4 & 5 for informing, educating and disseminating, building an extended ecosystem of multi-disciplinary collaborators, cross-connecting and synergising ICT & RES disciplines.

Task 3.2 Framework for Digital Services and Digital twins (**CIEMAT**, KIT, AIT, EPL, UCC, DTU) [M07-53]

This task aims to create a framework for digital services and digital twins in the RISEnergy project. The goal is to establish open science processes and methodical frameworks to ensure the quality and maturity of data and tools used for RISEnergy's thematic (i.e.: exposed to researchers) and core (i.e.: needed for advanced capacity integration) services. This will be achieved through the adoption of FAIR data principles, which will be automatically validated through metadata analysis and machine-actionable features.

The specific objectives of the task include providing a centralized service for integrating digital artifacts (CIEMAT, FZJ), checking and validating FAIR data practices (such as those from EERAdata FAIR data toolbox, FZJ's METADOR or the one from ARDC), and integrating digital artifacts into the framework for validation (KIT, EPL, DTU, AIT, UCC), delivery, and deployment of software components (CIEMAT, FZJ). Metadata and ontologies will be synergized, and a first-generation recommendation model will be included in the metadata marketplace as well. The resulting framework will be available until M53 and, beyond the project lifetime, evaluated to be integrated into major European initiatives such as EERA.

Task 3.3 Metadata service along the value chain (**CEA**, FZJ, KIT, UCC, DTU, IMEC, CIEMAT, CNR) [M02-M53]

This task is designed to help Users in finding the most suitable metadata schema for their research practice, spanning the ENTIRE innovation chain from materials to devices (macro and ICT) and integrated systems in the scope of RISEnergy. All participating Users and RIs adopt our metadata structure while adhering the FAIR data principles (cf. task 3.2). The proposed service will facilitate the curation/submission of User-produced data (experimental or computational) through following steps:

1. *Summarise* use cases for structured metadata application along the innovation chain, including reproducibility and repeatability of experiments, documentation of validation results, RI integration and automation, etc.
2. *Identify* and *compile* existing (meta)data platform and repositories on materials, devices and systems that are relevant to the eight renewable energy technologies of the project. We will take advantage of pre-existing list of repositories (e.g. "FAIR Data toolbox"), which will be expanded and adapted to meet the Users' needs. The collected data resource descriptions will be validated and stored using a unique format (template).
3. *Provide* guidance to the RI Users to the most appropriate metadata platforms/data repositories according to the type of materials studied and to the intended applications through a searchable database of data-platforms/repositories with the descriptions used in each (available at M30, updated version on M42). The search engine will be based on METADOR framework, with novel ontology and graph meta-data standards to accompany meta-data definition and integration across materials to devices and systems. (resp. FZJ). This also includes the first generation of AI/ML model duckers and data entry queries for materials intelligence for Hydrogen technologies, from materials to devices and integrate systems. This task will be linked to the RISEnergy's bespoke central service (*cf.* task 3.2), and the service will be offered until M53 and evaluated afterwards.

Task 3.4 Decision making for sustainability and sociotechnical aspects (**KIT**, UCC, DERlab, CIEMAT) [M01-M53]

An overview of technologies in frame of the RISEnergy project with selected sustainability KPIs (e.g. techno-economic and LCA based) using recent literature will be provided in cooperation with named partners (UCC, DERlab, CIEMAT). The data can be downloaded or e.g. used to get an overview of available potential environmental impact categories (global warming potential, human health etc.) as well as techno-economic values (e.g. €/kWh, € per kW, CAPEX and OPEX). From these, potential implications can be derived to provide top level recommendations for future research and identify new research areas. Ideally, selected data will allow to derive common benchmarks for each technology.

In line with this a decision-making tool and framework that allows to integrate different indicators for sustainability assessment to derive corresponding recommendations and to benchmark new technologies against existing ones will be developed. The tool and framework include different MCDA methods (Analytic Hierarchy Process, PROMETHEE, TOPSIS etc.) that can be used to support decision making processes related to relevant technologies. The tool and the framework will provide practical context via default data sets for considered technologies. In addition, the tool will be tested with relevant RISEnergy stakeholders and can help to involve different perspectives of the same until M42. A workshop and a survey will be carried out to include wider stakeholder groups as e.g. citizens or policy makers and to obtain socio-scientific feedback aiming to explore potential acceptance aspects for selected technologies. The optimized tool will be available until M53 and its use evaluated thereafter.

Work package number	**4** (Lead: EPL)
Work package title	Proactive Innovation Management

Objectives

This work package focuses on the support of innovation and the acceleration of technology development in the renewable energy sector. The project brings different renewable energy sectors and their associated state of the art infrastructures and it is important that the benefit of this is maximised in terms of knowledge sharing, improving processes, streamlining etc. such that to help and de-risk innovative technologies prior to commercialisation The work will not only concentrate on the infrastructures role in innovation testing but in providing a suite of complementary services that will guide technology developers and minimise bottlenecks as they progress through

the Technology Readiness Levels (TRLs). WP 5 offers a unique entry point for transnational Users.

In summary the aims of WP4 are as follows

1. Engage with innovators to provide pathway for technology development
2. Maximise synergies between renewable energy sectors to enhance innovation
3. Technical appraisal of TA reports to identify further opportunities
4. Broad engagement with industry and policy stakeholders relevant to innovation support and development
5. Organize the RIs training activities to support the RISEnergy ecosystem, with emphasis on the layer of cross-RI services, and complementing the innovation support activities.

Description of work

Task 4.1 Innovation Management (UCC, EPL, KIT, AIT) [M1-M54]

This task will offer a proactive service which will ensure that innovative technology ideas from various sources are supported and provided with a potential pathway to commercialization through consultation and engagement with relevant renewable energy sector experts from within the project. Hence, maintain contact with area coordinators and expert panels. When assessing a particular technology, previous development work and outcomes will be examined, and both the short term (within the time frame of the project) and the long-term (to full commercialization) requirements will be outlined. In this process close collaboration will be sought with the EU services such as the innovation radar and sister services (https://www.innoradar.eu/). The focus for the short term be on the capacity of the RISEnergy RIs to facilitate the development and identify those which are most suitable for use. For the long-term the aim will be to provide them with a plan and timeline to reach commercialization with the objective of accelerating the process. From a technological perspective the innovation must pass various stage-gates (efficiency, survivability etc.) but other requirements related to financing, LCoE, business models will also be addressed. Throughout the process emphasis will be given to the real needs of the industry and how SMEs build their profile and effectiveness in the innovation cycle.

Details of the procedure that will be followed are outlined below:

1.) The innovation management secretariat will offer a unique entry point to receive informal inquiries (web-form / email address) to engage with technology developers and innovators in the renewable energy sectors. The informal engagement may lead to the recommendation for the submission of a short application consisting of a more detailed discussion of the scientific idea or innovation. These applications will be invited at regular interval throughout the project and most likely in advance of TA applications.

2.) Each application will be reviewed by the secretariat and then passed on to relevant experts from within the consortium for more detailed technical assessment. Experts will not only be selected from the specific renewable energy sector related to the application but also from one or two other sectors such that new knowledge or potential synergies can be identified and used to the benefit of the innovator.

3.) The pathway for the application may take different routes following the initial assessment by the expert panel. This assessment will use a set of objective criteria to identify and rank the most promising technologies that have the highest opportunity for reaching full commercialization. For innovations that receive a low ranking, a short report will be prepared outlining the identified shortcoming and providing recommendations on how they can be addressed. For the remaining applications a much more detailed evaluation will be carried out.

4.) Successful applications will commence an engagement with the RISEnergy project that could potentially last until the end of the project. Initially the existing development work carried out on the innovation will be assessed and gaps and shortcomings may be identified that will need to be filled in order for it to advance to the next TRL. There will be a focus on how the RIs in the project could facilitate further development and recommendations can be made to this effect. It would be expected that the successful applicants would apply for TA. In addition, a potential development pathway will be prepared that will outline the steps and indicative associated costs involved with taking a technology to full commercialisation. The pathway will primarily deal with the technological aspects of the development process but will also highlight the importance of securing sufficient financing and investment. A set of selected pre-proposals is then discussed by *this* panel that brings together senior scientists and facility experts from the RI networks; this consultancy results in a suggestion for the most suitable facilities (including non-RISEnergy ones) to be used, and suggested experts to offer further ad-hoc consultancy.

5.) Following the above engagement, the innovation management secretariat will continue to track the

development of the innovation and maintain communication with the innovator. At the end of the project, it will be shown how through the preparation of a structured development process and the provision of TA that technologies advanced to higher TRLs.

6.) Special attention will be given to provide **fast-track acces**s to Ukrainian researchers from government-controlled areas to support applications with longer ad hoc training and length of visits (beyond 3 months).

Task 4.2 Innovation Acceleration (UCC, EPL, KIT, AIT) [M1-M54]

This task is aligned with task 4.1 in terms of identifying how the consolidation of RIs and associated experts from various sectors within the project will provide a better service to innovators and thus accelerate the technology development process. This project provides the opportunity to understand the specific development process for different technology types and through knowledge transfer and identified efficiencies, improvements can be made. In addition, certain technologies can be cross sectoral, for instance an offshore renewable energy technology can be developed to supply power to the grid where power quality and grid integration are important or to produce hydrogen or include battery storage. Therefore, understanding the development process across the renewable energy sectors, taking the potential use of the power into account will streamline the development process.

This task will undertake a detailed technical review of TA access reports to understand what was achieved and how the potential benefits can be maximized. This may take the form of advice to the applicant on their next steps, recommendations to the RI on improvements to their testing process or the identifications of learnings from one technology that may be of benefit to another. The innovation management secretariat will manage this task and assign relevant experts as required and track progress achieved. It will capture information that is normally missed in TA programmes in terms of identifying further opportunities and not letting the report of a TA in itself be the end of the process.

Task 4.3 Innovation support from and for industry and policy stakeholders (ENEA, EPL, KIT, AIT, EnBW, UCC) [M1 – M54]

This task is addressed to all the stakeholders of the energy value chain which are not directly involved in the innovation technology process, but who play a critical role in its development (e.g., certification authorities, financial organizations, government agencies, regulatory and standardization organizations, etc.). More in detail, the task aims to understand how these stakeholders can support innovation and which actions they can apply for fostering it.

To reach these goals, the task will be organized as follow:

1) Selecting relevant stakeholders to involve for identifying the main barriers and possible solutions to overcome the main issues/barriers. Each partner of the consortium will support this activity by providing a list of contacts for each country represented in the task.

2) Defining a strategy and related mechanisms for reaching the potential stakeholders. This activity will include specific meetings, targeted thematic workshops, roundtables, workshops, but also specific interviews to involve them in the decisional process. Finally, more information could be obtained from the Forum developed by the WP5 (subtask 5.3.2 'Online Presence and Research Infrastructure Platform' which is led by DERlab); all participants - properly stimulated by the moderators of the Forum - will be invited to discuss about specific relevant topics (e.g., actual needs, future trends and challenges, etc.).

3) Data collection and analysis. This activity will be focused on the selection of the collected information, the identification of better qualitative or quantitative analysis techniques to change information in User data, and, finally, the construction of useful dataset.

To support the above, an external consultancy is planned for the submission of surveys and data collection.

Task 4.4 Training on cross-RI services and innovation support (DTU, EPL, CEA, UCC, CIEMAT, KIT, AIT) [M06 – M48]

This task organizes and facilitates the creation of training materials and activities to support the RISEnergy eco-system, emphasizing cross-RI services (WP3) and complementing the innovation support activities (T4.1/.2/.3).

DTU will provide the framework to organize training activities and source content from relevant tasks, which include T1.2/.4 and WP2, represented by EPL, CEA, UCC, CIEMAT, KIT and AIT. Training activities are geared toward researchers and technology developers including: 1) content for seminars, panels and workshops to

promote the RISEnergy cross-RI services and innovation support; 2) webinars and the recorded talks as training materials; 3) compilations of technical training materials.
The goal is to offer a portal to both cross-cutting and area-specific training content, e.g. by identifying and linking to ERIGrid, EDDIE, ASSET, and EIRIE training materials, aiming to operate a single point of access for all material; the portfolio of materials will be on the RISEnergy website (in cooperation with EERA and DERlab in T5.3.2) and use EIRIE as a common repository area, including a YouTube channel where possible and proven complementary and useful. Technical content developed on aspects of *cross-RI services*, includes e.g. code samples, notebooks, instructions, and presentations; webinars will be developed for specific results from the tasks listed above; to facilitate the innovation support activities, training materials are targeted at both the innovation, development (User success stories, TRL progression, etc., optimal operation and use of resources, the selection of suitable KPIs, etc.) and technical implementation of access projects (.e.g. planning of experiments, and data analysis with hands-on examples, etc.).

Work package number	**5** (Lead: KIT)
Work package title	Project Management, Outreach and Engagement

The objective of WP5 is to manage all project activities among the partners, to monitor quality and timing of project results, to carry out the overall administrative and financial management of the project and to actively advertise the services of RISEnergy to targeted research communities and relevant industries (incl. SMEs). The aim is to ensure the project is conducted on time according to the budget and directed towards the overall project objectives.
The following core tasks and activities will be carried out: (i) Coordination of the technical activities of the project and linking together all project components; (ii) Overall legal, contractual, ethical, financial and administrative management; (iii) Maintaining communication with the European Commission and each partner; (iv) Establishing and maintaining conflict resolution and management of strategic orientation of the project; (v) Disseminating the activities and initiatives carried out in the context of the project; (vi) Facilitating and maintaining strong and effective involvement of relevant various stakeholders at local, national and European level, and between the different sectors of research, policy and practice by outreach and engagement activities.

Description of work

The Project Coordinator (PC) is responsible for technical coordination and scientific quality assurance throughout the project and will deal with the general management of the consortium including management of finances, legal aspects, risk monitoring, monitoring of the technical progress and the coherence between the different work packages in order to respect the project's objectives as well as providing the necessary reports to EC. Partners are requested to provide the necessary information to the PC to fulfil their tasks.
Special attention will be paid to addressing Ukrainian researchers from government-controlled areas.

<u>Task 5.1 Internal project management and coordination</u> (KIT, DERlab, EERA, ECCSEL, EU-SOLARIS, CIEMAT, CNR, all) [M1-M54]
Among others, this task involves (i) the handling of the project correspondence and the day-to-day requests from partners and external bodies; (ii) the set-up and maintenance of web-based tool as a platform for secured internal information exchange and project documents archive (e.g., SharePoint); (iii) the overall legal, contractual and administrative management including the establishment and maintenance of a Consortium Agreement and the maintenance of the Grant Agreement including the preparation of amendments; (iv) the administration of the EU financial contribution and distribution thereof within the consortium; (v) the preparation, organisation, administration, drafting of minutes and follow up of the meetings of the General Assembly, Steering Committee and mid-term and final EC review meetings.
<u>Sub-Task 5.1.1 - Development of a project management and quality assurance plan</u> (**KIT**, all) [M1 – M3]
This plan (D5.1, M03) will cover the management of the project in terms of internal communication and contractual, administrative and financial project management and quality assurance procedures;
<u>Sub-Task 5.1.2 - Development of a Data Management Plan</u> (DMP) (**KIT**, CIEMAT, CNR, all) [M1-M54]
The PC will direct the overall data management process, with the assistance of the SC and relevant WP and task leaders and will elaborate a detailed DMP, in line with the EC guidelines (Guidelines on FAIR Data Management in Horizon Europe), to improve and maximise access to and re-use of data generated/collected by the RISEnergy project. The DMP will outline how the different project data will be generated/collected and handled during and after the project, focusing on the data collection methodology and data sharing issues. It is a living document, which will evolve during the lifetime of the project in order to present the status of the project's reflections on data management. The initial DMP will be submitted as D5.2 in M06 and will be openly accesible.

Sub-Task 5.1.3 – Risk assessment and monitoring (**KIT**, all) [M1 – M54]
This is based on the assessment of the technical, financial and organisational risks in the project and preparation of a risk management plan in the first 12 months followed by regular assessments (once every 6 months). The risk (re)assessment will be included in the periodic and final reports.

Task 5.2 Monitoring and internal and external progress reporting (KIT, all) [M1 – M54]
This task includes (i) monitoring of the progress in terms of deliverables, milestones, task completion and resource use; (ii) monitoring the quality of technical deliverables by following an approval procedure which will be defined during the kick-off meeting; (iii) keeping track of the progress, costs and budget situation; (iii) maintaining compliance under Grant Agreement; (iv) compiling and submitting of contractual periodic and final progress reports; (v) collecting administrative documents, statements of expenditures, including required audit certificates of individual partners, compilation thereof and transmission to the Commission/Participant Portal; (vi) monitoring of the technical progress based on regular videoconferences with the WP leaders (monthly).

Task 5.3 - Dissemination, exploitation, outreach and engagement plan (EERA, KIT, DERlab, all) [M1-M54]

Sub-Task 5.3.1- Dissemination, outreach and engagement plan (EERA) [M1-M54]

This sub-task will accompany the activities of all WPs throughout the whole duration of the project, addressing all the stakeholder' groups preliminary defined in section *2.2. Measures to maximize impact - Dissemination, exploitation and communication*. Because of its size and outreach, EERA is the best suited partner to lead this task. Notwithstanding, all consortium partners will assist in this endeavor.

It will include some starting activities such as developing a logo, templates and additional communication material (e.g., flyers, factsheets, etc.) to ensure consistent branding. As the project progresses, existing and established channels will be used to disseminate information about RISEnergy and reach out to the relevant audiences. These will include periodic newsletters, but also specific outreach instances tied to the evolution of the project. It is also foreseen that new channels specific to the project will be created.

In order to enhance the effectiveness of this sub-task a critical step will be the development of a stakeholder map in which key stakeholders, including the ones preliminary defined in section 2.2 will be identified and further described and categorized according to their interest in the project. One of the key purposes of this will be to identify new potential Users for the available RIs.

Based on this input, an engagement plan will be put together in which, per stakeholder, the following is anticipated to be defined: a) a clear and compelling value proposition by articulating the benefits of open access to RIs; b) a plan to effectively communicate the project to the stakeholders through various channels, including websites, newsletters and social media (owned and earned), with targeted key messages according to their interests; d) outreach events and workshops for the relevant audiences to learn about the project and share insights and experiences from already participating parties.

As this sub-task is critical for reaching several objectives of the project, EERA foresees the development of a network/pool of Users (champions) who will be leveraged as multipliers of RISEnergy and its activities. They will share knowledge, experiences, and best practices and promote further the available RIs to maximize the outreach of the project, attracting new Users, and the engagement of all relevant parties.

Sub-Task 5.3.2 – Online Presence and Research Infrastructure Platform (**DERlab**, all) [M1-M54]

A website will be set up at the start of the project whose main purpose will be to act as the interface offering services to foster collaboration. The website functionalities will be enriched by linking it with other already existing European platforms that will complement and strengthen the objectives of RISEnergy, for example, the EIRIE platform, the DERlab website and the EERA website. All project partners will support this task by providing recommendations from the design perspective and content-wise.

The online presence of the project will be assured via the creation of a public website, which will be created and maintained by DERlab, and will be online in month 6. All project news, events, public deliverables, etc., will be uploaded and updated on a regular basis. The website will be relevant both for project stakeholders, as well as for the broader audience, to ensure maximal awareness and reach. A partner exchange platform will be created for internal use, as the basis for the internal project communication.

Sub-Task 5.3.3 - Exploitation strategy (**DERlab**, all), [M1-M54]

The task will identify the main exploitable results and analyse their replicability potential. A detailed exploitation strategy will be created. It will describe the overall exploitation strategy of the consortium as a whole and also

strategic exploitation plan for individual partners. The exploitation strategy will focus on: the replicability of the project concept and results after the project has ended; recommendations and promotion to relevant EU and national bodies; identification of target groups; identification of appropriate funding mechanisms for follow-up project activities; development of a sustainability plan for the long-term continuation of the project activities, defining roles and responsibilities, IPR and ownership issues.

Task 5.4 - Ethics management (KIT, all) [M1-M54]
The PC will ensure that all Ethical issues already identified (see ethical assessment Part A of the proposal) will be considered by the relevant partners within their project activities. Other ethic issues eventually identified during the course of the project will be considered as well. A specific report on ethical issues will be provided to the EC, specifying how the ethical issues have been tackled by the consortium and providing the requested information (tools, procedures, etc.), and also ensuring that the consortium complies with all relevant national/EU regulations.

List of deliverables (table 3.1c)

N°	Deliverable name	Short description	WP	Short name lead part.	Type	Dissemination level	Delivery date (in months)
D1.1	Working Plan for the experts' groups	Definition of the Working Plan of T1.1 for each group of experts of the ecosystem	1	EERA	R	PU	M06
D1.2	Terms of collaboration with the EU and international initiatives on climate change	Definition of the terms of collaboration between RISEnergy and the initiatives identified in T1.3	1	EERA	R	PU	M09
D1.3	Technology and systems gaps and needs in R&I to drive the energy transition	Report on technology and systems gaps and needs in R&I to drive the energy transition with optimal RES use	1	ENEA	R	PU	M18, M36, M54
D1.4	Summary of the webinars exchanging best practices with existing RI networks	Report of the webinars organised for presenting the initiatives of T1.2 (e.g. DERlab community and EnABLES project practices)	1	CNR	R	PU	M24
D1.5	Landscape analysis Energy RIs	Report on the result of the Landscape analysis to identify and help with the establishment of new renewable energy RIs	1	ECCSEL	R	PU	M53
D1.6	Best practice benchmark analysis in the context of energy RI landscape	Report of the best practice benchmark analysis in the context of energy RI landscape	1	CNR	R	PU	M54
D1.7	Summary of the collaboration activities with the EU and international initiatives on climate change	Final report describing the collaboration activities carried out with the initiatives of T1.3	1	EERA	R	PU	M54
D2.1	Selection Panel	Selection Panel approved by	2	KIT	R	PU	M04

		Governing Board					
D2.2	Specification of the Virtual Access Programme	Describes the VA schemes: process timing and deadlines, VA access conditions	2	AIT	R	PU	M06
D2.3	General Rules for TA according to access policy	Provides gereral rules if the TA	2	KIT	R	PU	M07
D2.4	Access Policy Agreement between coordinator, RI owner and User	Describes the Access Policy and provides a template of the Agreement	2	KIT	R	PU	M07
D2.5	Virtual Access Assessment Report (first 18 months)	18 months report from the external board that will periodically assess the virtual access services as well as the statistics on the access provided.	2	AIT	R	PU	M18
D2.6	TA statistics report for period M1-M18		2	EU-SOLARIS	R	SEN	M20
D2.7	Virtual Access Assessment Report (second 18 months)	36 months report from the external board that will periodically assess the virtual access services as well as the statistics on the access provided.	2	AIT	R	PU	M36
D2.8	TA statistics report for period M19-M36		2	EU-SOLARIS	R	SEN	M38
D2.9	TA statistics report for period M37-M54		2	EU-SOLARIS	R	SEN	M54
D2.10	Virtual Access Assessment Report (third 18 months)	Final report from the external board that will periodically assess the virtual access services as well as the statistics on the access provided.	2	AIT	R	PU	M54
D3.1	Scientific data guideline (SDG)	Scientific data guideline (SDG)	3	CIEMAT	R	PU	M12
D3.2	Use cases and list of existing data platforms/ repositories	Use cases and list of existing data platforms/repositories with resource descriptions - classify MD templates. Centralized view needed. (Identify available (baseline) and gaps.)	3	CEA	DATA	PU	M12
D3.3	Report/portfolio of 'ICT enabling' benchmark specifications	Report/portfolio of 'ICT enabling' benchmark specifications (for various fields) based on internal & external survey & experiments	3	UCC	R/ DEM	PU	M18 (initial) M44 (updated)
D3.4	Description and exploitation of the digital framework (DDP)	Description and exploitation of the digital framework (DDP)	3	CIEMAT	R	PU	M24
D3.5	White paper on relevant sustainability	White paper on relevant sustainability KPIs and related research gaps for selected	3	KIT	R	PU	M24

	KPIs	technologies					
D3.6	Searchable database for Users for finding the "right" repositories /platforms	searchable database for Users for finding the "right" repositories/platforms (Users will format data descriptions according to the selected repository's metadata schema)	3	FZJ	DATA	PU	M30 (initial) M42 (updated)
D3.7	Decision making framework and tool	Decision making framework and tool for sustainability assessment of energy technologies with corresponding weights	3	KIT	DEM	PU	M36
D3.8	White paper on 'ICT enabling'	White paper on 'ICT enabling' based on D3.3 and TAs undertaken	3	UCC	REP	PU	M50
D4.1	Report on innovation engagement	Produced after the engagement has been completed for each application call. These deliverables need to tie in with the TA calls	4	UCC	R	PU	M18, M36 & M54)
D4.2	Innovation opportunities and gaps	This deliverable will outline the added value of collaboration between the renewable energy sectors in this project.	4	UCC	R	PU	M18
D4.3	Innovation opportunities generated through the project	The objective of these reports is to track innovation opportunities generated through the project. Initial estimate to be doubled by the end of the project	4	EPL	R	PU	M30 & M53
D4.4	Report on the identified best practices and existing services	The innovation best practices will be identified and classified. Selected ones will be presented in more detail with lessons learned.	4	EPL	R	PU	M48
D4.5	Report on Training activities and materials	Implemented training will be reported, with details on material developed, access options and anticipated learning possibilities.	4	DTU	R	PU	M48
D4.6	Report the list of the main types of actions and tools to stimulate innovation	Reporting the main types of actions and tools to stimulate innovation addressing barriers to their implementation and recommendations will be proposed to overcome the cited barriers and facilitate the innovation process.	4	ENEA	R	PU	M52
D4.7	Innovation tracking in RISEnergy Project	This deliverable will show how the innovation activity in RISEnergy has progressed technologies through the TRLs	4	EPL	R	PU	M53
D4.8	Report on cases handled and lessons learned	All applications will be analysed in detail and lessons learned will be classified for future use.	4	UCC	R	PU	M54
D5.1	Project Management and		5	KIT	R	PU	M03

	Quality Assurance Plan						
D5.2	Data Management Plan (DMP)		5	KIT	R	PU	M06
D5.3	Report on project website and RI platform		5	DERlab	R	PU	M06
D5.4	Outreach and Engagement Plan		5	EERA	R	PU	M09
D5.5	First Risk Assessment Plan		5	KIT	R	PU	M12
D5.6	Final Risk Assessment Plan		5	KIT	R	PU	M54

List of milestones (table 3.1.d)

Milestone n°	Milestone name	Related WP(s)	Due date (in month)	Means of verification
MS 1	Preliminary identification of technology and systems gaps and needs in R&I to drive the energy transition with optimal RES use	1	M18	D1.3
MS 2	Searchable database on repositories &platforms	1	M42	Operative link
MS 3	VA scheme specified and agreed	2	M06	VA reference framework is formulated: access conditions and procedures are agreed among partners offering the VA services and are specified in the corresponding deliverable.
MS 4	First TA call	2	M07	Online announcement
MS 5	Last TA call	2	M42	Online announcement
MS 6	RISEnergy digital framework and metadata central service available	3	M18	Operative link
MS 7	Basic functions of the Decision-Support Tool tested	3	M24	Internal short report
MS 8	Preparation of Strategy for engagement of stakeholders	4	M12	An internal short report with the designed strategy for engagement of stakeholders, adapted by the general assembly of partners.
MS 9	Innovation opportunities and gaps	4	M18	Complete the report with the findings and submit
MS 10	Kick off meeting	5	M03	Minutes of Meeting (Report)
MS 11	RI Platform established	5	M06	RI platform online available

Critical risks for implementation (table 3.1e) #@RSK-MGT-RM@#

Description of risk (level of (i) likelihood, and (ii) severity: Low/Medium/High)	WP(s) involved	Proposed risk-mitigation measures
Low participation of Experts to the project and lack of engagement of stakeholders in the activities of the project (i: medium; ii: medium)	1	A wide range or participants sitting on the governing boards of the different initiatives are participating in the engagement activities of WP1. Furthermore, EERA, the alliance comprised of more than 250 experts from the research community will participate in the project as a consortium partner in order to guarantee the expertise needed. Additionally, a specific WP has been created to engage those

		experts (WP1).
Failure to receive proposals for TA (i: low; ii: medium)	2, 5	Make use of consortium partner's large network to inform EU industry and academia about TA, promotion during face-to-face meetings.
Key RI taken out by a partner due to internal decisions (i: low; ii: low)	2	Activities by partners are redundant, and it is likely that a similar service can be offered by another partner
Low interest in evaluation of TA proposals by SP (i: medium; ii: low)	2	Enlarging of SP
Server infrastructure for VA too less powerful (from the technical point of view, no of Users, etc.) (i: low; ii: low)	2	Limitation of services (technical) and number of concurrent Users.
RISEnergy digital framework and metadata central service unavailable (i: low; ii: high)	3	The involved partners have a long expertise in providing these kinds of services under large pan-European initiatives. Consultation and advise as part of these initiatives would be carried out if needed.
Poor understanding and low uptake of WSN ICT enabling technology (i: medium; ii: high)	3	Create internally some initial exemplars and specifications (T3.1), work with partners to create real-life use cases. Use outputs at webinars, workshops, etc. to promote TA offerings. Add use cases and testimonials accordingly as we complete TAs
Lack of experts in specific fields to assist the valuation and support the identified innovation path of specific technologies and / or solutions / systems (i: low; ii low)	4	Use will be made of the affiliated partners of the project RISEnergy and associations related to them to secure the missing services with an anticipated plan of action, included in the planned strategy for engagement of stakeholders.
Change of Management team or WP coordinator (i: medium; ii: medium)	All	Anticipate potential staff changes in the project management and WP coordinators and select suitable replacements within the consortium as soon as possible.
Breach of IPR conditions (i: low; ii: low)	5	The Steering Committee (SC) will be in charge of monitoring and solving IPR aspects throughout the whole project.
Problems in coordinating a large consortium Internal collaboration problems (i: low; ii: low)	5	Conflict resolution procedures have been agreed and will be signed once the project is approved. Special attention will be paid to mutual respect, ethics and gender issues. To favour the team cohesion, consortium meetings including social events will be organised in a regular basis. Moreover, the coordinator will be in continuous contact with all partners, therefore possible problems will be identified at an early stage.
A partner leaves the project or underperforms technically/financially (i: low; ii: low)	All	RISEnergy partners have strong experience and knowledge of EU funded projects. Overall, two options will be considered: a) Re-allocation of resources and tasks among other partner(s) as RISEnergy is a large consortium b) Substitution of the Partner with a similar profile from the contact networks of the partners.
Inadequate quality in works and deliverables or delays in milestones achievement (i:	All	The progress of the project will be assessed through a constant monitoring of its evolution that include a deliverable and milestone internal review process. Follow-up strategies will be established,

medium; ii: low)		like periodic project meetings and even interim reports of the evolution of the project both from the technical and financial point of view, with the aim to mitigate this risk.

Summary of staff effort (table 3.1f)

	WP1	WP2	WP3	WP4	WP5	Total PM/part.
1-KIT	4	35	30	8	35	**112**
2-AIT	3	8	9	3	1	**26**
3-CEA	1	1	9	3	1	**15**
4-CIEMAT	3	1	22	8	3	**37**
5-CNR	8	1	4	0	1	**14**
6-DERlab	3	0	4	0	18	**25**
7-NTUA	0	1	0	0	0	**1**
8-RWTH	0	1	0	0	0	**1**
9-TUS	0	1	0	0	0	**1**
10-UPB	0	1	0	0	0	**1**
11-DTU	2	1	10	8	1	**22**
12-ECCSEL	5	0	0	0	2	**7**
13-BRGM	1	0	0	0	0	**1**
14-UKRI	1	1	0	0	0	**2**
15-SOTACARBO	0	1	0	0	0	**1**
16-EERA	31	0	0	0	24	**55**
17-IEES	0	1	0	0	0	**1**
18-CRES	0	1	0	0	0	**1**
19-CTC	0	1	0	0	0	**1**
20-DIFFER	0	1	0	0	0	**1**
21-FRAUHOFER	0	1	0	0	0	**1**
22-HZB	0	1	0	0	0	**1**
23-IREC	0	1	0	0	0	**1**
24-NTNU	0	1	0	0	0	**1**
25-OFFIS	0	1	0	0	0	**1**
26-PLOCAN	0	1	0	0	0	**1**
27-RSE	0	1	0	0	0	**1**
28-SINTEF	0	1	0	0	0	**1**
29-TECNALIA	0	1	0	0	0	**1**
30-TUBITAK	0	1	0	0	0	**1**
31-UNIBologna	0	1	0	0	0	**1**
32-UNIChalmers	0	1	0	0	0	**1**
33-UNICyprus	1	1	0	6	0	**8**
34-UNIEdinburgh	0	1	0	0	0	**1**
35-UNILaSapienza	2	0	0	0	0	**2**
36-UNIPadova	0	1	0	0	0	**1**
37-UNIPerugia	0	1	0	0	0	**1**
38-UNIStrathclyde	0	1	0	0	0	**1**
39-UNITomasBata	0	1	0	0	0	**1**
40-EnBW	4	0	0	2	1	**7**

41-ENEA	10	1	0	20	1	**32**
42-EPL	7	0	8	21	1	**37**
43-EU-SOLARIS	3	8	0	3	3	**17**
44-CENER	0	1	0	0	0	**1**
45-CNRS	0	1	0	0	0	**1**
46-CYI	0	1	0	0	0	**1**
47-DLR	0	1	0	0	0	**1**
48-IMDEA	0	1	0	0	0	**1**
49-LNEG	0	1	0	0	0	**1**
50-UNIEvora	0	1	0	0	0	**1**
51-FZJ	0	1	9,5	1	1	**12,5**
52-IMEC	2	1	2	2	1	**8**
53-TNO	1	1	0	2	1	**5**
54-UCC	4	1	38	42	3	**88**
Total PM	**96**	**95**	**141,5**	**135**	**98**	**566,5**

Subcontracting costs items (table 3.1g)

Subcontracting	Cost (€)	Description of tasks and justification
1-KIT	72.000€	8.000€ for 9 subcontractors (DBFZ TA04 and TA05, DHI TA06, ECN TA07, HMU TA08, MARIN TA09, NRCan TA10, NREL TA11, Re-Cord TA12, UniHannover TA13) providing access to their RIs
2-AIT	8.000€	8.000€ for 1 subcontractor providing access to its RI (AIST TA15)
52-IMEC	8.000€	8.000€ for 1 subcontractor providing access to its RI (UNIAnkara TA76)
54-UCC	32.000€	8.000€ for 4 subcontractors (EMEC TA81, IFREMER TA82, VGA TA83, UNIGHENT TA84)

Purchase costs item (table 3.1h) – only for relevant participants

Purchase costs	Cost (€)	Justification
1-KIT		
Travel and subsistence	473.300€	TA Users travel costs (425.000€); KIT travel costs (30.300€); Advisory Board travel costs (18.000€)
Remaining purchase costs (<15% of pers. Costs)	32.000€	
Total	**505.300€**	
13-BRGM		
Travel and subsistence	2.520€	Travel costs
Total	**2.520€**	
33-UNICyprus		
Travel and subsistence	7.000€	Travel costs
Remaining purchase costs (<15% of pers. Costs)	1.500€	
Total	**8.500€**	
35-UNILaSapienza		
Travel and subsistence	7.000€	Travel costs
Remaining purchase costs (<15% of pers. Costs)	3.500€	
Total	**10.500€**	

Other costs categories items (table 3.1i)

TA/VA to RI	Cost (€)	Description of tasks and justification

1-KIT	1.466.330,97€	TA01-TA13
2-AIT	85.032,14€	TA14, TA15, VA01
3-CEA	98.247,00€	TA16
4-CIEMAT	392.215,74€	TA17, TA18
5-CNR	1.097.790,50€	TA19-TA24
7-NTUA	123.548,10€	TA25
8-RWTH	88.668,00€	TA26, VA02
9-TUS	30.906,75€	TA27
10-UPB	18.750,00€	TA28
11-DTU	192.120,25€	TA29, TA30
14-UKRI	121.250,00€	TA31
15-SOTOCARBO	25.074,60€	TA32
17-IEES	30.954,00€	TA33
18-CRES	566,67€	TA34
19-CTC	16.593,60€	TA35
20-DIFFER	131.068,75€	TA36
21-FRAUNHOFER	69.494,17€	TA37-TA40
22-HZB	97.524,00€	TA41
23-IREC	56.633,80€	TA42
24-NTNU	20.690,50	TA43
25-OFFIS	805,91€	TA44
26-PLOCAN	138.891,04€	TA45
27-RSE	108.500,00€	TA46
28-SINTEF	77.143,50€	TA47
29-TECNALIA	4.353,30€	TA48
30-TUBITAK	106.648,00€	TA49
31-UNIBologna	136.625,10€	TA50
32-UNIChalmers	88.187,20€	TA51
33-UNICyprus	40.625,00€	TA52
34-UNIEdinburgh	124.040,25€	TA53
36-UNIPadova	104.512,50€	TA54
37-UNIParugia	30.290,50€	TA55
38-UNIStrathclyde	41.749,40€	TA56
39-UNITomasBata	175.643,10€	TA57
41-ENEA	217.710,00€	TA58
44-CENER	182.713,17€	TA59-TA62
45-CNRS	189.350,00€	TA63
46-CYI	246.610,00€	TA64, TA65
47-DLR	498.114,70€	TA66, TA67
48-IMDEA	48.395,20€	TA68
49-LNEG	336.848,36€	TA69-TA71
50-UNIEvora	28.885,25€	TA72
51-FZJ	144.932,50€	TA73, TA74, VA03
52-IMEC	342.173,36€	TA75 and TA76
53-TNO	226.381,66€	TA77 and TA78
54-UCC	603.224,24€	TA79-TA84

Summary of trans-national/virtual access provision (table 3.1k)

The RISEnergy 84 TA and 3 VA RIs represent all research areas described in Part 1.1- Objectives and are allocated between partners, affiliated entities and subcontractors (KIT, AIT, IMEC and UCC). The funds indicated in Table 3.1i ("Other cost categories") will be managed and distributed by the project coordinator according to the actual use of the RIs, as mentioned in the description of WP2.

Access provider short name	Short name of RI	Installation		Installation Country code	Type of access	Unit of access	Estimated quantity of access to be provided	Unit cost (UC) (€)	Access costs		Estimated n° of Users	Estimated n° of applications*
		Nr	Short name						On the basis of UC (€)	As actual costs (€)		
KIT	TA01	1	KIT-HIU	DE	TA-ac	day	1			500,00	1	1
KIT	TA02	1	KIT-EnergyLab-SenSSiC	DE	TA-ac	day	24			26.708,64	1	1
KIT	TA02	2	KIT-EnergyLab-PtX-Lab	DE	TA-ac	day	1			3.339,47	1	1
KIT	TA02	3	KIT-EnergyLab-Cclab	DE	TA-ac	day	1			39.222,19	1	1
KIT	TA03	1	KIT-KALLA	DE	TA-ac	day	1			1.450,00	1	1
KIT	TA04	1	KIT-DBFZ-FBGA	DE	TA-uc	day	60	1.522,00	91.320,00		1	1
KIT	TA05	1	KIT-DBFZ-HTB<2L	DE	TA-ac	day	50			101.998,50	1	1
KIT	TA05	2	KIT-DBFZ-HTB - 10L	DE	TA-ac	day	25			86.322,25	1	1
KIT	TA05	3	KIT-DBFZ-HTB-100L	DE	TA-ac	day	25			113.660,75	1	1
KIT	TA05	4	KIT-DBFZ-HTB-RC	DE	TA-ac	day	25			94.805,50	1	1
KIT	TA06	1	KIT-DHI-DeepOceanBasin	DE	TA-uc	day	25	4.278,00	106.950,00		1	1
KIT	TA07	1	KIT-ECN-CSTB-JVCWT 1	FR	TA-uc	day	5	7.300,00	36.500,00		1	1
KIT	TA07	2	KIT-ECN-CSTB-JVCWT 2	FR	TA-uc	day	5	6.650,00	33.250,00		1	1
KIT	TA08	1	KIT-HMU-RC/iEMERGA	EL	TA-ac	day	50			62.396,00	1	1
KIT	TA08	2	KIT-HMU-RC/IEECC	EL	TA-ac	day	50			40.208,50	1	1
KIT	TA09	1	KIT-MARIN-OB	NL	TA-ac	hour	1			544,17	1	1
KIT	TA10	1	KIT-NRCan-CAMDI	CA	TA-ac	day	40			36.617,60	1	1
KIT	TA11	1	KIT-NREL-TCPDU	US	TA-uc	day	50	2.950,38	147.519,00		1	1
KIT	TA12	1	KIT-RE-CORD-RECPARK	IT	TA-uc	day	80	2.296,13	183.690,40		1	1
KIT	TA13	1	KIT-UNIHannover-GWK+	DE	TA-uc	day	50	5.186,56	259.328,00		1	1

AIT	TA14	1	AIT-Energy Labs	AT	TA-ac	day	60			62.572,20	1	1
AIT	TA15	1	AIT-AIST-FREA	JP	TA-ac	day	1			1.322,94	1	1
AIT	VA01	1	AIT-EnergySim Lab	AT	VA-ac	hour	100			21.137,00	1	1
CEA	TA16	1	CEA-FASTinMat	FR	TA-uc	day	60	1.637,45	98.247,00		1	1
CIEMAT	TA17	1	CIEMAT-PSA-CESA-1	ES	TA-ac	week	6			42.499,98	1	1
CIEMAT	TA17	2	CIEMAT-PSA-SOLFU	ES	TA-ac	week	15			90.750,00	1	1
CIEMAT	TA17	3	CIEMAT-PSA-MOSA	ES	TA-ac	week	6			60.937,50	1	1
CIEMAT	TA17	4	CIEMAT-PSA-DESAL	ES	TA-ac	week	6			28.768,98	1	1
CIEMAT	TA17	5	CIEMAT-PSA-SOLWATER	ES	TA-ac	week	15			116.415,60	1	1
CIEMAT	TA17	6	CIEMAT-PSA-HYWATOX	ES	TA-ac	week	6			19.287,48	1	1
CIEMAT	TA18	1	CIEMAT-CEDER-HEGSINT	ES	TA-uc	day	20	1.677,81	33.556,20		1	1
CNR	TA19	1	CNR-ST	IT	TA-uc	day	60	6.731,25	403.875,00		1	1
CNR	TA20	1	CNR-IMA	IT	TA-ac	day	52			92.248,00	1	1
CNR	TA21	1	CNR-I-ZEB and DEC	IT	TA-ac	day	30			20.812,50	1	1
CNR	TA22	1	CNR-Test Centre (TC)	IT	TA-uc	day	15	5.247,00	78.705,00		1	1
CNR	TA23	1	CNR-TT	IT	TA-uc	day	62	6.325,00	392.150,00		1	1
CNR	TA24	1	CNR-Green-H2 LABs	IT	TA-uc	day	50	2.200,00	110.000,00		1	1
NTUA	TA25	1	NTUA-EES-lab	EL	TA-uc	day	65	1.900,74	123.548,10		1	1
RWTH	TA26	1	RWTH-RTlab	DE	TA-ac	day	60			64.875,00	1	1
RWTH	VA02	1	RWTH-Vlab	DE	VA-uc	hour	100			23.793,00	1	1
TUS	TA27	1	TUS-PSSlab	BG	TA-ac	day	25			30.906,75	1	1
UPB	TA28	1	UPB-MicroDERlab	RO	TA-ac	day	25			18.750,00	1	1
DTU	TA29	1	DTU-SYSLAB+RisøHPP-SYSLAB	DU	TA-ac	day	30			65.625,00	1	1
DTU	TA29	2	DTU-SYSLAB+RisøHPP-RisøHPP	DU	TA-ac	day	20			68.020,00	1	1
DTU	TA30	1	DTU-MaterialsLab	DU	TA-uc	day	25	2.339,01	58.475,25		1	1
UKRI	TA31	1	UKRI-UKGEOS	UK	TA-ac	day	40			121.250,00	1	1
SOTOCARBO	TA32	1	SOTOCARBO-XtL Pilot Plant	IT	TA-ac	day	12			25.074,60	1	1

IEES	TA33	1	IEES-HITMOBIL	BG	TA-uc	day	22	1.407,00	30.954,00		1	1
CRES	TA34	1	CRES-Lid100ct	EL	TA-ac	day	1			566,67	1	1
CTC	TA35	1	CTC-MCTS EL BOCAL	ES	TA-uc	day	80	207,42	16.593,60		1	1
DIFFER	TA36	1	DIFFER-IBF	NL	TA-ac	day	10			32.787,50	1	1
DIFFER	TA36	2	DIFFER-PLD	NL	TA-ac	day	20			2.4350	1	1
DIFFER	TA36	3	DIFFER-PSI	NL	TA-ac	day	5			73.931,25	1	1
Fraunhofer	TA37	1	Fraunhofer-BladeMaker	DE	TA-uc	day	26	2.465,76	64.109,76		1	1
Fraunhofer	TA38	1	Fraunhofer-IIS	DE	TA-ac	day	1			267,07	1	1
Fraunhofer	TA39	1	Fraunhofer-IMS	DE	TA-ac	day	1			266,22	1	1
Fraunhofer	TA40	1	Fraunhofer-CSP	DE	TA-ac	day	1			4.851,12	1	1
HZB	TA41	1	HZB-Emil	DE	TA-uc	day	7	13.932,00	97.524,00		1	1
IREC	TA42	1	IREC-EnergySmartLab	ES	TA-uc	day	20	2.831,69	56.633,80		1	1
NTNU	TA43	1	NTNU-RESIW-GDMS-GDOES	NO	TA-uc	hours	50	199,77	9.988,50		1	1
NTNU	TA43	2	NTNU-RESIW-FURNACES	NO	TA-uc	hours	50	117,00	5.850,00		1	1
NTNU	TA43	3	NTNU-RESIW-SEM	NO	TA-uc	hours	50	97,04	4.852,00		1	1
OFFIS	TA44	1	OFFIS-eLab	DE	TA-ac	day	1			805,91	1	1
PLOCAN	TA45	1	PLOCAN-TEST SITE	ES	TA-ac	day	80			13.8891,04	1	1
RSE	TA46	1	RSE-METF	IT	TA-uc	day	35	3.100,00	108.500,00		1	1
SINTEF	TA47	1	SINTEF-NSGL	NO	TA-ac	day	45			77.143,50	1	1
TECNALIA	TA48	1	TECNALIA-HarshLab	ES	TA-uc	day	70	62,19	4.353,30		1	1
TUBITAK	TA49	1	TUBITAK-TU BIOTHEC	TR	TA-ac	day	80			160.648,00	1	1
UNIBologna	TA50	1	UNIBologna-ZEROCARBON	IT	TA-ac	day	30			136.625,10	1	1
UNIChalmers	TA51	1	UNIChalmers-WTG	SE	TA-uc	day	80	1.102,34	88.187,20		1	1
UNICyprus	TA52	1	UniCyprus-DGSF	CY	TA-uc	day	25	1.625,00	40.625,00		1	1
UNIEdinburgh	TA53	1	UNIEdinburgh-FastBlade	UK	TA-ac	day	25			124.040,25	1	1
UNIPadova	TA54	1	UNIPadova-TESLab	IT	TA-ac	day	45			104.512,50	1	1
UNIPerugia	TA55	1	UNIPerugia-e-StorHy	IT	TA-uc	day	50	605,81	30.290,50		1	1

UNIStrathclyde	TA56	1	UNIStrathclyde-KHL	UK	TA-uc	day	20	2.087,47	41.749,40		1	1
UNITomasBata	TA57	1	UNITomasBata-LiPCAL	CZ	TA-uc	day	45	3.903,18	175.643,10		1	1
ENEA	TA58	1	ENEA-PRAGUP	IT	TA-uc	day	25	8.708,40	217.710,00		1	1
CENER	TA59	1	CENER-COATLAB	ES	TA-uc	day	39	756,30	29.495,70		1	1
CENER	TA60	1	CENER-SESES	ES	TA-uc	day	45			34.706,25	1	1
CENER	TA61	1	CENER-SIMPV	ES	TA-ac	day	39			30.712,50	1	1
CENER	TA62	1	CENER-SOLPVLAB	ES	TA-uc	day	48	1.829,14	87.798,72		1	1
CNRS	TA63	1	CNRS-PROMES-MicroSolR	FR	TA-ac	week	1			8.825,00	1	1
CNRS	TA63	2	CNRS-PROMES-MSSF	FR	TA-ac	week	30			131.812,50	1	1
CNRS	TA63	3	CNRS-PROMES-MWSF	FR	TA-ac	week	3			35.581,25	1	1
CNRS	TA63	4	CNRS-PROMES-Thémis	FR	TA-ac	week	2			13.131,25	1	1
CYI	TA64	1	CYI-POLYRES	CY	TA-us	day	65	1.897,00	123.305,00		1	1
CYI	TA65	1	CYI-PROTEAS	CY	TA-uc	day	65	1.897,00	123.305,00		1	1
DLR	TA66	1	DLR-CSP-MTF	DE	TA-ac	day	40			13.990,80	1	1
DLR	TA66	2	DLR-CSP-STJ-Helio	DE	TA-ac	day	50			57,50	1	1
DLR	TA66	3	DLR-CSP-STJ-PP	DE	TA-ac	day	40			265.995,20	1	1
DLR	TA66	4	DLR-CSP-STJ-RP	DE	TA-ac	day	40			14.332,40	1	1
DLR	TA66	5	DLR-CSP-Synlight	DE	TA-ac	day	40			107.064,00	1	1
DLR	TA67	1	DLR-TFCL	DE	TA-ac	day	40			96.674,80	1	1
IMDEA	TA68	1	IMDEA-IME-HTPU-LAB	ES	TA-ac	day	10			6.123,40	1	1
IMDEA	TA68	2	IMDEA-IME-KIRAN42	ES	TA-ac	day	20			14.631,20	1	1
IMDEA	TA68	3	IMDEA-IME-VHCST	ES	TA-ac	day	20			27.640,60	1	1
LNEG	TA69	1	LNEG-Lx-STE-HPC	PT	TA-ac	day	1			1.285,79	1	1
LNEG	TA69	2	LNEG-Lx-STE-LES	PT	TA-ac	day	1			1.782,96	1	1
LNEG	TA69	3	LNEG-Lx-STE-STTF	PT	TA-ac	day	1			2.374,46	1	1
LNEG	TA70	1	LNEG-UME	PT	TA-ac	day	50			104.961,50	1	1
LNEG	TA71	1	LNEG-BBRI1	PT	TA-ac	day	50			43.294,00	1	1
LNEG	TA71	2	LNEG-BBRI2	PT	TA-ac	day	50			42.694,50	1	1

LNEG	TA71	3	LNEG-BBRI3	PT	TA-ac	day	10			9.028,40	1	1
LNEG	TA71	4	LNEG-BBRI4	PT	TA-ac	day	40			37.947,20	1	1
LNEG	TA71	5	LNEG-BBRI5	PT	TA-ac	day	25			20.370,75	1	1
LNEG	TA71	6	LNEG-BBRI6	PT	TA-ac	day	30			73.108,80	1	1
UNIEvora	TA72	1	UNIEvora-REC	PT	TA-ac	day	25			28.885,25	1	1
FZJ	TA73	1	FZJ-JULIO	DE	TA-ac	day	48			138.420,00	1	1
FZJ	VA03	1	FZJ-XR4MAT	DE	VA-ac	day	1			2.106,25	1	1
FZJ	TA74	1	FZJ-LLEC	DE	TA-ac	day	1			4.406,25	1	1
IMEC	TA75	1	IMEC-EV PV Lab	BE	TA-ac	day	60			80.700,56	1	1
IMEC	TA76	1	IMEC-UNIAnkara-ODTÜ-GÜNAM	TR	TA-uc	day	60	4.357,88	261.472,80		1	1
TNO	TA77	1	TNO-SBT-GAS	NL	TA-ac	day	7			13.801,90	1	1
TNO	TA77	2	TNO-SBT-SYNT	NL	TA-ac	day	7			42.879,76	1	1
TNO	TA78	1	TNO-SWITCH	NL	TA-ac	day	50			169.700,00	1	1
UCC	TA79	1	UCC-Lir NOTF	EI	TA-uc	day	50	3.888,24	194.412,00		1	1
UCC	TA80	1	UCC-TYN	EI	TA-uc	day	80	841,77 €	67.341,60		1	1
UCC	TA81	1	UCC-EMEC-EMEC	UK	TA-uc	day	80	1.561,16	124.892,80		1	1
UCC	TA82	1	UCC-IFREMER-WaCuTa	FR	TA-uc	day	50	2.900,00	145.000,00		1	1
UCC	TA83	1	UCC-VGA-VGATL	IT	TA-ac	day	1			2.325,00	1	1
UCC	TA84	1	UCC-UNIGhent-COB	BE	TA-ac	day	18			69.252,84	1	1

3.2 Capacity of participants and consortium as a whole #@CON-SOR-CS@# #@PRJ-MGT-PM@#

Consortium capabilities

The RISEnergy consortium includes energy services (DERlab, EnBW and EPL), research institutions and universities (KIT, AIT, CEA, CIEMAT, CNR, DTU, ENEA, FZJ, IMEC, TNO, UCC) and ESFRI landmarks (ECCSEL and EU-SOLARIS). The proposed consortium thus represents a unique mix of knowledge centers and industry-leading expertise that will allow the consortium to fully address the challenges and objectives of the project, ensuring the realization of the key project deliverables. In addition, the presence of the European Energy Research Association (EERA) representing both research areas in the SET-Plan will ensure that the RISEnergy ecosystem has a wide reach.

RISEnergy needs expertise in the ten target areas to implement MO1, the proactive innovation activities, and MO3, the higher level activities in the ecosystem. IMEC coordinates the EERA JP PV and participates in the VIPERLAP project. TNO is the EERA JP Bio representative and responsible for RI research in the JP. AIT coordinates the ERIGrid project and ENEA is responsible for the RIs in the Smart Grids EERA JP. EU-SOLARIS is leading the ESFRI project on CSP/STE technologies and CIEMAT is coordinating the EERA JP on CSP. UCC played an important role in the MARINET projects and coordinates the ICT project EnABLES. DTU is coordinating the EERA JP on wind energy. FZJ conducts hydrogen research at all TRL levels and leads the Helmholtz Hydrogen Cluster, which is funded with more than €900 million until 2038. FZJ is also involved in the Hydrogen Clean Partnership and the EERA JP Fuel Cells and Hydrogen. KIT coordinates the StoRIES RI project on storage and coordinates the JP on energy storage. The EERA JP on materials AMPEA is coordinated by CEA and CNR. ECCSEL ERIC operates an ESFRI infrastructure that includes many materials research facilities. These research organization has been successfully collaborating within EERA for 10 years.
For MO1 and MO3, industrial expertise is provided by EnBW and EPL. DERlab already manages a web portal for network RIs that can be expanded to become the unique entry point for Users. Finally, EERA is connected to the SET plan.
KIT successfully coordinates the StoRIES project with 64 RIs in the portefolio, which has a similar structure as RISEnergy, and KIT is the main responsible for the implementation of MO2.
The cross-RI services for the implementation of MO4 consist of different parts. 1.) "ICT-enabled RES," led by UCC. 2.) "Framework for digital services and digital twins", led by CIEMAT. CIEMAT is also coordinating the EERA JP on "Digitization for Energy."
Under this task, the **open science processes** will be implemented. 3.) "Metadata service along the value chain" is led by FZJ. FZJ, together with KIT, are the leaders in MAP technologies in Europe and have a lot of experience in connecting materials research and devices. 4.) "Decision making for sustainability and **socio-technical** aspects" is led by the KIT institute ITAS, which is specialized **in socio-economic** problems.
MO5 is conducted by an experienced team of RI project participants. And MO6 is led by ECCSEL and KIT. ECCSEL has the experience to set up an ESFRI infrastructure, and KIT is associated with Mission Innovation to expand global contacts with other leading research partners. All partners have previously worked in numerous international and national research projects.

Resources of the partners

In order to fulfill all tasks and management activities, the coordinator and the working group and task leaders receive an appropriate share of the resources. The partners are involved in WP1 in the ecosystem and partners contributing to the 10 target areas need some additional resources for providing the expertise. All RI providers receive at least one PM of support for internal management purposes.
Person months (PMs) and corresponding personel costs are shown in parentheses. The personal costs are in k€.

1.) KIT is the coordinator, leads WP2 and WP5, 6 tasks and provides experts for energy storage; (112PM/922 k€).
2.) AIT leads 2 tasks. Supports the access management and provides experts for grids; (26PM/234 k€)
3.) CEA leads one task and provides partially experts for materials; (15PM/87 k€)
4.) CIEMAT leads tasks 3.2 on Digital Services and Digital Twins; (37PM/165 k€)
5.) CNR leads one task; (14PM/112 k€)
6.) DERlab provides internet web-site for unique entry point and administrates 4 AEs; (25PM/165 k€)
7.) DTU leads one task and provides experts for wind; (22PM/165 k€)
8.) ECCSEL leads one task and administrates 3 AEs; (7PM/70k€)
9.) EERA leads WP1 and 3 tasks, provides contact to policy marker and administrates 23 AE; (55PM/358k€)
10.) EnBW contributes with industry expertise in WP1 and WP4 areas; (7PM/150k€)
11.) ENEA leads 2 tasks; (32PM/112k€)

12.) EPL leads WP5 and is strongly involved innovation management; (37PM/201k€)
13.) EU-SOLARIS leads one task and provides expertise for CSP/STE, additionally it administrates 7 AEs; (17PM/97k€)
14.) FZJ brings expertise in tasks on metadata services along the value chain and provides expertise in hydrogen; (12,5PM/112k€)
15.) IMEC provides expertise in PV (8PM/100k€)
16.) TNO provides expertise in bio (5PM/54k€)
17.) UCC leads WP3 and 2 tasks. Is responsible for the innovation management secretariat, ICT-enabling cross-cutting services and provides expertise in ocean energy and ICT-enabling; (88PM/566k€)

RIs are by nature very diverse, inclusive and international. Diversity inclusion and **gender equality**, including family-friendly approaches for carers, regardless of gender, are increasingly being implemented in institutions.

Description affiliated entities (AE)

The 37 participating affiliated entities are the organizations that do not have numbers in bold and are listed on pages one and two of this proposal. **We are introducing affiliated entities to reduce the administrative burden of the project.** Unfortunately, not all of the selected RI providers are affiliated with an umbrella organization, so some have had to act as subcontractors. Most of the affiliated institutions provide access to their RIs, the exceptions like UNICyprus and UKRI are additionally involved in the creation of the ecosystem in WP1. UNILaSapienza and BRGM do not bring RIs but will support the project with their specific expertise. 15 Subcontractors from KIT, AIT, IMEC and UCC will potentially support the project by providing transnational access to their RIs.

There is no critical infrastructure in the RISEnergy project to carry out the project activities.

Industry involvement

Industry participation is ensured through the involvement of EnBW and EPL. Both partners are strategic players in the energy sector and are determined to support RISEnergy's efforts to develop European leadership in renewable energy technologies. They will contribute industry views to MO1 and MO3. In addition to the actions described in Section 2.2, the ecosystem will connect with a large community of industry stakeholders to leverage and reach out. EERA is working with various industry associations, e.g. the “Energy Materials Industrial Research Initiave” (EMIRI) and the “European Association for Sorage of Energy” (EASE). This is also true for the ongoing H2020 RIs projects as well as ECCSEL and EU-SOLARIS.

Other countries and international organisations:

The workprogramme states, that access could be open, under certain conditions, to third countries’ researchers to work on global challenges. RIs from third countries may be involved when appropriate. **Six unique international RIs are integrated in the RISEnergy portefolio of 87 RIs.** These are RIs are from Canada, Japan, UK and US. Their outstanding excellence is described here:

The Canadian “Centre for Accelerated Materials Discovery and Innovation” (**CAMDI**) houses a unique laboratory facility for self-driving / autonomous laboratories (SD/ALs), that will accelerate material and device development by a factor of 10 and support scaling activities for new materials and device technology. The facility is designed to merge three enabling technologies: artificial intelligence, robotic automation, and high performance computing for simulation and modeling. The Centre plans to commission a diverse set of SD/Als particularly for energy applications and welcomes collaborative efforts under RISEnergy and other international activities

The US “Thermal and Catalytic Process Development Unit” (**TCPDU**) from NREL has capabilities in thermochemical conversion of biomass feature processing in two sophisticated one-of-a-kind pilot plants. Both features coupled riser reactor/regenerator systems integrated to product collection that can process up to 20 kg/h feedstock. One system is coupled to a biomass pyrolysis reaction system so that bio-oil vapors can be directly fed to the riser. These capabilities are unique to NREL and will be offered to our EU partners as part of this project.

FastBlade (UK, University of Edinburgh) is the world’s first test facility that uses regenerative hydraulic technology to offer high-quality, low-cost fatigue testing of tidal blades and other composites structures for research and product development. The innovative structural composites research facility has been developed by the University of Edinburgh specifically for cost effective, accelerated testing of stiff and slender composite and metal structures, such as tidal turbine blades, composite bridge sections and carbon fibre aircraft wing boxes. The facility will be the first of its kind in the world and will use a Digital Displacement® regenerative hydraulic actuation system to reduce the energy requirements of fatigue testing.

Established in 2003, European Marine Energy Test Site (**EMEC**) is the world's first and leading facility for demonstrating and testing wave and tidal energy converters – technologies that generate electricity by harnessing the power of waves and tidal streams – in the sea. EMEC is also pioneering the development of a green hydrogen economy and smart local energy systems. As a plug-and-play facility EMEC helps reduce the time, cost and risk of testing innovative sustainable technologies. EMEC offers purpose-built, open-sea testing facilities for prototype technologies and operate two grid-connected, accredited test sites.

Kelvin Hydrodynamics Laboratory (KHL of University of Strathclyde) is one of the leading providers of testing services to the UK wind, wave and tidal energy industry. It provides repeatable and controllable conditions for testing of wind, wave and tidal energy devices on a moderate scale (1:50th to 1:25th scale depending on application). The facility can determine the seakeeping performance of floating wind turbine platforms (with or without aerodynamic loads), wave energy converter power extraction efficiency and floating structure's survivability under extreme loading conditions. With self-propulsion dynamometer and the carriage, they can examine propulsion and resistance characteristics of ships. It is also ideal for large scale Under Water Vehicle tests. The KHL was one of the most requested infrastructures in the H2020 MaRINET2 transnational access programme and the UoS is an integral partner in the development of MaRINERG-i which in 2021 achieved ESFRI Roadmap status.

The "Smart System Research Facility" of the Fukushima Renewable Energy Institute (**FREA**) of the National Institute of Advanced Industrial Science and Technology (**AIST**) accelerates and promotes the large-scale introduction of renewable energy and its integration into the electric power system. The world-class facility can supply up to 5 MVA, one of the largest AC grid simulators in the world, to test large power electronics. One also can conduct integrated megawatt-scale research and development of the components, systems, and strategies required to penetrate renewables safely and efficiently onto the electric power grid. Especially both software in the loop (**SIL**) and power hardware in the loop (**PHIL**) with RTDS (NovaCore) are implemented in this facility. AIST (FREA) aims to test the interoperability of power electronics such as smart inverters, smart meters, and storage systems. In addition, the facility cooperates on the international level via the IEA ISGAN/SIRFN network with other world-class facilities and networks like DERlab, ERIGrid 2.0, etc.

UKGEOS Glasgow is an infrastructure with flexible arrays of boreholes, sensors, monitoring and geo-engineering infrastructure for at-scale investigation into underground mine water thermal resources. It is unique globally in being open for experimentation in which the User designs their research and innovation. For example, the User can choose the configurations of boreholes for pumping and re-injecting groundwater, a flow rate up to 12 L/s and heating or cooling applied up to 200 kW. Users can bring their own equipment and sensors for testing and benefit from a growing body of open baseline environmental data available on the project website. In Europe, other geothermal mine water infrastructures are either in commercial use or have a planned investigation programme as part of a project, e.g. HEATSTORE in Germany and Heerlen Mijnwater in the Netherlands.

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