

LIST OF TOPICS – RESEARCH TRAINING FRAMEWORK

1. HUMANS AND THE MOUNTAINS/ ARTIC

- ❖ Traditional relation humans – mountain/ artic environments
 - Traditional mountain/ artic lifestyles
 - Traditional mountain/artic architecture
 - Knowledge on mountain/ artic environments by local residents: what can be learnt from locals on ways to better live in harmony with nature in mountain/artic areas

- ❖ Urbanisation in mountain/ artic areas
 - Current trends
 - Socio-economic activities leading to the urbanisation of mountains/ artic environments and their dynamics
 - Farming and animal husbandry: past and current dynamics
 - Mining: past and current dynamics
 - Fishing: past and current dynamics
 - Tourism: past and current dynamics
 - Challenges of mountain/artic cities posed by the actual urbanisation and socio-economic dynamics, and strategies to address them
 - Urban sprawl
 - Settlements in risk areas
 - Population loss
 - Seasonal demographic fluxes

- ❖ Risks in mountain/artic areas
 - Natural conditions causing the occurrence of disasters
 - Characterisation of risks (probability of occurrence, etc.), their potential impact on human activity (including cities), and strategies for their mitigation and the recovery
 - Forest fires
 - Landslides
 - Avalanches
 - Flooding
 - Overflow of mountain lakes due to glacier melting
 - Earthquakes

2. ENVIRONMENTAL CHANGE IN THE MOUNTAINS/ ARTIC

- ❖ Impacts of socio-economic activity in mountain/ artic ecosystems
 - Impacts generated by:
 - Farming
 - Mining
 - Fishing
 - Marine operations
 - E.g. Environmental safety of marine operations at Arctic seas
 - Forestry

- Tourism
- Energy generation
- Urbanisation associated to all the activities abovementioned
- Transportation network associated to all the activities abovementioned
 - E.g. Northern Sea Route oil spills
- Impacts produced on:
 - Biodiversity
 - Soil (soil degradation)
 - Atmosphere
 - Exacerbation of natural hazards
 - Water resources
 - E.g. Microplastic contamination
 - Sea and lake shores
 - E.g. Microplastic contamination
- ❖ Impacts produced by globalisation to mountain/ arctic societal systems
 - Vulnerability of indigenous and local culture and knowledge system in a global world
- ❖ Impacts of climate change in mountain/ arctic areas
 - Regional and local climate projections/dynamics
 - Effects of climate change on:
 - Mountain/arctic habitats and the life diversity that they sustain
 - Availability of natural resources for mountain/arctic inhabitants and for lowlands residents relying on mountain resources, such as water and food resources
 - Occurrence of extreme events and the associated risks
 - Glacier melting and changes in hydrological systems
 - Welfare of mountain/arctic inhabitants
- ❖ Environmental monitoring of human activity and its impacts

3. SUSTAINABLE DEVELOPMENT OF THE MOUNTAINS/ ARTIC: LIVING IN HARMONY WITH NATURE

- ❖ Mitigation of environmental change
 - Strategies for sustainability in mountain/ arctic areas
 - Strategies in the ecological/ technical sphere
 - Compatibility between the protection of mountain/arctic environments and human activity: co-evolution with nature
 - Biodiversity
 - Energy management
 - Food production – farming, animal husbandry, and fishing
 - Mining and construction industry
 - Forestry
 - Tourism
 - Transportation
 - Urban green
 - Water supply

- Rainwater/ stormwater management
 - Wastewater management
 - **Integrated watershed management**
 - Waste management
 - Strategies in the social sphere
 - **Protection of indigenous and local culture and knowledge systems, and empowerment of mountain/ arctic societies**
 - Environmental awareness/ education of **mountain/ arctic residents**
 - New forms of governance
- ❖ **Climate change adaptation**
- Strategies for climate change adaptation
- ❖ Policy and agenda-setting to respond to the challenges posed by environmental change
- Existent regulations and agendas at the:
 - International level
 - National level
 - Regional level
 - Local level
 - Role of non-governmental organisations and the public in the process of policy and agenda-setting
 - Effectiveness of the current policy processes (strengths and weaknesses of the tools and regulations in force)
 - Strategies for a more effective and better targeted policy process

LEGEND

Topic of courses/ PhD thesis by partner P5 (Russian State Hydrometeorological University)

Topic of courses/ PhD thesis by partner P6 (Siberian Federal University)

Topic of courses/ PhD thesis by partner P7 (Gorno-Altai State University)

Topic of courses/ PhD thesis by partner P9 (Royal University of Bhutan)

Topic of courses/ PhD thesis by partner P11 (Kumaun University)

Topic of courses/ PhD thesis by partner P12 (Jawaharlal Nehru University)

Topic included in courses/ PhD thesis developed by several partners