

Belmont Forum Collaborative Research Action

Vulnerability and resilience management for socio-environmental systems in exposed territories

RESILIENCE 2025

Call for Proposals

Abstract

With increasing environmental risks, scientists and disaster experts have been working with communities, such as the Society for Risk Analysis (SRA), to develop new risk management approaches. The next step is to better integrate socio-environmental systems within these approaches and implement a more holistic and transdisciplinary risk science. Taking inspiration from the recent COVID-19 pandemic crisis, this new Collaborative Research Action (CRA), called RESILIENCE, builds upon [DR3 CRA of the Belmont Forum](#) and aims at defining and promoting "new" risks management concepts that better account for global change and for rapidly changing relations between societies and nature. Expected outcomes include risk science developments in line with sustainability science, co-production of knowledge, a focus on highly vulnerable territories, informed governance, and the rise of a new generation of scientists and stakeholders able to better cope with ever-rising environmental risks.

Background and rationale

The French National Research Agency (ANR), the French Environmental Research Programming Agencies (FERPA) and the Taiwanese National Science and Technology Council (NSTC) are co-leading a new Belmont Forum funding call entitled “Vulnerability and resilience management for socio-environmental systems in exposed territories¹.”

RESILIENCE follows and expands the research conducted so far within the “Disaster Risk, Reduction and Resilience” (DR3 2019) research program. It notably aims at better framing risk science within sustainability sciences, and accounting in a more holistic way for the changes in the relations between societies and nature in the design of a resilient future for socio-environmental systems.

DR3: <https://www.belmontforum.org/cras#dr32019>

The Belmont Forum (BF) comprises 39 science funding institutions and partners worldwide. These agencies jointly develop and fund Collaborative Research Actions (CRA). These transdisciplinary research funding calls address global environmental change issues that require global coordination to accomplish scientific goals, increase synergies, and avoid duplication.

The design of a more comprehensive risk science implies the typical roadmap of sustainability sciences, namely a holistic, interdisciplinary and trans-disciplinary approach that sums up knowledge and involves all concerned parties in identifying and implementing relevant risk management solutions. Critical gaps to be addressed include: i) the definition of risk resulting from increasing interactions between societies and nature, ii) multiple and nested spatio-temporal scales, iii) the diverse nature of socio-environmental vulnerabilities

¹ According to the IPCC (2022), *exposure* refers to “the presence of people; livelihoods; species or ecosystems; environmental functions, services and resources; infrastructure; or economic, social or cultural assets in places and settings that could be adversely affected” (p. 7), while *vulnerability* is defined as “the propensity or predisposition to be adversely affected” and includes “sensitivity or susceptibility to harm and lack of capacity to cope and adapt” (p. 7).

Building on these definitions, the present call defines **exposed territories** as geographical areas where the sensitivity of socio-ecosystems to hazards is exacerbated, namely areas situated in proximity to or in direct interaction with intense natural hazards — whether of telluric origin (volcanoes, earthquakes, tsunamis), climatic origin (floods, droughts, coastal submersion or erosion, landslides), or driven by socio-environmental processes (e.g., deforestation, pollution, land degradation), and where socio-ecosystems have limited capacity and/or critical infrastructure to cope, adapt, and recover.

The present call will focus on exposed territories in proximity to or in direct interaction with natural hazards related to global change.

Reference:

Intergovernmental Panel on Climate Change. (2022). *Climate change 2022: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, ... B. Rama, Eds.). Cambridge University Press. <https://doi.org/10.1017/9781009325844>

(notably in highly exposed/vulnerable territories), iv) the complex interplay between risks, risk perception, and risk management strategies in the decision-making paradigm, v) the design and promotion of effective Nature-Based Solutions for Disaster Risk Reduction, and vi) the co-construction of knowledge and solutions between citizens, concerned stakeholders and scientists.

A specific emphasis needs to be made on the drastic evolutions in risks due to global change. Assessing these over short to long time scales requires combining systematic data from measurement stations with historical sources from archives and future projections. Potential benefits include, for example, i) evaluating the impact of global climate warming and extreme weather at local scales, ii) integrating gradual or abrupt changes in socio-environmental conditions in risk assessment, iii) quantifying the associated uncertainties at different temporal horizons and scales, and iv) investigating the link between risk and resilience of the different components of socio-environmental systems.

Future research efforts should also be framed by multi-causality and/or multi-dimensionality since induced effects, cascading and concomitant events are often present in areas exposed to increasingly connected natural and human-made hazards. The question of sustainable management of economic resources and sustainability at geographic scales needs therefore to be considered in a systemic and multi risk perspective.

Because the notion of exposed area cannot be appropriately considered without the societal dimensions of risk, equitable adaptation solutions must be co-constructed between scientists and stakeholders. Emphasizing this anticipates society's response, reinforces resilience capacities, and installs trust between the institutions producing knowledge, the public and decision-makers. The COVID-19 pandemic provides a source of lessons and research that can certainly be transposed to other disaster management situations. Notably, this pandemic has revealed the importance of effectively managing in times of crisis, developing citizens' understanding of the issues at stake, and of involving them in crisis mitigation strategies. Inspiration should be taken from this experience to define "new" risk management concepts, framed within a more holistic perspective.

Societal relevance / expected impact

The rise of environmental risks and losses in socio-environmental systems is affecting various sectors of the economy, including agriculture, industry, finance and law. Risk awareness is largely shared by stakeholders and citizens who are calling for risk management solutions. Notably, risk management autonomy, mutual aid and co-design within the full complexity of socio-environmental systems are now considered as mandatory guidelines. The proposed research will develop and promote solutions addressing these needs, particularly including reliable, science-based, future risk projections to anticipate and better manage future risks.

Because risk management differs between decision and implementation, the transdisciplinary approach of the proposal will allow efficient collaborative actions with all concerned parties, from the technical side with scientists, to the social one with citizens, and from local knowledge holders to decision-makers. Projects should include optimal appropriation of the results at the appropriate scale, notably in targeted highly vulnerable areas. Attention will be paid from rural to urban areas, and from coastal/lowland to mountainous/highland regions currently affected by sea level rise and the shrinkage of the mountain cryosphere, in order to develop efficient risk management plans.

In addition to the direct involvement of local authorities and scientists, research projects in this CRA may also encourage training and education – from schools to university levels – in the targeted highly vulnerable territories, so as to boost capacity building (e.g. data acquisition, modelling, risk management, legal framework). These activities are aimed at raising the next generation of scientists and stakeholders in these countries to be more aware of risk assessment and management strategies.

Finally, in addition to the co-construction of research questions, this CRA will support dissemination of results and optimal risk management strategies to local and national governance levels.

On this basis, RESILIENCE will investigate the links between the vulnerability of socio-environmental systems in exposed areas and their capacity to convert/evolve into a more resilient future, in the light of Sustainable Development Goals (SDGs). The aim is to better frame risk science within a sustainability science perspective building on the outcomes of the projects funded through the DR3 Collaborative Research Action.

In detail, the CRA aims at fostering research on the following issues, in line with SDGs and the main gaps in risk science identified at various levels, such as the Sendai Framework community and the European Union:

1. How to better integrate humanities and social sciences into new risk management methodologies: 1) to better integrate citizens, stakeholders and scientists through co-design approaches and 2) to better account for the implications, in terms of risks, of the changes in the relations between societies and nature (including cultural and communication aspects)?
2. How to account, within a holistic perspective (e.g. breaking down barriers between disciplines and sectors to address the increasing complexity of risk systems at territorial scales), for the different risks affecting socio-environmental systems, including societies, ecosystems as well as their complex and changing interactions? And how to design and promote efficient Nature-Based Solutions for equitable Disaster Risk Reduction?

3. How to better learn from the territories, namely their history, resources, local knowledge, environmental and cultural practices, and document and identify relevant conditions for changes towards Disaster Risk Reduction through resilience?
4. How to better formalize (formal/mathematical developments of risk concepts and measures, legal aspects of SDGs, institutional interoperability), understand (causes: climate, socio-environmental trends), evaluate (quantify), and act upon (ie through legal action) risks which evolve rapidly and strongly in all their components (including appearance, displacement) in a temporal continuum between past (observation) and future (projections)?
5. How to ensure a continuum from (remote sensing) observations, modelling, decision-making to the definition of resilience strategies, for a better exploitation of risk data for the society?
6. How to efficiently link geosciences, engineering and mathematical sciences with humanities to embed risk science (including geohazard mapping, vulnerability and impacts assessment, risk perception and management and mitigation strategies) in the numerical transition?

In a nutshell, based on the above context and research questions, submitted proposals are expected to encompass elements from at least two of the three areas listed below **with a Sustainability Science perspective and clear reference to the above challenges:**

AREA 1. Better assess risks of increasing complexity with global change

AREA 2. Pay specific attention to exacerbated vulnerabilities in highly exposed territories

AREA 3. Develop innovative solutions for Disaster Risk Reduction

Project requirements

Proposals must meet the expectations of both this Call for Proposals and the [Belmont Challenge](#), a vision document that encourages “international transdisciplinary research providing knowledge for understanding, mitigating and adapting to global environmental change”.

Proposals should include a strong and deliberate link between the societal and environmental aspects of global environmental challenges, to ensure that they meet the [Belmont Challenge](#) for international transdisciplinary research that generates knowledge for understanding, mitigating, and/or adapting to global environmental change.

Given the complexity and scope of these challenges, research consortia must be truly transdisciplinary, thus including researchers from a) social sciences/humanities/economics and b) natural sciences/physical sciences/engineering/technology, as well as c) societal partners (i.e., citizens, industry, decision-makers or civil society organizations), using a

participatory, co-designed and co-implementation approach. Additional knowledge holders are welcome to be part of the proposing consortium once this minimum criterion is met.

Successful proposals **must address the Call Theme** and deliver on **at least two of the three Areas** (with crosscutting linkages encouraged), clearly describing how the proposed project will accomplish it. Successful proposals will include well-justified budgets, partitioning of funds, and clear allocation of roles, responsibilities, and time.

In the preliminary phases (defining financing trajectories and project formulation), a candid and direct dialogue must be established to reconcile the interests of academia and communities in a specific working domain.

The same dynamic dialogue should be taken to co-define the roles of each partner in the consortium, it is important to keep in mind that from the Belmont Forum perspective, **it is strongly encouraged that non-academic partners also take leadership roles as co-PIs**. The team should also reflect on effective measures to prevent any form of exploitative or "extractive research" dynamics that could emerge between academic and non-academic partners of the consortium.

The design of project outcome measurement should be a collaborative effort involving the whole diversity of interested/involved actors. Monitoring frameworks should address inquiries posed by shared interests among those actors.

Encouraging continued research programs or the synthesis of existing knowledge: Even with the presence of advanced information systems, databases, observatories, scientific networks, and datasets, the generation of scientific knowledge often remains fragmented or redundant, hindering both scientific advancement and effective decision-making. The CRA should prioritize supporting projects that stem from well-established research programs known for addressing intricate problems and upholding best practices. Efforts should be made to encourage synthesising and consolidating existing information and knowledge.

Proposals must include:

1. **Data and Digital Outputs Management Plan (DDOMP)**, including public accessibility of data, digital objects, results, and findings;
2. **Project Description** including background, research plan, and consortium composition with a detailed discussion of stakeholder engagement and co-production process;
3. **Management Plan** to describe the implementation of the project's overall coordination, monitoring, oversight, and evaluation; must address the implementation of open access policies and a reflection on the equitable and just access and ownership of knowledge and data produced by the project following the [FAIR principles](#).

4. **Impact, Engagement, and Dissemination Plan**, including the development of introductory and valorization videos for the kick-off and end-term meetings, planned social media activities as well as any other externally facing communication activities foreseen as a result of this work, capacity building activities foreseen as part of the co-development of the research;
5. **Funding Plan**, including funding to participate in coordinated activities throughout the project's lifespan, such as attending the CRA Kick-Off, Mid-Term, and End-Term meetings to be held preferably at the annual [Sustainability Research and Innovation Congress](#) (SRI). The expenses for these activities should be accounted for in the Funding Plan to allow participation from *at least* three Consortium members.

Project duration

Projects are intended to be *three* years in length.

Eligibility criteria

To be deemed eligible for this call, a Research Consortium should have **at least three participating partner organizations established in three different countries (not including self-funding partners)**, and should request support from **at least three participating funding organizations involved in this call**.

Each funding organization's eligibility requirements can be found in their annex for this call on the [Belmont Forum Website](#).

We encourage global geographic diversity to increase the scalability and applicability of the project outcomes. Consortium partners that are not eligible for funding from any of the participating funding agencies can participate in the research project at their own expense.

Given the complexity and scope of the challenges, research consortia must be truly transdisciplinary, thus including researchers from: **a) social sciences/humanities/economy and b) natural sciences/technology, as well as c) societal partners (i.e. citizens, industry, civil society organizations), using a co-design, co-development and co-implementation approach**. The transdisciplinary of the projects will be assessed through the direct engagement of stakeholders in projects consortium or through the level of engagement of stakeholder's communities / society actors in the project implementation.

Funding will be provided for scientifically and technologically excellent projects managed by universities, other research organisations and companies from involved countries. Funding will follow the nationality principle meaning each participating national or regional funding agency will fund its respective national/regional research partners in a particular project consortium.

In addition, applying research consortia are required to interact and include partners of the private sector (e.g. SMEs), stakeholders and/or end-users while preparing the proposal and

carrying out the project. Where possible SMEs and other stakeholders should be encouraged to participate in the consortia, to enhance impact, facilitate knowledge exchange and uptake of results to deliver measurable benefits to Vulnerability and resilience management research. However, the support of any type of stakeholder as an active partner in the research consortia depends on the national/regional funding regulations defined by the funding bodies (see “Organizational Annexes” documents on the submission system (<http://bfgo.org>)).

Consortium members can **request funding** or **in-kind support** as outlined in each Annex. Additional members may participate in a self-financed capacity *if* the minimum number of participants from three countries requesting funds from three funding organizations is met.

Each Research Consortium **must have a Consortium Lead**, who facilitates collaboration and communication across the team and submits the research proposal, and annual reports, which are due each June 15th for the project's lifetime. **Consortium Leads must request funding** from a participating funding agency and **cannot participate in a self-financed or in-kind capacity**. It is critical that each Consortium Member and Consortium Lead review the applicable funding agency annexes for this Call to determine whether their funding requests in the Funding Plan align with available support. Specific questions about eligibility should be directed to the relevant point of contact listed at the bottom of each organizational Annex. We encourage the creation of a gender and geographically-balanced Research Consortium that provides opportunities for early career researchers to participate.

Evaluation Criteria:

The proposals will be reviewed under the following selection criteria:

1. **Quality/Intellectual Merit**

- What is the quality of the science proposed? How innovative are the team’s project goals and objectives?
 - How well does the activity advance knowledge and understanding within its own field and across different fields?
 - To what extent does the proposed activity suggest and explore creative, original, and innovative concepts?

2. **Fit to call objectives (including user engagement & societal or broader impacts)**

- Addressing the call Theme and elements of at least two of the described Areas
- Engagement of research users/societal actors (relevant policymakers, regulators, NGOs, communities, local and Indigenous people organizations, or industry) and effectiveness of proposed knowledge exchange activities
- Expected impacts: e.g. societal, policy-related, economical
 - What may be the benefits of the proposed activity to society (e.g. policy

development, economies)?

- How have users/societal actors been engaged and how effective are the proposed mechanisms and pathways to impact (i.e. knowledge transfer to decision-makers)?
- Does the research collaboration focus on global challenges for which solutions can only be achieved by global scientific approaches?

3. Personnel/Quality of the Consortium

- Competence and expertise of teams and complementarities of consortium members?
 - How well qualified are the proposers (Consortium Lead and team) in terms of science knowledge, expertise and experience to conduct the project?
 - What is the quality of previous work in terms of past or potential contributions to, and impact on the proposed and other areas of research?
 - Is the Consortium Lead team (including any identified Co-Principal Investigators) able to lead the project, e.g. having strong management and leadership skills, or having complementarity of expertise and synergy of the members of the team?
- The Belmont Forum aims at increasing the accessibility of research opportunities, especially to marginalized communities. In this spirit, the Belmont Forum encourages the diversity of the Consortium team considering multiple factors including geography, training or background as well as non-academic actors including but not restricted to Indigenous peoples and local knowledge holders.
- What is the added value of international cooperation? When appropriate please discuss the extent to which Partner Organizations' existing investments are leveraged in the proposed project
 - If these partnerships currently exist what does this new funding allow them to do that they could not do otherwise?

4. Co-Production and Societal Relevance

- Are there transdisciplinary approaches embedded throughout the planned project lifecycle? (co-design, co-identify, co-develop). The transdisciplinary approach should also encompass practical recommendations relevant to public policy and envision how the research project could enhance society in general, including local institutions.
- Were societal parties/stakeholders involved in the initial framing and development of the proposal? Stakeholder engagement actions (described in methods sections or in equity, diversity and inclusion plans) should acknowledge and deal with the varying degrees of vulnerability of local populations according to differential characteristics.
- Do the proposed project outcomes exhibit genuine (on-the-ground) societal relevance/impact?

- Are provisions made so that all partners (including stakeholders/society) will share equitably in on-the-ground impacts/benefits as a result of this project?

5. Resources and Management

- Appropriateness of resources and funding requested
- Appropriate and equitable cooperation
- How well conceived and organised is the proposed activity?
- Is there an operational plan with well-defined milestones in place?
- Is the coordination plan adequate?
- Is there sufficient access to resources?
- Are the requested investments well justified and relevant?
- Are the scientific and financial contributions requested of the Partner Organizations from each country equitable?

6. Data and Digital Outputs Management Plan (DDOMP) and other required documents

- Does the DDOMP conform to the [Belmont Forum Open Data Policy](#) and [FAIR principles](#)?
- Does the DDOMP consider [CARE](#) principles?
- Is the DDOMP appropriately detailed and resourced to be able to be taken forward effectively?
- Data management plans must address the implementation of open access policies and a reflection on the equitable and just access and ownership of knowledge and data produced by the project.

How to apply

All call documents, including guidelines for applicants and national/regional requirements, and the submission portal can be found at the Belmont Forum Grant Operations website: <http://bfgo.org>.

This CRA has a two-stage submission process. Registration (mandatory for full proposal submission) and full proposals. **Proposals can be written in English, French, Portuguese, Spanish** and submitted online at www.bfgo.org. Each proposal must be submitted in **only one** language.

Proposals submitted in languages other than English will undergo translation to English for evaluation by the panel. The proposal will also be read in the original language by at least one of the members of the panel of experts. Translation will be facilitated through Amazon Web Services software, ensuring compliance with the EU General Data Protection Regulation (GDPR). Proposals will remain confidential within the Belmont Forum BFgo system and will not be shared externally.

Details of the call and the application process are presented on the Belmont Forum website: <https://belmontforum.org/cras#open>, where you can also find links to training modules for proposers on the Belmont Forum YouTube channel.

Before preparing proposals, applicants are advised to contact their National Contact Points as listed in the annex documents for the call to ensure their eligibility.

Capacity building and networking activities

Building strong and appropriate consortia will be key for the development of proposals meeting the challenges highlighted in the call text and producing the expected outcomes

The capacity building and networking phase consists in a period of several months to be used to support activities of networking especially with various societal actors and disciplines, capacity building, transdisciplinary training or series of workshops. These activities will help applicants to 1) address the challenge of this CRA focused on transformation of management practices (transdisciplinary) using a holistic system approach (interdisciplinary) and 2) submit the proposals on the BFgo platform.

Potential supporting activities during the phase of proposal development:

- Workshops and other supporting activities could be organised regionally with the objective to build community gathering Natural Scientists, Humanities and Social Scientists, and Societal actors from different countries. Participation in these workshops should not be mandatory for proposal submission but should be considered as great opportunities for applicants to develop the transdisciplinary community and their networks. A key aspect for the success of these activities will be working with good knowledge brokers. These activities could have a regional focus.
- Webinars could be organised by each Partner Organisation with the support of the TPO and Belmont Forum secretariat. Webinars will help spread information through research communities about themes, good practices in transdisciplinarity or Belmont Forum specificities (i.e. Exchanges with previous Belmont Forum awardees).
- Networking tool or platform for future applicants looking to meet future partners. These tools would help build the transdisciplinary community working on this theme. Futures applicants looking for new partners will be encouraged to join the following platform: <https://members.futureearth.org/topics/39286/feed>

If you would like to stay updated, please feel free to sign up for our [mailing list](#) and follow us on our social media channels. If you need precisions or more information, please contact info@belmontforum.org