Schweizerische Eidgenossenschaft
Confédération suisse
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Swiss Confederation

Federal Department of the Environment,
Transport, Energy and Communications DETEC

Swiss Federal Office of Energy SFOE

M-ERA.NET
Joint Call 2024 for Research Proposals

M-ERA.NET is a strong network of public funding organisations supporting and increasing the coordination and convergence of national and regional funding programmes on research and innovation related to materials and battery technologies to support the European Green Deal. Technological innovation is the driving force behind M-ERA.NET's contribution to achieve the environmental and growth objectives necessary for the green transition, supporting the circular economy and the Sustainable Development Goals (SDGs) set in the 2030 Agenda for Sustainable Development by the general assembly of the United Nations.

With annual joint calls M-ERA.NET funds ground-breaking research, facilitates knowledge exchange, promotes sustainable solutions in the field of materials science, and fosters transnational collaboration among researchers, academia, industry and other stakeholders. In addition, efforts are directed towards consolidating strategic programming, reducing fragmentation of funding, engaging in international cooperation and facilitating the exploitation of knowledge along the entire innovation chain.

Scope

SFOE in collaboration with M-ERA.NET is pleased to announce the Joint Call 2024. The aim is to support **transnational research and innovation activities** related to "Sustainable advanced materials for energy" (Topic 1) and "Next generation materials for advanced electronics" (Topic 6). The total maximum SFOE call contribution is EURO 650'000 for Topic 1 and EURO 350'000 for Topic 6.

Topic 1: Sustainable advanced materials for energy

Under Topic 1, the SFOE will prioritise projects in the field of *battery technologies* (no flow batteries). In addition, project submissions in the field of *fuel cell (PEM) and hydrogen technologies (PEM electrolysis)* may also be considered. All other topics like thermal storage, wind energy and energy harvesting are not taken into account. In the area of photovoltaics, research topics related to crystalline silicon, which have a particularly industrial focus, might also be considered depending on budget availability.

A strong connection to application is required for all topics, ideally with the direct involvement of an industrial implementation partner.

Topic 6: Next generation materials for advanced electronics

Under Topic 6, the SFOE exclusively funds projects on the *sustainability of semiconductors and circular economy in power electronics*. Power electronics is a key technology for the efficient and sustainable utilisation of electrical energy. It is therefore one of the priorities of the research strategy of the SFOE. However, the technology requires a considerable amount of resources and raw materials, particularly in order to achieve the energy transition. As an example, according to the Global E-waste Monitor 2020, the total volume of e-waste in 2019 was around 53 million tonnes, of which power electronics accounted for a significant proportion. Without switching to a circular economy, this figure is expected to reach a massive 74 million tons by 2030. This challenge can only be met by moving towards a circular economy.

In addition to the sustainability of semiconductor processing, projects should cover all aspects of a comprehensive approach to the circular economy for semiconductor products. They shall identify and analyse its key aspects in detail and provide manufacturers, vendors, users and policy makers with guidance on how to transition power electronics to a circular economy.

Projects under topic 6 must address at least two of the following aspects, which can be freely complemented by further relevant aspects, of which there are countless:

1. *General circular economy concept along the life cycle*

A power electronic device consists of various components, which in turn are made from different raw materials. After production, the product is shipped to its final location and enters the utilisation phase. During the utilisation phase, the product is regularly maintained and/or repaired until it reaches the end of its life. In a circular economy, the entire material of the product will then enter a "new life" in all its properties. Projects should examine all stages of the life cycle of a power electronics product, not focusing exclusively on the semiconductor, and analyse the key actions of the actors involved to ensure that the life cycle becomes circular. The key issues must be identified and analysed in such a way that concrete actions for the relevant actors can be derived. Therefore, all relevant actors must be identified and their main influence on the circular economy along the life cycle of the semiconductor and the entire device (e.g. a PV inverter) must be described. Based on the results, a guideline will be developed containing relevant aspects and suggestions for the different stakeholders to ensure that the circular economy aspect of a power electronic device is considered and taken into account in such a way that, ideally, no e-waste is generated by power electronics.

2. *Lifetime extension*

An important aspect of reducing the environmental impact of a power electronics product is extending the life of the product. Power electronics consist of a large number of different components, often with different lifetimes. If the level of integration of a power electronic product is very high, this often means that the entire product has to be scrapped if just one component fails. Projects should statistically analyse the failure rate of the different components of a typical power electronic product (e.g. a PV inverter) and the results should lead to clear specifications for the product design to ensure that the (early) failed component can be easily identified and replaced. In addition, the proposal should analyse the overall aspect of repairability and maintainability of a specific product (e.g. a PV inverter). Targeted results for the different stakeholders, mainly manufacturers, vendors and policy makers, should be developed and presented.

3. *Reuse of components and materials at the end of life*

A power electronic device consists of various components. In an in-depth analysis, concepts for the reuse of certain components are to be developed. To this end, the main components of a power electronic device (e.g. a PV inverter) are to be listed and structured. The best way to reuse each component should then be analysed. If a component cannot be reused for any reason, the reuse of the material from which the component is made should be investigated.

Timeline

5 March 2024	**Call opens**
until 30 April 2024	**Mandatory contact with the responsible SFOE person**
14 May 2024	**Deadline for transnational pre-proposal submission**
early October 2024	Application portal opening for full proposal submissions
20 November 2024	**Deadline for transnational full proposal submission + deadline for national full proposal submission**
February 2025	Notification of accepted projects
February – May 2025	Launch of accepted projects

Eligibility

The call is addressed to universities (including ETH-domain), universities of applied science, further research organizations and the private sector in Switzerland. The participation of young scientists in the research teams is encouraged. Researchers in the public and private sector can apply for remuneration of the personnel costs according to the maximum rates provided in the Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects. SFOE does not pay any contribution to hardware and overhead cost.

The **participation of industrial partners** (i.e., manufacturers at material, device and application level) **is strongly desired** to ensure the relevance of the research to technological development and to provide advice and data. Exceptions must be clearly justified.

An adequate share of own and third-party contributions (in-kind and/or cash) is expected and has to be formally confirmed at the national full proposal submission.

Consortia must include at least three independent legal entities applying for funding from three different countries of the funding agencies participating in the Call 2024. The Swiss partner has to provide a substantial contribution to the work performed in the project. SFOE funding is limited to the Swiss partner of consortia.

Applicants must comply with the conditions set out in the Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects.

Application Procedure

The call follows a two-stage submission and evaluation procedure. First, the consortium hast to submit **one common transnational pre-proposal** to M-ERA.NET by **14 May 2024** via the Electronic Submission System. Swiss applicants **are obliged to contact the responsible SFOE programme manager** at least two weeks before submitting a pre-proposal in order to seek support and guidance from their respective agencies (contact information see below).

If the pre-proposal is selected after evaluation, the consortium is invited to submit a full proposal to M-ERA.NET. Invitation to submit a full proposal does not guarantee funding. The deadline for submission of the **transnational full project proposals** via the Electronic Submission System is **20 November 2024**.

The projects presented in the pre-proposal and in the full proposal must be consistent. Any change to the plans described in the pre-proposal should be explained and justified.

IMPORTANT!

Swiss partners **must submit** one common **national full proposal** per project to SFOE. The content of the application form (only in English) should be based on and consistent with the transnational full proposal with a special focus on the activities of the Swiss project partners. Furthermore, detailed information about costs and finances of the Swiss partners have to be provided.

The national full proposals (application + finance sheet) have to be submitted by 20 November 2024 via e-mail to:

Topic 1: stefan.oberholzer@bfe.admin.ch
Topic 6: roland.brueniger@brueniger.swiss

The receipt of the national full proposal will be confirmed in due time.

Swiss partners not having submitted a national full proposal in time will not be eligible for funding!

Evaluation of Proposals

During the eligibility check and evaluation phase, the project pre- and full proposals will be subjected to an eligibility check of formal requirements, national eligibility check, and a transnational independent expert evaluation. The project proposals must include all necessary information and documentation, as well as any information needed to fulfil national requirements. If these formal requirements are not met, the project proposal will not pass the evaluation phase.

The final national eligibility check in Switzerland will be based on the national full proposals. They must comply with the conditions set out in the Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects. Research proposals will be checked along the criteria listed below in Appendix 2. A **minimum score** of **18 points** is required to pass the national eligibility check and, thus, to be handed over to the transnational independent expert evaluation.

Contact Information

If you have any question regarding the call, please do not hesitate to contact:

General questions & Topic 1:

Dr Stefan Oberholzer
stefan.oberholzer@bfe.admin.ch
Phone +41 58 465 89 20

Topic 6:

Mr Roland Brüniger
roland.brueniger@brueniger.swiss
Phone +41 44 760 00 66

Swiss applicants **are obliged to contact the responsible SFOE programme manager** (contact information see above) at least two weeks before submitting a pre-proposal.

No extensions of the deadline will be granted!