



Guidelines for proposers

2020 SAF€RA joint call

*Safety concerns and opportunities
related to advanced materials and
new technologies in energy production
and storage*

November 2019

SAF€RA is a partnership between 19 research funding organizations from 10 European countries who collaborate on research programming and launch joint calls in the field of industrial safety. It prolongs the work developed in the SAF€RA ERA-NET, which was funded by the European Union's Seventh Framework Programme for research, technological development and demonstration.

1. Introduction

SAF€RA is a partnership between research funding organizations working in the field of industrial safety in Europe. SAF€RA publishes joint calls for proposals on various topics related to industrial safety and organizes dissemination activities to ensure that research results lead to improvements in safety management. The scope of SAF€RA includes coordination of research on the prevention of major accidents, with off-site consequences and risks to the environment and society, and in particular the economic benefits of industrial safety solutions, safe innovative processes, preparedness and response as well as protection of the environment, new methods to enhance the creation of a safety culture and prudent attitudes, risk reduction strategies, reference technologies for life extension of aged and repaired structures, as well as products and systems required to improve industrial safety.

SAF€RA is a continuation from the ERA-NET project which was funded by the European Commission between 2012 and 2015. The SAF€RA ERA-NET coordinated research investment on industrial safety among a number of EU Member States. After the end of the support by the European Commission in 2015, 19 organizations decided to continue to invest jointly in research and founded SAF€RA. SAF€RA has launched four joint calls:

- Human and organizational factors including the value of industrial safety (2013)
- Innovating in safety and safe innovations (2015)
- Intelligent prognostics and developing professional competencies (2016)
- New technologies, new trends and monitoring safety performance (2018)

In 2020, the SAF€RA joint call concerns *Safety concerns and opportunities related to advanced materials and new technologies in energy production and storage*.

SAF€RA brings dynamism to safety research in Europe by promoting collaboration in research programmes and by fostering lateral thinking as well as favouring innovations. Its objectives include:

- Building up sustainable channels for communication and effective instruments for collaboration between national programme owners and/or managers and promoting the creation of strategic coalitions at a European level.
- Increasing awareness about the importance of research in the field of industrial safety as a major contributor to a dynamic knowledge-based economy as well as working to strengthen the impact of this research at the EU, national and international levels.
- Exploiting synergies and avoiding duplication of research and development among the partners of the Consortium by increased coordination.

- Establishing collaborative research projects between the involved Member States.
- Developing and implementing joint strategic activities to establish a durable European network for cooperation between key actors in the field of industrial safety.

For more information:

- SAFERA's 2020 joint call > <https://call.safera.eu/>
- SAFERA's website > <https://www.safera.eu/>

2. Call objectives

Scope of the call. The scope of the call includes research on the management of industrial risk, avoiding major impacts on the environment or society, as well as research on products and systems required to improve safety in industrial settings. Industries involved include, among others, the process industries, energy, dangerous goods transport, construction and operation of major infrastructure and the services industry. The scope includes occupational safety as long as there is a relation with major accident hazards in industrial settings. For example, if research primarily with an occupational safety perspective aims to prevent an accident sequence which could also lead to off-site consequences, then it is included in the scope.

Most projects funded within this joint call will be relatively small (2 to 4 partners, duration between 12 and 36 months, with budgets typically between 20 and 150 k€ per project partner). The call aims to fund mainly **applied research** carried out in universities and research institutes, though proposals from industry may also be eligible if they contain a significant research component. **Interdisciplinary research** is encouraged. Cooperation and joint activities between different consortia funded within the call will be encouraged. Research proposals which adopt a comparative approach (analyzing similarities and differences between different European countries, between different industry sectors, between large and small organizations, etc.) are encouraged.

General remarks

- The research teams within a consortium should include investigators of complementary scientific disciplines and research areas necessary to address the proposed research aims.
- Given the applied nature of the topics, the participation of stakeholders within the project (either as subjects of investigation, or partners contributing to the work) is encouraged.
- Proposals should contain novel, ambitious aims and ideas, combined with (in full proposals) well-structured work plans. The scientific methodology should be described (in full proposals) in sufficient detail to allow reviewers to assess its quality.

3. Call topic

Title: Safety concerns and opportunities related to advanced materials and new technologies in energy production and storage

Energy production and storage plays a crucial part of our everyday lives. Energy storage (with technologies such as batteries, fuel cells, flywheels, compressed air systems), is increasingly important in electric power systems, with the use of intermittent energy sources such as solar and wind power. Other important application areas include mobile devices and automobiles.

Development of these new energy production and storage technologies requires innovations in several areas, in particular in advanced materials (including nanomaterials). Research on new electrode materials for energy storage devices is of high importance to push the boundaries of cost, energy density, power density, cycle life, health and safety. As a result of research in this area, various promising anode and cathode materials exist, but many suffer from limited electrical conductivity. Many intercalation cathodes have been brought to market, and conversion material technology is slowly coming closer to widespread commercialization. Ongoing research on nanostructured materials is of interest for energy storage devices because of their high surface area, porosity, etc., which make it possible to introduce new active reactions, reduce the specific surface current rate, and improve stability and specific capacity. As the energy density of batteries and other storage systems increases, safety becomes even more critical if the energy is released unintentionally. Accidents related to fires and explosions have caused serious threats to human life and health and have led to numerous product recalls by manufacturers. These incidents are reminders that safety is a prerequisite for batteries, and serious issues need to be resolved before the future application of high-energy battery systems.

Concerning the use of advanced materials in batteries there are clear practical and commercial prospects, but the rapid increase in their use raises questions about their potential effects on health and the environment. There is a need to adequately assess and manage the potential risks of these new forms of materials, in the production process of batteries and in the full product life cycle. At the end of their product life cycle, advanced and nanomaterials can enter waste treatment plants and landfills via diverse waste streams. Little, however, is known about how these materials behave in the disposal phase and whether potential environmental or health risks arise. Life cycle assessment (LCA) can therefore provide valuable insight into the balance between benefits versus risks of using these advanced materials. This LCA provides a scientifically sound foundation for decision-making on innovation. A safer design of these materials, for example assisted by safe-by-design tools, will help avoid any potential risks of these novel materials in the future.

The use of renewable energy sources, like wind generators and photovoltaic systems, requires storage systems. This combined use allows electricity transmission and distribution system operators to increase the dependability of power system infrastructures, balancing the fluctuations of intermittent renewables, minimizing the risk of unpredictable faults (e.g. circulation of overcurrent caused by sudden overproduction of wind unit), without reducing the electricity production coming from the zero-carbon technology, etc. However, there are important safety

concerns raised by widespread deployment of high-capacity energy storage systems.

Alongside research aiming to resolve these technical questions, there is also a need for research on societal and organizational issues, such as public awareness and the public perception of these technologies and the associated risks, necessary policy changes and issues related to governance (risk communication and stakeholder engagement, decision-making and standardization processes under significant uncertainty, coordination of regulatory approaches to nanomaterial risks). Furthermore, the development and harmonization of test guidelines and standards (by OECD, ISO, CEN) will facilitate the comparing and sharing of scientific data to underpin decision making and regulatory acceptance.

Projects are invited concerning one or several of the following items:

- Safety of the energy storage system
 - Accidents (transport, explosion, leakages, shock, heat, water, light, etc.)
 - Environmental fate (upon accidents)
 - Post accidental exposure (human tox, ecotox, etc.)
 - Stability
- Risk assessment of impacts on human health and the environment
 - Human hazard assessment (in vivo, in vitro, epidemiology)
 - Exposure assessment (evaluation of exposure models with industrial case-studies)
 - Environmental Risk Assessment (eco toxicity, environmental fate, including exposure)
- Life-cycle assessment (LCA) of equipment and materials throughout their value chain
 - Modelling of benefits (environmental, economic, societal) and risks (public health, occupational/consumer health, environmental) for decision support
 - Recycling, including circular economy aspects
 - Incineration
 - Storage of waste products
 - Traceability
 - Life-cycle management (e.g. blockchain technologies)
- Safety of the production process for advanced materials and energy storage systems
 - Accidents (explosion, leakages, shock, heat, water, light, etc.)
 - Environmental fate (upon accidents)

- Post-accidental exposure (human tox, ecotox, etc.)
- Stability
- Safe-by-Design principles for the design of energy storage systems:
 - Existing knowledge (from existing electricity storage)
 - New knowledge (from other sources)
 - Screening tools (for materials)
 - Hazard testing (all tox)
 - Modelling
 - Particle functionalisation
- Safety of the electricity infrastructures
 - New network configurations including batteries and renewables
 - Use of batteries in demand-response applications
 - Risk analysis models of transmission and distribution network architectures including batteries and renewables
- Public concerns, governance and standardization issues
 - Development of test guidelines (eg. input to OECD) and standards (ISO, CEN)
 - Regulatory developments (areas including workplace safety, consumer protection, product liability, chemical regulation)
 - Risk governance, including coordination of regulatory approaches to nanomaterial risks
 - Risk communication and stakeholder engagement processes, characterization of public concerns

Research types: The call aims to fund primarily applied research and development projects. Given the nature of research questions concerning safety, multi-disciplinary projects are particularly encouraged.

4. Funding rules

Funding organizations participating in the joint call will provide funding for a maximum of three years for transnational, collaborative projects, according to the conditions described in Annex 1.

The eligibility rules and funding principles will follow the regulations of the national/regional funding organization(s) to which the application for funding is addressed. Final funding decisions will be made by the national or regional funding agencies and research institutes. The scientific

evaluation process will be made at a European level by a panel of independent experts.

Funding will be provided through direct contracts between participating SAF€RA funding organizations and the selected research teams. This means that each organization receiving funding is subject to the rules and regulations of their respective national/regional funding organization. Note that eligible costs and funding rates vary according to the national/regional funding organization (see Annex 1 for details).

5. Eligibility criteria

Eligible consortium structure. In order to foster transnational collaboration, projects funded within this joint call will involve the collaboration of at least two research teams in two eligible countries. All EU member states (including the United Kingdom) plus the Republic of Serbia are eligible countries; please see Annex 1 for details of the funding available for organizations in each country.

Researchers requesting support for their project may submit either:

- A **transnational consortium pre-proposal**, comprising at least two partner organizations from two eligible countries;
- A **single-nation pre-proposal**, comprising one or more organizations from a single eligible country. In this case, the organization(s) accept the principle of a collaboration with one or more other organizations from one or more other eligible countries. After evaluation of the pre-proposals, the Call Steering Committee will suggest grouping two or more single-nation pre-proposals into a transnational consortium, based on their thematic and methodological complementarity. Please note that there is no guarantee that an appropriate matching can be found by the Call Steering Committee.

In the second stage of the call, full proposals are to be submitted by a transnational consortium, which must comprise at least two consortium partners from two eligible countries.

Furthermore, additional consortium partners, not eligible for SAF€RA funding, may participate in the projects on the basis of self-financing. Such partners should state the source of funding for their contribution to the proposal and the conditions under which their funding will be available.

Eligible organizations. The funding scheme targets institutional collaboration: private individuals may not apply independently. Proposals are primarily expected from research teams from universities or public research/expertise organizations. However, some funding organizations participating in the present call can also fund researchers from industry (SMEs or large firms) or from NGOs¹ (see Annex 1 for details).

¹ NGO: Non-governmental organization.

Other comments:

- Most funding organizations are only able to fund research undertaken within their country or region. Check Annex 1 for details.
- Consortia may not request all their funding from the same SAF€RA funding organization.
- The **duration of funding** requested should be compatible with that supported by the funding organization(s) requested during application. All projects will concern durations between 12 and 36 months. The funding durations requested from each funding organization may be different (but should be clearly specified in the response form).
- The **expected funding per project partner** is typically in a range between 20 k€ and 150 k€ (check Annex 1 for available budgets and acceptable project size for each funding organization).
- Some funding organizations are able to provide funding only if applicants are able to provide **co-funding** from industry or from another research funding organization. Check Annex 1 for details.
- The roles of each partner within the consortium should clearly add value to the objectives of the proposed project.

The list of funding organizations participating in the call is provided in Annex 1.

6. Application procedure

The joint call will use a **two-stage application process** with a pre-proposal mechanism for the first stage, according to the schedule outlined below.

Action	Date
Joint call is launched	November 12 th 2019
Deadline for submission of pre-proposals	30 th January 2020
Information sent to applicants on results of the first stage. Requests for full proposals are sent to selected applicants, and collaborations proposed to single-nation applicants.	7 th February 2020
Deadline for submission of full proposals	30 th March 2020
National funding decisions transmitted to applicants	September to October 2020
Projects start	October to December 2020

Pre-proposals (maximum of 5 pages) will be checked for validity and relevance by the SAF€RA Call Steering Committee. The Call Steering Committee will also propose possible cooperation between single-nation applications at this stage. A subset of the first stage applications, selected by

the Call Steering Committee on the basis of their eligibility and their relevance, will be requested to prepare a full proposal, as a transnational consortium, to be submitted in the second stage. Second stage proposals will then be assessed by the Evaluation Panel.

Organizations submitting a project are invited to use the pre-proposal form (maximum of 5 pages, in English) available on the call website. Applications in the first stage (pre-proposals) must be made by email to applications@safera.eu, before the submission deadline of 30th January 2020 at 16:00 CET. Applicants will receive a confirmation email within one working day. Applications should not be sent directly to the participating national/regional funding organizations.

Project coordinator. Researchers submitting a pre-proposal must designate a project coordinator, who will lead the consortium through the application procedure and is fully responsible for the overall project coordination. All communication with the Call Secretariat will be through the project coordinator, who should disseminate information to all parties to the proposal.

Confidentiality. Proposals and any information relating to them shall be handled in confidence, and only be made accessible to the organizations involved in the funding and the experts involved in the evaluation process. Proposals shall not be used for any purpose other than the evaluation of the applications, making funding decisions and monitoring of the project.

Projects selected for funding shall have a summary of their project published on the SAFERA website, and all relevant project deliverables will be disseminated by SAFERA, as a complement to dissemination activities undertaken by the projects.

7. Call management

Two boards, the Call Steering Committee and the Evaluation Panel, will manage the evaluation process of the joint call with the support of the Call Secretariat. The process includes the eligibility and relevance check of the proposals, the evaluation of the proposals and the final selection and award of research funding.

The **Evaluation Panel** is a panel of internationally recognized scientific experts within the disciplines identified as being relevant for the call topic, responsible for the evaluation of submitted proposals. Evaluation Panel members will not submit or participate in proposals within the call, and will accept a confidentiality agreement. The work of the Evaluation Panel will be organized so as to avoid conflicts of interest.

The **Call Steering Committee** is composed of a representative from each SAFERA funding organization participating in the joint call. All decisions concerning the call procedures will be made by the Call Steering Committee. It will supervise the progress of the call and the evaluation of proposals. The Call Steering Committee will make funding recommendations to the

national/regional funding organizations regarding the proposals to be funded, based on the final ranking list provided by the Evaluation Panel. It will accompany the entire lifespan of the Call, evaluates the performance of the projects and resolves potential disagreements which may arise during the lifetime of the projects.

8. Evaluation process

A centralized evaluation of the full proposals will be performed by the Evaluation Panel and the Call Steering Committee. Based on the result of the evaluation, projects will be recommended (or not) for funding by the organizations concerned. Note that the national/regional organizations will make the final funding decisions.

The **evaluation criteria** are:

- Compatibility with the call topics
- Scientific or technological excellence
- Expected outcomes (scientific & operational)
- Project implementation

These criteria and the associated weightings are described in more detail in the *Guidelines for evaluators* document, which applicants are free to consult.

Each proposal will be allocated to at least two external reviewers and one Evaluation Panel member who fit the profile of the application. Based on the proposals' ranking established by the Evaluation Panel and on available funding, the Call Steering Committee will recommend the projects to be funded to the national/regional funding organizations.

Only proposals judged to be of high quality will be funded. If the number of proposals considered to have high quality, as judged by the Evaluation Panel, corresponds to a total requested funding which is smaller than the available budget, only part of the funds will be used. Projects not evaluated as being of high quality by the Evaluation Panel will not be funded in the context of this SAF€RA joint call.

For each proposal, the Call Steering Committee will communicate the final decisions and the evaluation report to the project coordinator.

9. Common SAF€RA activities

Reporting. The coordinators of all funded projects must submit an interim and a final (within three months of the end of the project) scientific progress project report to the Call Secretariat. All reports must be in English and use a common report form that will be provided. The research partners are jointly responsible for the delivery of the reports, and the Call Secretariat will only accept reports delivered on behalf of the consortium, via the project coordinator.

In addition, each project partner will be responsible for the necessary reporting to their funding organization according to national/regional rules in order to obtain and maintain funding during the lifetime of their portion of the project.

Project review. As a complement to the national/regional project review process, the transnational cooperation aspects will be monitored at a SAFERA level. The project coordinator is responsible for providing concise reporting according to the requirements (publishable summary at project start, interim concise reporting and final reporting, participation in questionnaires). Any substantial change in an ongoing project must be reported promptly to the involved funding organizations. The project partners should be aware that changes might have effects on funding.

Progress seminars. Funded research projects will be required to participate once a year in a seminar organized by SAFERA partners. The seminars will be organized so as to facilitate interaction between researchers from different projects and to disseminate research results to interested parties. Funding for travel of a project representative to the seminars (which will be organized in a location in Europe and last a full working day) should be included in proposal budgets.

Dissemination. Researchers funded within the context of this call will be required to acknowledge the support of SAFERA and the specific funding organization in their publications, exhibitions, lectures and press information concerning results of SAFERA-funded projects. In addition, electronic copies of all relevant publications and deliverables must be sent to the Call Secretariat.

A public database of projects funded within SAFERA and the results of the research is maintained by the SAFERA funding organizations. All research projects funded within this call must submit all relevant data created during the lifetime of the project to this database.

10. Support

Frequently Asked Questions (FAQ) are listed on the SAFERA joint call website. In addition, all funding organizations participating in the call will provide assistance to project proposers in case of questions. General inquiries concerning the call should be addressed to the Call Secretariat, at call-secretariat@safera.eu.

Annex 1 – Specific requirements of the participating funding organizations

The following tables provide information on the available budgets, funding durations and other requirements of each participating funding organization. **Applicants must contact the national/regional funding organization for further information on eligibility.**

Concerning funding duration and available funding per applicant: applicants may request funding for a task included within a larger project, whose duration is less than the total project duration. In such cases, please identify clearly the scope of the larger project in which your requested funding is included, and specify precisely the scope of the task for which funding is requested.

Austria

Organization	Austrian Research Promotion Agency (FFG)
Contact persons	Alexandra Kuhn (alexandra.kuhn@ffg.at)
Eligible applicants	All legal entities in Austria are eligible for funding.
Budget	400 k€
Funding duration	Between 12 and 36 months
Other requirements	<p>Consortia must include at least one company based in Austria. (For clarity, this means that a consortium consisting of one research organization outside Austria, funded by another SAFERA member, and one Austrian company, funded by FFG, is possible.)</p> <p>Individual enterprises must account for a maximum of 70% of the eligible project costs (shares of affiliated companies count as one enterprise).</p> <p>Cooperation between a company and one or more research institutes: research institutes must account for at least 10% of the eligible costs.</p> <p>Obligation to submit in parallel to the FFG eCall system: https://ecall.ffg.at</p> <p>Applicants selected to proceed to the second stage of the call will submit a specific annex, which must be written in English or German.</p>

Finland

Organization	Finnish Institute of Occupational Health (FIOH) – Finland
Contact persons	Carita Aschan < carita.aschan@ttl.fi >
Budget	250 k€ in person-months for FIOH personnel. Funding between 50k€ and 150k€ per project.
Funding duration	Between 12 and 36 months
Other requirements	Co-funding and industrial cooperation are required.

Organization	Finnish Work Environment Fund (FWEF) - Finland
Contact persons	Kenneth Johansson < kenneth.johansson@tsr.fi >
Eligible applicants	Research organizations and companies whose research may improve Finnish working life.
Budget	Between 20k€ and 150 k€ per project. Total amount of funding depends on how many applications FWEF receives and how they are rated in the evaluation (between 100 and 300k€).
Funding duration	Between 12 and 36 months
Other requirements	Co-funding is required.

Germany

Organization	Bundesanstalt für Materialforschung und prüfung (BAM) – Germany
Contact persons	Claudia Eggert < claudia.eggert@bam.de >
Budget	Person-month funding for a PhD candidate based in BAM (equivalent to 210 k€).
Funding duration	36 months

Italy

Organization	Italian Workers' Compensation Authority (INAIL) – Italy
Contact persons	Paolo Bragatto < p.bragatto@inail.it >
Eligible applicants	Italian universities or recognized Italian Research Institutes.
Budget	120 k€ per year
Funding duration	24 months
Other requirements	Co-funding covering 40% of the total cost is required.

Republic of Serbia

Organization	Serbian Ministry of Education, Science and Technological Development (MESTD)
Contact persons	Milica Tasevska < milica.g.tasevska@mpn.gov.rs >
Eligible applicants	Researchers working for a research organization based in Serbia are eligible.
Budget	40 k€ (maximum of 20 k€ per year) Funding per applicant limited to 20 k€
Funding duration	12-24 months
Other requirements	Co-funding from companies may be required. Proposals selected for funding will be required later to submit their application in Serbian language.

Spain – Basque country

Organization	Instituto Vasco de Seguridad y Salud Laborales (OSALAN) – Basque country
Contact persons	María Nieves de la Peña, tel. +34 944032145, fax +34 944032107, e-mail: osalantpr16ba@euskadi.eus
Eligible applicants	All legal or physical entities in the Basque Country are eligible for funding, as long as they have not been found guilty in legal cases related to occupational health and safety within the last five years, and have no debts due to the public treasury or the social security system. The organization must comply with occupational risk regulation.
Budget	100 k€ (50k€ per year) Funding per project per year between 10 and 50k€
Funding duration	12-24 months
Other requirements	In addition to compatibility with the call topic, projects must have some relation to occupational health and safety. Projects which are accepted for funding will need to prepare a summary of their proposal in Basque language or Spanish, including the title of the project, the objectives, the workplan, methodology and a detailed budget.