Q1: Please name the 5 general topics that, from your point of view and unrelated to Horizon 2020 funding, are of primary importance for European mountains

The word cloud generated with tag growd shows that the most mentioned term is change (86), mostly used in connection with climate (44). Other combinations are global change (11), land use and land cover change (10), demographic change (2), forest change (1), structural change (1), change of gender relationships (1), changes in the cryospheric systems (2), changes in 3D space (1), change in species distribution (1), resilience as capacity to change (1), ecological changes (1) (note that the term change is never mentioned as stand-alone term).

Climate (53): mostly occurs with change; Other combinations: projection, risk, mitigation, smart. Most of the comments don’t address basic climatology but rather climate change and its impacts on other disciplines.

Biodiversity (36): mostly occurs as single term. In combination with other terms: Biodiversity conservation (4), land use change implications on biodiversity (2), climate change impacts on biodiversity (2), biodiversity loss (1), management for biodiversity (1), biodiversity and animal agriculture (1), biodiversity recovery (1), monitoring biodiversity (1), Reduction of biodiversity (1), changing biodiversity (1).

More than 20 clicks:

Water (35): as a resource and its management, conservation, water cycle

Tourism (28): single term, development, sustainable, infrastructure, impact on ecosystems

Regions (31): mountain, alpine, high-altitude, cold

Natural/nature (23): conservation, hazards, resources, area/habitat, protection

Forest (28): forestry, management, sustainable, dynamics, health, deforestation/conservation

Conservation (21): single term, nature, biodiversity, soil, landscapes, measure, water, area

Sustainable (26): adjective used in diverse combinations

Ecology/ecological (22): as stand alone term (5), mountain, alpine, aquatic, restoration, community, landscape, macro

Environment(al) (21): diverse combinations
**Less than 20 clicks:**

11-20: social, resources, research, protection, production, population, pollution, management, landscape, land (?), impacts, global, economic/economy, development, cultural, communities, adaptation, agriculture.

→ it seems that human related topics are dominant in this middle category.

**5 to 10 clicks:**

warming, urbanization, transport, traditional, systems, strategies, species, soil, society, snow, smart, services, rural, risks, recreation, quality, organic, monitoring, local, hydrology, heritage, health, hazards, future, farming, energy, cycle, abandonment.
Q2: Please tick the three priority Societal Challenges or other programme sections of H2020 that provide opportunities for your research

![Bar chart showing the number and percentages of how many of the 137 participants mentioned a certain research area as one of the three most important sections.](chart)

Climate actions was mentioned by almost three fourth of the participants (74.5%). Food security and agriculture follows with more than 58% and science with and for society reaches 43.8%. The other areas show lower percentages between 5 and 30%.

Figure 1: Number and percentages of how many of the 137 participants mentioned a certain research area as one of the three most important sections.
Q3: Overview of nine H2020 programme sections – Relevance for mountain researchers

The question has only two possible answers:

- If mountains were included here, I would be able (would like) to participate in a project → could be interpreted as “I am working in this area and would like to participate in a project”
- This is not my research priority, but may be interesting and mountains should be mentioned

The class „not relevant“ is calculated as the sum of the two possible answers subtracted from the total of all participants. That means that nobody has assigned a research area as not relevant.

Figure 2: Overview of all nine H2020 programme sections.
Figure 2 shows in blue bars the percentage of participants who work in a certain field and would be able to participate in a project. 70% of all participants would be able to participate in a project in the field of climate action, environment, resource efficiency and raw materials. Many people are working in the area of food security (58%) and science for society (49%).

An interesting result in figure 2 is that only few researchers are working in areas like health, energy, transport, research infrastructures, and ICT, but the interest (in orange bars) in these areas is quite high.

![Bar chart showing the percentage of participants who work in various fields. The highest percentage is for Climate Action, Environment, Resource Efficiency and Raw Materials at 93%, followed by Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Science with and for Society at 85% and a little lower at 74% respectively. The remaining fields have lower percentages, with the lowest being Information and Communication Technologies at 49%.]

Figure 3: percentage of participants, which mention the research area as “relevant”. “Relevant” is the sum of all ticks with “if mountains were included here, I would be able to participate in a project” and “this is not my research priority, but may be interesting”.

Figure 3 shows the relevance of a programme section. Relevance is calculated as the sum of all clicks with “if mountains were included here, I would be able to participate in a project” and “this is not my research priority, but may be interesting”. The calculation and gradation of relevance shows a similar picture as in Figure 2, with “Climate Action, Environment, Resource Efficiency and Raw Materials” (93%), “Food Security, Sustainable Agriculture and Forestry, Marine...” (85%), and “Science with and for Society” (74%) as the most relevant challenges. All of the 9 selected programme sections but one are seen as relevant by 60% and more of the participants.
This confirms the results of question 2 that the three programme sections „Climate Action, Environment, Resource Efficiency and Raw Materials” (93%), „Food Security, Sustainable Agriculture and Forestry, Marine,...” (85%), and „Science with and for Society” (74%) are the most important ones for our science community and most of the participants are working in one of these three top fields. Except for “research infrastructures”, also the gradation of relevance is similar as in question 2.
Q4: Overview of the subcategories – Relevance for mountain researchers

Figure 4: Number of clicks with „my research fits in this subcategory“
Figure 5: Relevance of each subcategory calculated as the sum of clicks with “my research fits in” and “not my priority, but interesting”.

Figure 4 shows all clicks for “my research fits”. Most of the participants are working in areas ecosystems, biodiversity, natural resources, water resources, cultural heritage, global environmental observation, and rural development. Also many people are working with observatories, networks, and data processing.
In figure 5 all clicks for “my research fits” and “not my research, but interesting” are summed for each subcategory. Again, the sum is seen as the relevance of a topic. This figure shows less variation as in Fig. 4. Even if the participants aren’t working in an area, they still see most of the subcategories as interesting and that mountains should be mentioned there.

**Detailed diagrams per programme section: relevance of their subcategories**

**Health, Demographic Change and Wellbeing - Relevance of subtopics**
Food Security, Sustainable Agriculture and Forestry, Marin, Maritime and Inland Water Research and the Bioeconomy - **Relevance of subtopics**
**Secure, Clean and Efficient Energy - Relevance of subtopics**

- Energy efficiency: 16%
- Competitive low-carbon energy: 9%
- Renewable energies: 20%
- Large scale energy storage: 18%
- Smart cities and communities: 22%
- Other: 15%

**Smart, Green and Integrated Transport - Relevance of subtopic**

- Mobility for growth: 24%
- Infrastructures: 22%
- Intelligent and green transport systems: 22%
- Socio-economic and behavioral research: 10%
- Other: 20%
Climate Action, Environment, Resource Efficiency and Raw Materials - **Relevance of subtopic**

- ecosystems: 14%
- biodiversity: 9%
- natural resources: 14%
- water resources: 15%

Europe in a changing world - inclusive, innovative and reflective Societies - **Relevance of subtopic**

- spatial dynamics and cohesion: 21%
- inequalities and social exclusion: 16%
- geopolitical changes: 22%
- new technologies: 25%
- other: 11%
Research Infrastructures - **Relevance of subtopics**

- Observatories: 32%
- Data processing: 28%
- Networks: 30%
- Other: 10%

Science with and for Society - **Relevance of subtopics**

- Multi-actor engagement and governance: 26%
- Scenario building and foresight: 24%
- Gender equality: 23%
- Education: 18%
- Other: 9%
Over all these figures: it seems that there is an uncertainty about what a programme section includes. E.g. according to the answers of Q3 only 29 participants are working in the section health, but according to Q4 a) about 42 participants are working in the subcategory “tourism”.

Some important research areas aren’t mentioned in the subcategories, for example natural hazards and risk.
Q4: Second part: What question or challenge does your research help to answer or to solve?

The results of this question are lists of research topics/questions associated with the subtopics of each programme section. They can be used while making statements on the relevant mountain research topics within the programme sections.

We have attributed the statements to the correct topic when they were made in a wrong programme section, and have marked the ones which are not an answer to the question. The assignment to a subtopic was also made by us. Apart from this we have not edited the statements.

Example:

**Europe in a changing world – inclusive, innovative and reflective Societies**

spatial dynamics and cohesion; inequalities and social exclusion; geopolitical changes; new technologies; other

<table>
<thead>
<tr>
<th>Correct answer to what we were asking</th>
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<tbody>
<tr>
<td>Marginalization of mountainous countries and populations</td>
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<td>Inequalities between mountains and low lands</td>
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<td>Marginal communities - how do they continue to survive in a capitalist neoliberal society</td>
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<td>Aspects of territorial cohesion, at national and European level</td>
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<tr>
<td>Searching for reflexive factors (vicious circles, accumulation of social, cultural, financial and political-systemic territorial anchoring, new and alternative life styles societal innovations links between towns and rural areas)</td>
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<td>Recent researches are highlighting the presence of a certain number of new inhabitants on the Alps. Researchers generally analyses of changes in social-ecological systems resilience of communities and regions Aspects of living together (or apart) in rural communities Participation</td>
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<tr>
<td>Socio-economic factors related to population fluxes</td>
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<td>How to make efficient and competitive the mountain societies?</td>
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<td>Overcome of territorial and cultural distance from mnts peripheries to whatever place</td>
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Find the other programme sections in the following document: [Question4b_chart.xlsx](attachment:Question4b_chart.xlsx) Please note that there is one sheet per programme section.
Q5: Does your research give any indication about the transformation needed to master the (societal) challenges as described by Horizon2020? Yes/no. If yes, please write a short summary.

Yes 53.30%
No 46.70%

The answers to this question about transformation knowledge show, that the question was not sufficiently clear. Most answers refer to what challenges should be tackled or what kind of research is needed, as opposed to current research on societal transformations. At the present moment we suggest to not process or use this last question - but this is up for discussion.

Link to the answers for anyone interested: [Question5_chart.xlsx](Question5_chart.xlsx)