



## FUNDING SCHEME

«RESTART 2016-2020» Programmes for Research, Technological Development and Innovation of the Research and Innovation Foundation

## PROGRAMME

«Research in Enterprises»

## CALL FOR PROPOSALS

ENTERPRISES/ENERGY/1123



**Funded by the  
European Union**  
NextGenerationEU



Republic of Cyprus



RESEARCH  
& INNOVATION  
FOUNDATION

This Call for Proposals is funded by the Recovery and Resilience Facility of the NextGenerationEU instrument



## ΕΙΣΑΓΩΓΗ

The Research and Innovation Foundation announces the Call for Proposals for the «**Research in Enterprises - Energy**» of the «**Research in Enterprises**» Programme within the framework of the «**RESTART 2016-2020**» Programmes for Research, Technological Development and Innovation – Programmes for the Period **05/2022 – 12/2023** and invites potential beneficiaries to submit relevant Project Proposals (Proposals).

The present Call will be financed by the Recovery and Resilience Facility of the Next Generation EU instrument, in the frame of the action C6.117 « Thematic research in enterprises for energy production, storage, transmission and distribution solutions ». The Action is implemented under Policy Axis 6 , and specifically the Component 6.1 «REPowerEU» of the Cyprus Recovery and Resilience Plan.

## GENERAL CALL INFORMATION

<b>Pillar</b>	<b>I. Smart Growth</b>
<b>Programme</b>	<b>Research in Enterprises</b>
<b>Call Identifier</b>	<b>ENTERPRISES/ENERGY/1123</b>
<b>Source of Funding</b>	<b>Recovery and Resilience Facility EU</b>
<b>Call Budget</b>	<b>4.000.000 Euro</b>
<b>Maximun Funding Per Project</b>	<b>200.000 Euro</b>
<b>Publication Date</b>	<b>24 November 2023</b>
<b>Deadline</b>	<b>26 January 2024, 13.00</b>

*The English version of the Call, even though an official translation endorsed by the Research and Innovation Foundation, is provided for information purposes only. Only the Greek version of the Call is legally binding and shall prevail in case of any divergence in interpretation.*

## OBJECTIVES

The "Research in Enterprises " Programme and the said Call for Proposals on Energy support the involvement of Cypriot enterprises in research, technological development and innovation (RTDI) activities, for the development of technological solutions of high added value that will respond to challenges faced by Cyprus in the energy production, storage, transmission and distribution field and which solutions can at a later stage, if deemed useful, be exploited by energy production, storage, transmission and distribution organisations.

In addition, the following are expected from the implementation of the Programme:

- To enhance the competitiveness of Cypriot enterprises thus resulting in making a contribution in the country's economic growth, through the development of



technological solutions of high added value in the field of energy production, storage, transmission and distribution solutions.

- To strengthen and encourage collaboration in the ecosystem and especially among Cypriot businesses in order to address relevant current challenges, and
- To enhance the knowledge transfer within the ecosystem with the aim of exploiting existing knowledge for the development of new technologies and solutions related to the selected challenges in the energy sector, by and for the Cypriot industry.

## DESCRIPTION

The Programme concerns the funding of research projects with industrial research and experimental development activities of technological maturity 4-7 (TRL 4-7), which aim at developing technological solutions to be exploited by energy production, storage, transmission and distribution organisations. The proposals submitted under this Call for Proposals should fall under one of the following Specific Objectives, addressing challenges faced by electricity generation and transmission organisations.

### Specific Objectives:

#### 1. Analysis of Lightning Activity on Transmission Lines

Challenge Description: Transmission lines (TL) are often struck by lightning due to their height and length. Lightning strikes on TL can lead to power outages due to the activation of switching elements but also to equipment failure/damage (e.g. insulators).

Indicative Solution: Development and installation of a sensor system to record lightning activity along the lines (e.g. every 5 km) and development of software to analyse the recorded data. The software will accelerate: a) the detection of the fault location in reduced time compared to traditional patrol, b) the evaluation of the system reliability indicators and c) the evaluation of the asset management indicators.

#### 2. Monitoring of substations through thermal imaging

Challenge Description: Transmission substations include a set of devices to manage and control (e.g., transformers, power switches, protection relays) the power flow. Their maintenance is periodically performed to ensure the safety and reliability of the substations. EAC performs maintenance of its equipment at regular intervals in accordance with the manufacturers' instructions and the internal directive, without any prior assessment of the health of the equipment. There are software on the market that based on the database and measurements provide the operational capability of the equipment using health indicators (asset health index AHI). However, their use requires a large workload of data introduction for each element of the equipment, and they sometimes require data that does not exist historically, as well as a limitation in the accessibility of the introduced data.

Indicative Solution: Development of Methodology-Algorithm to evaluate the operational status of transmission substations and optimize the maintenance program. The methodology based on international standards and practices could be implemented in the form of a computational algorithm that is fully applicable to the topology of the elements that comprise the



transmission substations of EAC. The calculation of health indicators could take as input data a set of quantities that are monitored: a) by equipment monitoring systems (e.g. SF6 gas level in GIS) and b) in the context of preventive maintenance inspections (e.g. thermal imaging), results of DGA oil analyses. It is essential to provide full transparency and accessibility to all input, output data as well as intermediately calculated values, so that reports and other statistics can be derived at will based on the data in the database. Finally, based on the extracted health indicators, the equipment will be calibrated in terms of its functional capacity, and a maintenance and replacement schedule will be prepared in which the chronological order of maintenance of each element will also depend on its health status.

### 3. Fault detection on the transmission lines

Challenge Description: The design and installation of a reliable high-complexity fault protection and remote fault protection system in high-voltage transmission lines is a critical challenge in modern power grids. Currently, remote fault protection is the first and main part for electrical protection of transmission lines. Using real-time calculations with the help of voltage and current transformers, the actual impedance of the conductor is estimated and response is according to certain predefined ranges. However, in real conditions, the actual impedance is affected by the prevailing weather conditions (air temperature, soil moisture, etc.) deviating from its nominal values. It is therefore vital to incorporate intelligent tools that will be able to retrieve weather variations, re-estimate impedance ranges and automatically integrate changes in the configuration of the protection relay. In this way, more accurate fault detection and location could be achieved, increasing the overall safety and reliability of the system.

Indicative Solution: Development of a system that will provide the possibility to change-adjust the settings of the Main Protection on the Transmission Lines for the valid detection of faults.

### 4. Holistic Management of Small PV/Dispersed Generation in the Electricity Grid

Challenge Description: The rapid increase of RES penetration in the Grid and their expected further increase in the coming years, combined with the absence or delayed availability of management tools, creates particularly difficult challenges for the Grid.

Indicative Solution: The development of a specialized platform for the management of all small PV Parks using all available telecommunication tools in order to:

- a) Monitor the production
- b) Control/cutback the production
- c) Send and modification of operational setting of the respective voltage converters.

### 5. Energy storage systems

Challenge description: Cyprus has one of the lowest rates of renewable energy production from RES which specifically amounted to 13.8% in 2018 and about 14% in 2019, compared to the EU average of 20%. Renewable energy production currently amounts to 157.5 MW from wind, 125 MW from solar and 12.8 MW from biomass. To meet the EU targets, Cyprus needs to change its energy mix in favour of renewables to 23% by 2030. The increase in renewable energy consumption will require an increase in production of 360 MW. While there are currently more than 17,000 very small systems installed that exceed 65MW in production, there is no storage capacity. Therefore, optimal utilisation of renewable energy requires the simultaneous development of efficient electricity storage technologies.



Indicative Solution: Develop efficient and economic energy storage systems that can be used together with smart energy demand management to achieve proper management and optimisation of energy allocation between grid and storage.

**6. Use of state-of-the-art digital technologies in the field of electricity generation or/and storage or/and, transmission or/and distribution (including High Performance Computing, Quantum Technologies, Internet of Things, Machine Learning, Big Data, Artificial Intelligence, blockchain, etc.)**

## BENEFICIARIES

Research Organisations (A.1, A.2), Enterprises (B.1, B.2, B.3), Other Organisations (Γ).

## SPECIFIC RESTRICTIONS AND CONDITIONS FOR PARTICIPATION

- ⬢ The Host Organisation (HO) of a project must be a Small, Medium or Large Sized Enterprise (B1, B2, B3).
- ⬢ Startups can participate as Host Organisations only if they sold at least one product or service in the last two (2) years and can document sales and turnover through audited financial statements. Otherwise, they can participate as Partners.
- ⬢ The project should be initiated by the Enterprise/Host Organisation, which should have a direct and significant commercial interest in achieving the project's results. Furthermore, the core activities of the Host Organisation should be relevant to the project activities.
- ⬢ Research Organisations, Enterprises or Other Organisations may participate as Partner Organisations.
- ⬢ At least 40% of the Project Budget should be allocated to the Host Organisation.
- ⬢ Please note that participation of a Large Enterprise in a RESTART 2016-2020 Programme project is possible after the justification, through the proposal, of the incentive effect that the funding will have for the Large Enterprise, as specified in Chapter 1.2, Section III, of the RESTART 2016-2020 Work Programme.
- ⬢ Enterprises will have the possibility to use research results for the development and production of innovative technological solutions (i.e. through exclusive or non-exclusive licenses) as described in the provisions of the current Work Programme Section III, Chapter 7 - "Exploitation and Dissemination of Knowledge". Additionally, in case of participation of a Research Organisation, the Host Organisation should be granted the right for first refusal on IP generated through project results.
- ⬢ The participation of Foreign Research Organisations is allowed.

## PROJECT ACTIVITIES

- ⬢ The projects must necessarily include Experimental Development activities. They may also include Industrial Research activities.



- ⬡ Project activities should fall within Technology Readiness Levels (TRL) 4-7 and upon completion should be at least at technological maturity level 6 (TRL 6) in compliance with the relevant definitions adopted by the EU<sup>1</sup> (this will be, inter alia, an evaluation point during the scientific evaluation of the Projects).
- ⬡ It is noted that by completion of the Project Implementation, the Host Organisation must prepare a “Commercialization Plan” which will be submitted to the RIF as a Deliverable along with the Final Report. The “Commercialization Plan” must include an assessment and analysis of the project results’ market potential, in order to support future decisions by the Host Organisation and/or the Consortium, and the planning of exploitation of results. It is noted that, activities related to the implementation of actions included in the “Commercialization Plan”, are not eligible in the frame of the funded projects.

## DURATION OF PROJECT IMPLEMENTATION

6-18 months

## BUDGET

€ 4.000.000

## MAXIMUM FUNDING PER PROJECT

€ 200,000

The maximum aid intensity for Enterprises and Other Private Sector Organisations cannot exceed 70%.

## ELIGIBLE COSTS

Personnel costs, Instruments and Equipment Costs, Costs for External Services, Costs for Foreign Research Organisations, Costs for Travelling Abroad, Consumables, Other Specific Costs, Overheads.

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<sup>1</sup> The Technology Readiness Levels adopted by the EU are:

TRL 1- basic principles observed

TRL 2- technology concept formulated

TRL 3- experimental proof of concept

TRL 4- technology validated in lab

TRL 5- technology validated in relevant environment

TRL 6- technology demonstrated in relevant environment

TRL 7- system prototype demonstration in operational environment

TRL 8- system complete and qualified

TRL 9- actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies)



All beneficiaries that have not previously participated in the RESTART 2016-2020 Programmes, should make use of the simplified cost Method «Standard Scales of Unit Costs» for the calculation of personnel costs.

## SERVICES OF THE CENTRAL KNOWLEDGE TRANSFER OFFICE (KTO)

The beneficiaries of the following Programmes will automatically become beneficiaries of the services and tools for support and knowledge transfer that will be provided by the RIF in the framework of the Central Office for Knowledge Transfer (KTO).

Aiming at enhancing the projects' potential for exploitation of research results, all Project Consortia funded under the present Call will be required to contact the Central Knowledge Transfer Office (KTO) for the preparation of a specialised Service Delivery Plan.

Acceptance of the Service Delivery Plan by the Project Consortia and utilization of the central KTO services will be optional.

## RESTART 2016-2020 WORK PROGRAMME

All general rules and procedures for the participation of organisations and individuals, the eligible activities and costs, as well as the specific information regarding the RESTART 2016-2020 Programmes, are included in the **RESTART 2016-2020 Work Programme – Programmes for the Period 05/2022 – 12/2023**, which is the main reference document and an important information source for interested parties and can be found on the Research and Innovation Foundation's **IRIS (Innovation Research Information System) Portal** (<https://iris.research.org.cy/#/documentlibrary>).

## SPECIFIC CONDITIONS

- Each Organisation can receive funding as Host Organisation for a maximum of two (2) projects under this Call and up to one (1) per Specific Objective (in case that more than 2 proposals of a Host Organisation have been ranked 1<sup>st</sup> in their respective Specific Objectives, the 2 with the highest score will be selected).
- For funded projects that will be successfully completed under this Call and (a) have reached at least TRL level 6, (b) show excellent quality by receiving an "A" rating at the scientific verification by Independent Experts, as described in Ch. 6.2 – Scientific Verifications, of Section III, of the Work Programme RESTART 2016-2020, and if EAC or any other interested organisation deems it appropriate, they can provide access to the infrastructures of these organisations for experimental purposes. For the selected projects that meet the above, the relevant cost (their participation in the experimental implementation phase) will be fully covered by the interested organisation (e.g. EAC). It is understood that EAC or any other interested organisation will be responsible for the planning, implementation and monitoring of this action and will ensure the compatibility of the action with the State aid regulatory framework. The EAC or any





other interested organisation, depending on the outcome of the experimental application, will decide, if appropriate, to proceed with any relevant Innovation Procurement tool. **The whole process described above (selection and participation in the experimental phase and beyond) is not the subject of this Call.**

- Where necessary, in order to facilitate the process of selecting projects by an interested organisation (e.g. EAC) to provide access to its infrastructure, RIF will be able to inform it, upon request, of the progress of project implementation on the basis of the submitted progress reports, taking into account all necessary measures to maintain confidentiality.
- Payment Requests for the interim and final payment are submitted up to thirty (30) calendar days following the end of the time period they pertain to. In case of delay in submitting the Report, RIF reserves the right to terminate the project and the Project Contract.
- During the Examination of Payment Requests, the deadline for the submission of additional information is set at fourteen (14) calendar days.
- All private organisations (Host Organisation and Partner Organisations) are required to register the updated data regarding their ultimate beneficial owners in the Competent National Registry / Archive, as per «The prevention and suppression of money laundering and terrorist financing Law of 2007 (188(I)/2007)». The RIF maintains the right to proceed with the appropriate checks in the competent Registries to verify the registration. For this purpose, all private organisations should submit an official proof for the data registration during the Contract Preparation stage. Furthermore, all private organisations (Host Organisation and Partner Organisations) who request funding exceeding 150.000 Euro, during the Contract Preparation stage will be required to also submit the data (Name and Surname, ID / Passport Number and Date of Birth) of their ultimate beneficial owners through the relevant Declaration.
- Funded Projects should comply with the «Do No Significant Harm» principle, according to which they must not include or support activities that could cause significant harm to any of the six environmental objectives, as per Article 17 of Regulation (EU) No 2020/852, on the establishment of a framework to facilitate sustainable investment.
- In the event that it is found that the Proposal (or a similar one with minor deviations regarding the content and / or participants) has been submitted under any other Programme / Call of the RESTART 2016 - 2020 Programmes, and this has not been duly declared by the Project Coordinator at the Proposal Submission Stage (Part A), the RIF has the right to declare the proposal ineligible and/or to consider to impose sanctions to the Host Organisation and/or the Project Coordinator.

## ΥΠΟΒΟΛΗ

Proposals are submitted through the Research and Innovation Foundation's **IRIS Portal** (<https://iris.research.org.cy>).





The Project Coordinator and the Host Organisation and, if there is a Project Consortium, all Partner Organisations, should register in advance on the IRIS Portal.

Potential applicants are advised to use the «**Guide for Applicants**», which contains guidelines and clarifications regarding the Submission procedure and the «**IRIS Portal User Manual**» which can be found on the IRIS Portal (<https://iris.research.org.cy/#/documentlibrary>).

*The Research and Innovation Foundation encourages in all its Calls for Proposals:*

- *the participation of women as Project Coordinators, and*
- *a gender-balanced participation in Projects.*

**The Project Proposal consists of the following parts:**

1. Part A – General Information & Budget (electronic form (fields) to be completed online through the IRIS Portal).
2. Part B – Technical Annex (document to be uploaded as an Annex on the IRIS Portal in PDF format). **Note:** *The template provided for this Call must be submitted **without any alterations**. The Part B template for this Call can be found on the IRIS Portal, under the relevant Call for Proposals (Call Documents).*
3. Annex I: CVs of the Coordinator and the key personnel of the project team – **Optional Submission**. *It is recommended that CVs are created according to the EUROPASS format and do not exceed 5 pages per person.*
4. Annex II: Smart Specialisation Sectors – **Obligatory Submission**. *The specific document for the selection of the Priority Sector that the project is applied to can be found on the IRIS Portal, under the relevant Call for Proposals (Call Documents). The selection is obligatory and only one focus area (e.g. 1.1.2) should be selected or a single sub-Sector where focus areas are not available (e.g. 2.3).*

## PROJECT SELECTION

### Evaluation Procedure

For the evaluation of Proposals to be submitted under the «Research in Enterprises» Programme, a Proposal Preliminary Check and a remote scientific evaluation procedure by three (3) independent evaluators (with a Consensus Report) will be followed, as described in the RESTART 2016-2020 Work Programme. It is noted that in case the requested documents have not been submitted the proposal will be deemed ineligible during the preliminary check.

Prior to the scientific evaluation of each Proposal according to the evaluation criteria, evaluators are requested to assess the Proposal's compatibility with:

- the Objectives of the Programme and the Call for Proposals, and
- the selected Specific Objective, and



- the «Do No Significant Harm» principle, and the compatibility of the proposed type(s) of research with the proposed Technology Readiness Levels (TRLs) and those allowed by the Call for Proposals.

The evaluator will not proceed with the assessment of the evaluation criteria should the Proposal fail the compatibility assessment.

## Evaluation Criteria

### 1. Excellence – Weight 20%

#### ⬡ Technological Breakthrough:

- The technology has a high degree of novelty compared to other technologies available, or in development.
- The Novelty creates the potential for new applications and functionalities in energy production, storage, transmission and distribution organisations.
- The results of the technology demonstration and validation so far indicate the potential for application in energy production, storage, transmission and distribution organisations.

#### ⬡ Project Objectives:

- Relevance to the objectives of the Programme and the Call.
- Clarity, completeness, quality, scientific/technical documentation.
- The proposed research activities (experimental development, industrial research) are relevant given the core activities of the Host Organisation and compatible with the project's, the Programme's and the Call's Objectives (activities fall within technology readiness levels (TRL 4-7) and be at least in TRL6 by the completion of the project).
- Objectives for the planned technology development and validation of the innovation in relevant application environments are appropriate, credible and feasible.
- Potential applications in energy production, storage, transmission and distribution organisations, have been identified and are plausible.
- The timing for this technology/innovation is right.

### 2. Added Value and Benefit – Weight 40%

#### ⬡ Credibility of the Impact:

- Expected impact described is credible and realistic within the project and beyond. The technology has added value for energy production, storage, transmission and distribution organisations, in factors such as usability, functionality, cost and ease of use.



- The proposed business model of the Host Organisation, as described in the proposal (Business Model Canvas) is sound and credible.
- There is a convincing market penetration strategy, including possible regulatory approvals to be secured, standardization, certifications that may be needed (if applicable), time to market penetration.
- Economic, Scientific and/or Societal Benefits:
  - The project is expected to contribute to the enhancement of the Host Organisation's competitiveness in domestic and/or international markets, and subsequently in the growth of the local economy.
  - The project is expected to generate other benefits such as the increase of employment in the Host Organisation or the broader economy (Partner Organisations, Vendors etc), contribute in addressing one or more existing environmental, societal, scientific and/or other local or EU challenges etc.
- Effectiveness of the proposed measures for the exploitation of results (including management of Intellectual Property Rights) and maximizing their dissemination.
  - Reliability of the proposed Commercialization Plan.
  - Management and protection of intellectual property rights that may arise from the implementation of the project and its relevance to the objectives of the project and the Programme, including the "right of first refusal" to the participating enterprises.

### 3. Implementation – Weight 40%

- Quality and Motivation of the Team:
  - The Consortium has the necessary capabilities and motivation to implement the proposed technological innovation and market-related activities.
  - The Consortium has the necessary expertise to create a unique commercial value from the emerging technology and develop an attractive business and investment proposition.
- Workplan and Allocation of Resources:
  - The allocation of resources (person-months, budget and equipment) in the workplan/work packages and project partners is appropriate.
  - Relevant and clearly defined Milestones and Deliverables are provided (measurable, timed, comparable etc.) to track progress along the pathway towards the objectives.
  - The suitability and contribution of organisations and individuals of the Consortium (including Foreign Research Organisations, where applicable) to the implementation of the project according to their specialization and real



capabilities, so the project can achieve at least TRL 6 technological maturity level upon its completion.

- The adequacy of the existing/proposed infrastructure to achieve at least TRL 6 technological maturity level upon its completion.
- The ability and motivation of the team members to exploit the results of the project.

⬡ Risk assessment:

- The main risks (technological, market, financial etc.) have been identified, together with measures to mitigate in order to achieve the project objectives, including risks that might prevent the validation of the innovation in relevant application environment and/or market success been appropriately considered.

## Selection

Projects are selected for funding as follows:

- the top two ranked eligible proposals, out of the proposals submitted in the same Specific Objective, with different Host Organisation and
- the selection of the rest of the proposals for funding will be made according to their ranking until the exhaustion of the Total Call Budget.

## INFORMATION – CONTACT DETAILS

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### RIF Support Service

E-mail

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*The Research and Innovation Foundation may at its discretion, proceed to the extension or revocation of the present Call by applying the same publication procedure.*