



RESEARCH FRAMEWORK OVERVIEW

UNDER THE ERASMUS+ CBHE PROJECT SUNRAISE



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1. INTRODUCTION

The SUNRAISE Research Framework overview has been developed to provide background to research agendas suggestions co-created together with SUNRAISE partners, and to explain the information infrastructure created to support working on SUNRAISE research and training agenda in the post-project period.

The core of the SUNRAISE research framework are brief analytical reviews of SUNRAISE-relevant capacities and academic activities of SUNRAISE partners in Bhutan, India and Russia, and suggestions for enhancing the value of their research output. Those documents have been developed through a multistep iterative process involving talks with stakeholders from within and outside the partnership, including academic faculty, administrators, students, representatives of the world of profession, policy makers. The materials of the interviews (one-to-one and group) have been use to produced the first draft of reviews and agendas. These drafts went through several discussion rounds with SUNRAISE partners , and once agreed they were made available from (http://sunraise.sfu-kras.ru/results/research_framework/profiles) together with comprehensive research profiles developed for each partner. In order to understand the logics behind the analysis and suggestions, we hereby provide this Research Framework Overview.

In what follows, we first provide a concise overview of the European Union policies and agendas (both political and research), which are dealing with the Arctic zone and high mountainous areas. In doing so we assume that the experience of the European Union in the development of management and policy actions for addressing the specific issues of such areas can be useful and highly relevant for SUNRAISE partner countries. This is because the EU documents are backed by first rate research expertise, and because the EU is championing many actions tackling global environmental issues. This is, in its turn, secures international policy relevance of research outputs following such methodological guidance. The next section is an analytical summary of general patterns identified in partner countries. This chapter serves as an explanation for the overall logic guiding the analysis of partner institutions and the suggestions developed for them.

2. 2. EU POLICY OBJECTIVES FOR THE ARCTIC AND MOUNTAIN REGIONS

2.1. ARCTIC REGION

The geopolitical interests and location of part of the territory of (on the one side) along with the known impacts caused by (on the other side) the EU in the Arctic region, has led the EU to set out a Joint Communication on Arctic matters. First launched in 2008, it constitutes the main proof of the EU's engagement in the Arctic. The communication has gone through several updates until its current version (2021), explicitly reframed so as to accommodating the objectives of the New European Green Deal (2020) and, thus, the new perceived challenges and opportunities in a context of climate and geopolitical change and sustainability. Three key objective areas are defined (summarised and shortened):

- Objective 1: Contributing to keep the Arctic a safe and geopolitically stable place, with a view to responding to the geopolitical competition and tension that might arise for the Arctic resources and transport routes as a result of the melting of the Arctic ice;
- Objective 2: Addressing the ecological, social, economic and political challenges posed by climate change in the region, including acting against climate change and environmental degradation;
- Objective 3: Supporting the sustainable development of the Arctic, by especially taking into account the indigenous communities and future generations.

The latter two objectives are particularly related to the SUNRAISE research agenda and, consequently, become the focus of a more in-depth examination in this document. The particular sub-objectives and related intended action set up for each of them include (summarised and shortened):

- Promoting sustainable solutions to extract materials needed for the green transition by e.g. implementing circular economy initiatives and respecting and involving the local communities in the process (objective 2);
- Impelling to keep the oil, gas and coal in the ground (objective 2);
- Preventing unregulated fisheries and supporting the designation of marine protected areas (objective 2);
- Encouraging a better monitoring and forecasting and climate prediction for the poles, including the creation of a Copernicus Arctic thematic hub (objective 2);
- Reducing black carbon emissions by 33% below 2013 levels by 2025 (objective 2);
- Fostering ambitious emission reductions in Arctic shipping, with the aim to attain zero pollution and zero emission shipping (objective 2);
- Improving the understanding of transportation of plastic waste (objective 2);
- Increasing in research on sustainability issues in the Arctic, including research projects establishing a cooperation with indigenous knowledge holders (objective 3);
- Advancing research on the societal and demographic impact of changes, including the impacts on health caused by climate change (objective 3);
- Further engaging women, the young and indigenous population in the decision-making (objective 3);
- Stimulating the green transition in the Arctic through EU funding and by using the EU Arctic zone for the adoption of showcase sustainability solutions (objective 3).

2.2. MOUNTAIN REGIONS

The diversity of European mountain regions in bio-physical and social terms makes it challenging and arguably meaningless to formulate a common strategy for mountain areas across the EU. Regardless the early consideration of mountain areas in EU policy, no EU agenda specific for mountain areas has been set out to date. Rather, sectoral policies covering the whole EU territory apply, with those on agriculture, regions and nature conservation particularly covering mountain environments the most specifically. The first explicit mention to mountains in EU policy was made in the Common Agricultural Policy (CAP) back in 1975. Land-use changes and mountain agriculture are specifically targeted in the CAP. Other relevant sectoral policy encompasses the Pan-European Biological and Landscape Diversity Strategy and the Habitats Directive, among others.

Little attention to mountains is, however, generally provided in EU sectoral policies. Adjustments appear necessary in order to better support mountain regions to identify priority areas and address challenges and opportunities. This was made explicit in the European Parliament resolution of 10 May 2016 on cohesion policy in mountainous regions of the EU (2015/2279(INI)). The resolution put the focus on 5 thematic areas: 1) coordination; 2) jobs and economic growth; 3) socio-economic dimension; 4) environmental protection and combating climate change; and 5) accessibility and connectivity. Among others, calls were made on the EU Commission and/or member states for: 1) a better coordination and public participation in mountain issues; 2) the facilitation of the use of renewable energies by taking into account the balance of nature and landscape protection; 3) the protection of water sources and emblematic species; and 4) a larger focus on sustainable forest management, the protection of small and medium-size farms, and the development of sustainable tourism. Calls for coordination and a precise consideration of the needs of mountain territories have also been raised in the European Parliament resolution of 3 October 2018 on addressing the specific needs of rural, mountainous and remote areas (2018/2720(RSP)).

Through both the 2015/2279(INI) and 2018/2720(RSP), a general request is made to work on an Agenda for EU Mountainous Regions and an EU Agenda for Rural, Mountainous and Remote Areas, respectively, considering the calls made. These agendas (not set out yet) should constitute a framework for better targeted action in mountain areas. The questionable usefulness in formulating an EU common strategy does, indeed, not imply that EU frameworks for strategies development cannot be produced. Quite the contrary, general frameworks proposing procedures recognising the specificities of mountain areas for the undertaking of better targeted measures are desirable. This is fully recognised by the partners of the SUNRAISE project and the basis for the creation of the SUNRAISE research framework. As stated in the EU parliament resolutions, these frameworks should support cooperation among territories, as well as territorially integrated and place-based approaches. They should assist regions and countries in addressing the opportunities and challenges in mountain areas and encourage cooperation among regions and countries located in the same mountain range.

Mountain policy tends to be restricted to the national or regional level in EU countries and significant differences exist from country to country in the adopted approaches. Thus, the latter (i.e. trans-regional and trans-frontier cooperation) becomes of high relevance. Remarkably, concepts, strategies and institutions for cooperation coherent with the mountain perimeter are starting to appear, with the longest tradition existing in the Alps and France. Two notable cases of trans-frontier cooperation formally captured in mountain range conventions can be found in the Alps and the Carpathians; these are:

- The Alpine Convention; and
- The Carpathian Convention.

The Alpine and Carpathian Conventions have been signed by the eight and seven Alpine and Carpathian countries and are in force since 1995 and 2006, respectively. They are the first and second international treaty worldwide concentrated on and covering an entire transnational mountain area. They have been

devised to pave the way for and guide the sustainable development and protection of these mountain areas. To do that, common objectives are set up to respond to challenges and opportunities faced and requiring conjoint dialogue and action among actors within and outside the national borders. Objectives are not limited to the safeguarding of Alpine and Carpathian sensitive ecosystems, but also include the cultural heritage, lifestyle and traditions of communities. Similar working areas are defined in both conventions. These are (summarised and shortened):

- Common working area 1 – Population and culture: Preservation and promotion of the cultural heritage, traditions and living standards of mountain communities;
- Common working area 2 – Spatial planning: Pursuit of an integrated planning for a rational use of land resources and harmonious development;
- Common working area 3 – Biological and landscape diversity: Conservation of natural habitats and landscapes, and restoration of those that have become degraded;
- Common working area 4 – Water: Conservation of healthy water systems;
- Common working area 5 – Farming: Maintenance of the management of land traditionally cultivated, and promotion of environmentally sound farming practices;
- Common working area 6 – Forestry: Application of sustainable forestry techniques, enabling the prevention of any detrimental utilisation;
- Common working area 7 – Transport: Development of a more sustainable model of transportation (e.g. increases in the railway network);
- Common working area 8 – Energy: Introduction of sustainable methods for the production, distribution and use of energy, and promotion of energy-saving measures;
- Common working area 9 – Tourism: Promotion a sustainable form of tourism that benefits the local people and meets ecological requirements;

A drastic reduction in the emission of pollutants and soil damaging activities, along with the development of waste management systems adapted to mountain areas, are additional working areas particularly highlighted in the Alpine Convention. The Carpathian Convention additionally stresses (among others) the need to develop ecological networks and integrated river basin plans, as well as to promote cleaner production technologies in industry. So as to responding to these objectives, cooperation in research, monitoring and data compilation programmes is fostered, as well as public information campaigns and participation channels upon/in the decision-making. Improvements and cooperation in mountain research have also been more recently promoted at the EU level as a result of the EU intention to develop a European Mountain Research Strategy. The objectives of this strategy will be to better support climate change adaption and improve observation and monitoring activities in mountain areas.

3. RESEARCH PATTERNS IN THE SUNRAISE CONSORTIUM

3.1. LINES OF RESEARCH

A deep look into the research agendas of SUNRAISE research partners reveals the existence of 4 widely addressed lines of research in both mountain and Arctic environments. Climate change and the living conditions, development, traditions and/or heritage of indigenous populations, appear to be most numerous in research projects, together with studies on wildlife/ biodiversity and water. Research on the former (i.e. climate change) includes its dynamics, impacts and strategies for adaptation and to a lesser extent its mitigation. Studies at the catchment level tend to dominate regarding the latter (i.e. water). Contrastingly, relevant topics in the sustainability field such as transportation and waste management, livestock production, and eco-tourism are generally given little attention. The higher number of institutions working on mountainous environments, when compared to the Arctic zone, explains the wider range of research topics handled within the consortium in mountain areas.

The following main lines of research can be noted for each research partner:

- Russian State Hydrometeorological University: study of atmospheric and oceanic processes as well as the indigenous populations in/of the Arctic
- Siberian Federal University: study of the resource development (especially energy and transportation), indigenous populations, wildlife and water of the North
- Gorno-Altai State University: study of the heritage of people, dynamics and manifestation of climate and anthropogenic change, wildlife, and sustainable agriculture, energy and tourism management in the Altai
- Royal University of Bhutan: study of the biodiversity, food production, natural resources management (especially water and soil), and impacts of and resilience building against climate and anthropogenic change of/in Bhutan
- Kumaun University: study of the sustainable management of natural resources (especially water), urban sprawl, climate change adaptation, food security, and quality of life of communities in the Himalayan mountains
- Jawaharlal Nehru University: study of the different ecosystems (forests, glaciers, etc.), traditional communities, and influence and risk of climate and anthropogenic change of/in the Indian Himalaya.

3.2. FUTURE AMBITIONS

The great majority of research partners (5 out of 6) have the ambition to further develop their research activities. The main aim is the provision of more extensive research in locally priority areas for sustainability. This is mirrored by the ambition of e.g. Jawaharlal Nehru University to make a greater research contribution that helps in the attainment of the Sustainable Development Goals (SDGs) in the Indian Himalayan region. The objective of e.g. Royal University of Bhutan to further promote innovation on natural resources management and sustainable development in the country is also reflective of this reality.

A shared ambition to improve the system for training specialists follows, expressed by 4 of the research partners. Improvements should be targeted at better meeting the existent global, national but especially local demands. The need to take into account the requirements of employers and other local stakeholders when amending the training curriculum has been specifically stressed by e.g. Gorno-Altai State University. The setting up of a new research centre and labs, implementation of outreach activities, and provision of consulting services are among the ambitions of Russian State Hydrometeorological University. The latter objective is shared by Royal University of Bhutan.

With a view to attain these ambitions, further capacities want to be developed by research partners. These are in the form of: 1) the acquisition of additional equipment/software; 2) the provision of further training for academic and/or technical staff; and 3) a better access to international databases (pointed out by 4, 3 and 3 of the research partners, respectively). Interest has been also voiced in the procurement of better access to modern information technology and external experts support, and the development of further cooperation with national and foreign universities (by 2 research partners). In the case of Royal University of Bhutan, further cooperation among disciplines is considered especially desirable. Russian State Hydrometeorological University specifically stresses the willingness to strive for a better marketing policy and better integration of the institution into the world-leading research.

3.3. ENABLERS AND OBSTACLES FACILITATING/HAMPERING THE ASPIRED DEVELOPMENTS

A propitious location in or close to a mountainous/the Arctic region, the availability of highly experienced professionals in the field, the uniqueness of the research made regionally speaking, supportive national policies, and the participation in international projects such as SUNRAISE, appear to be those factors better explaining part of the current success of research partners in the pursuance of their research activities. Networking among universities and/or with other stakeholders have additionally played a key role at Siberian Federal University and Jawaharlal Nehru University. The positive impact of university policy and international reputation should be added for Royal University of Bhutan and Kumaun University, respectively. As for Russian State Hydrometeorological University, the following factors also apply: an extensive track record in research, the implementation of state programmes in the profile areas of the institution, the activation of participation in scientific and educational projects, and the development of scientific and educational centres.

Further development is, nonetheless, being hampered by two obstacles faced consortium-wide (each by 4 out of the 6 research partners): shortages of financial and human resources. Staff leakages do occur at e.g. Russian State Hydrometeorological University. The youthfulness of e.g. the College of Natural Resources of Royal University of Bhutan translates into a shortage of experience of faculty members in research and securing funding. It also explains the absence of time series and high quality data covering a long time span in this institution, which hinders the development of high quality research. Other obstacles hampering research development encompass shortages of equipment and the occurrence of unforeseen risks, such as a pandemic, both expressed by two of the research partners. Low salaries for university personnel additionally constraints the ambition of Russian State Hydrometeorological University, along with the prevailing development plan of the institution (considered outdated), and the increased pedagogical load and age of academic staff. A paucity of interest among students for research training, infrastructure, and networking/political will have been additionally reported by Gorno-Altai State University, Kumaun University, and Jawaharlal Nehru University, respectively.

About SUNRAISE

This report has been developed under the project SUNRAISE (<http://sunraise.sfu-kras.ru/>). SUNRAISE - (Sustainable Natural Resource Use in Arctic and High Mountainous Areas) project aims to promote sustainable management of Arctic and high mountainous ecosystems in Bhutan, India and Russia (partner countries, PCs) through enhanced tertiary education linked to labour markets and wider stakeholder circles. This aim will be achieved through the following objectives:

To revise and upgrade selected BSc, MSc & PhD programs in PIs to make them end-user-oriented & policy-relevant, and enhance opportunities for LLL education.

To develop SUNRAISE open education environment Platform (SUNRAISER) and online training services of the new generation (MOOC) for qualitative improvement of the education process and academic workflow support among universities and stakeholders across the PC and EU Member States.

To create sustainable feedback mechanisms to end-users, ensuring adaptive and practice-relevant teaching contents, knowledge co-production opportunities and stakeholder support to post-project course development and teaching.

To develop capacity for academic mobility, shared experimental facilities and joint research by PIs and beyond.