Monitoring for the

Strategic Environmental Assessment (SEA)

of the

ALPINE SPACE PROGRAMME 2014+

Final report

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1. Executive Summary

As the Alpine Space Programme 2021-27 approaches, the time has come to reflect on the results of the programme, plan and interim results of the ongoing programme 2014-20. As a follow-up to the first and second Strategic Environmental Assessment environmental reports from 2008 and 2013 this monitoring report examines both positive and negative environmental impacts to identify unexpected environmental effects in order to contribute to long term improvements of environmental sustainability of the future of the Alpine Space Programme.

A step by step approach based on previously defined indicators and objectives was used to assess the projects' outcomes. The estimated environmental impacts are compared with the actually occurred changes caused by the programme. The regularity and transparency of project monitoring is of utmost importance to the evaluation of the planning process.

The SEA has contributed to the improved consideration of environmental requirements by investigating of mitigation measures (selection criteria) to avoid and/ or minimize significant negative environmental impacts. Overall, no significant negative effects on the Alpine Space environment were monitored. As the "Alpine Space Programme" committed itself to sustainability and climate change mitigation, this report monitored also whether projects achieved positive improvements to the state of the environment, health and wellbeing of the alpine population and cultural heritage.

Some of the projects highlighted in this report have been successful at achieving significant positive environmental impacts due to the commitment of the Alpine Space Programme and its environmental criteria in project selection. Nonetheless, specific recommendations have been made to foster the success of the Programme, create environmental co-benefits also in those Specific Objectives which are not substantially focusing on the environmental condition. Major aim is to ensure the continuous development of synergies and achievements for the environmental issues including objectives such as the mitigation of climate change and improvements in human health for the population of the Alpine Space in the upcoming period.

2. Scope and aim of the Monitoring

Monitoring is a fundamental concept in the European precautionary environmental planning (Jiricka and Pröbstl 2009, Fischer 2006, Joao 2005). Identifying unexpected impacts at an early stage is a key objective. Therefore, on the one hand the emphasis is on the examination of the results of the program/plan and/or interim results of it, in order to be able to, if necessary, take remedial measures to improve the programs'/plans' environmental impacts if unexpected environmental effects should occur. On the other hand, a detailed monitoring contributes to long term improvements and learning effects for future planning.

As a follow-up to the first and second SEA report elaborated in 2008 and 2013 in compliance with the SEA Directive (2001/42/EC), this first monitoring of the results of a Strategic Environmental Assessment builds upon an indicated approach of the first two SEA carried out for the Alpine Space Programme. Results of the monitoring are supposed to provide a basis for the elaboration of the third SEA of the Alpine Space Programme 2021-27.

It comprises a validity check of the statements made in the SEA, including preventive, compensatory and offsetting measures (GRDP 2006, p.30). Based on the previously defined indicators and objectives, a concrete assessment of the projects' outcomes shall be carried out, where possible. In the process, the estimated environmental impacts (e.g. land consumption) shall be compared with the actual changes caused by the programme.

It is essential for the quality of the monitoring that it is regularly conducted, thoroughly documented and understandable. Despite a careful look at environmental impacts, monitoring should be transparent and therefore is to be kept as simple as possible. We tried to find the balance between a detailed review and a concise overview with this first final monitoring report.

3. Methodological approach

Environmental indicators subject to the Monitoring

According to its intention, the SEA, as an instrument to accompany and evaluate the planning processes, is supposed to result in a continuous improvement of programme planning (Joao 2005). The question arising at the end of the process – but also during and after the implementation of the program/plan is "what has the SEA achieved" and "to what extent does it contribute to a better consideration of environmental requirements"? Thereby the focus should primarily be on the surveillance of significant negative impacts.

As the "Alpine Space Program" committed itself to sustainability and targeted climate change mitigation within its objectives, it was also highly interesting to monitor whether the project could achieve substantial positive improvements to the state of the environment as well as health and wellbeing of the alpine population and their cultural heritage.

The methodological approach was based on the environmental issues defined by the SEA Directive and indictors developed in the past SEA. Next to the environmental indicators for each environmental issue (as specified in the environmental report of the SEA and displayed in Table 1 below), the mitigation criteria were subject to the monitoring. These criteria are relevant for the selection process of projects by making apparent both positive and negative effects of them. Ideally, these criteria would have become an integral part of the management system for the implementation of the programme and reflected in the documents (e.g. the AF or the reports to the JS and MA).

Table 1: Indicators and criteria for the monitoring process

Environmental issue	Indicator	• Mitigation measure
Soil/ Land	• Sealing • Influence on soil quality (contamination) • Susceptibility to erosion	• Reduction of greenfield development • Brownfield development • Stabilisation of soils through proper land-use/ avoidance of erosion
Water	• Influence on ground water (quality and quantity) • Impact on surface water (quality and quantity) • Connectivity among water systems/bodies	• Focus of creation of retention spaces for flood risk management • Decoupling of economic growth from the use of water resources
Climate/Air	• Air quality (emissions) • Influence on greenhouse gas emissions • Influence on mirco- and meso climate conditions	• Fostering of environmentally friendly technologies and climate change mitigation • Decoupling of economic growth from the throughput of material and energy resources • Integrated strategies for waste and emission reduction and prevention
Fauna/Flora/Biodiversity	• Habitat fragmentation/ corridors and networks • Influence on habitats and species (condition) → particularly influence on Natura 2000 sites	• Avoidance of construction in sensitive areas • Thoughtful selection of type and location of renewable energy facilities
Landscape	• Impact on landscape aesthetics and natural scenery	• Combination of new industry/energy plants with, existing infrastructure

	• Influence on cultural landscapes	
Human health/Population	• Emissions (such as noise, air pollution, vibrations) • Emission related diseases • Impact on recreational capacity/ attractiveness for recreation	• Decoupling of economic growth from the throughput of material and energy resources • Integrated strategies for emission reduction and prevention
Material assets/ Cultural heritage	• Impact on cultural ensembles/ traditional settlement structures • Impact on cultural heritage by emissions/ vibrations • Enhancement/Protection of immaterial cultural heritage	• Avoidance of construction in cultural heritage areas • Integrated strategies for emission reduction and prevention • Thoughtful selection of type and location of renewable energy facilities
• Mitigation measures particularly relevant for objective 1 in order to compensate negative impacts from increased economic activities • *Fostering of environmentally friendly technologies* as well as the • *Decoupling of economic growth from the throughput of material and energy resources* should be envisaged. • *Integrated strategies for waste and emission reduction and prevention* should be chosen instead of end-of-pipe solutions. • Mitigation measures in particularly relevant for objective 2 with regard to new production facilities of renewable energies. • *avoidance of construction in sensitive areas* • *thoughtful selection of type and location of renewable energy facilities*		

Analytical steps of the monitoring approach

The allocation of impacts to the respective projects funded is partly not possible in an exact quantifiable way, as indirect effects, which were induced by the projects should be considered, too. Exact identification of them is often difficult through the application forms (AF) or the interim/final reports alone. For this reason, a five-step approach was developed, which considers not only the official documents for project evaluation by the JS but also the major outcomes and, if needed, also direct statements of the project team through qualitative interviews.

The Monitoring was based on the following information of the projects funded under the Alpine Space Programme 2014-20:

- The projects' objectives;
- Actors involved in the elaboration of the project and implementation of the outcomes;
- Core interim results (according to reporting to JS/MA);
- Outcomes already available from the project (dissemination activities, reports etc.).
- Interviews with a selected number of projects

The following "**Step by step – Approach**" (Figure 1) was applied.

- **First step** – Analysis of project objectives, overall outcomes envisaged and beneficiaries in the Application Form (AF)
- **Second step** – Detailed analysis of Application Form (AF) with regard to likely environmental impacts
- **Third step** – Analysis of interim reporting documents to JS with regard to likely environmental impacts
- **Fourth step** – Analysis of (first) project outcomes
- **Fifth step** – Interviews with project partners of selected projects

Additionally, two likert scale questions (ranging relevance of factors from 1 to 5) about the environmental impacts (both positive and negative) as well as the application/ relevance of mitigation measures were included in to the mid-term impact evaluation carried out by T33.

Their results were considered as additional background information as they were not applicable for all projects.

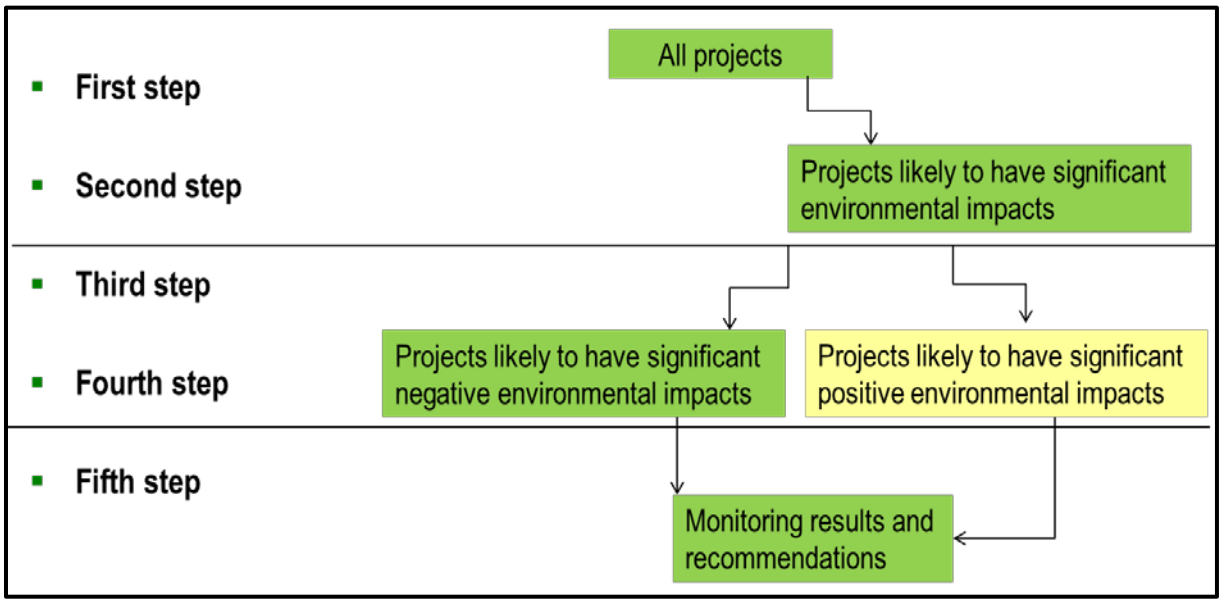

Figure 1: SEA Monitoring – step-by-step approach

Data basis subject to the monitoring

The first two steps were applied to all projects; as environmental impacts could not be excluded for any project by step one alone. The number of projects analysed in the subsequent steps was narrowed down in case the second step provided specific information to exclude significant environmental impacts. For step three and four a smaller number of projects was subject to detailed analysis regarding both significant positive and negative environmental impacts (see Figure 1).

The third and fourth step focused on the analysis of the direct tangible outcomes and reported information. Both interim and final reports contributed less concrete information on the actual consideration of environmental impacts and benefits to improve the environmental sustainability of the projects than expected. Therefore, the result of their analysis (step 3) is not explained separately but inherently reflected in the discussion of the project outcomes and interview results.

Finally, interviews with project leaders/partners were carried out if even the outcomes did not allow for a concrete assessment of significant positive or negative impacts. The interviews helped to clarify the impact in case the implementation and outreach of the project was not concretely/sufficiently described in the interim/final report and cannot be deducted from the outcomes either. All nine interviews were based on a general interview guideline and a specific guideline for each project. These are available in the Annex of the report. Please check the Annex to see which projects were interviewed.

Overall, final reports and outcomes could currently only be checked completely for fourteen projects as these have been completed at this point in time. Other projects were still ongoing with some only just having started a few months before the monitoring. As far as possible, first outcomes were checked in these cases as well, if relevant.

4. SEA monitoring results – Environmental impacts

Overall the first step was less successful than anticipated in narrowing down the number of projects likely to lead to significant environmental impacts. Examples of clearly defined outcomes which relate to environmental issues were rare.

As Figure 2 shows, about fifteen projects' AFs did not contain concrete or any information on environmental impacts in the description of objectives and central outcomes envisaged. For about half of the projects significant negative impacts are considered not likely. For several projects the concrete link to environmental impacts remained unclear however.

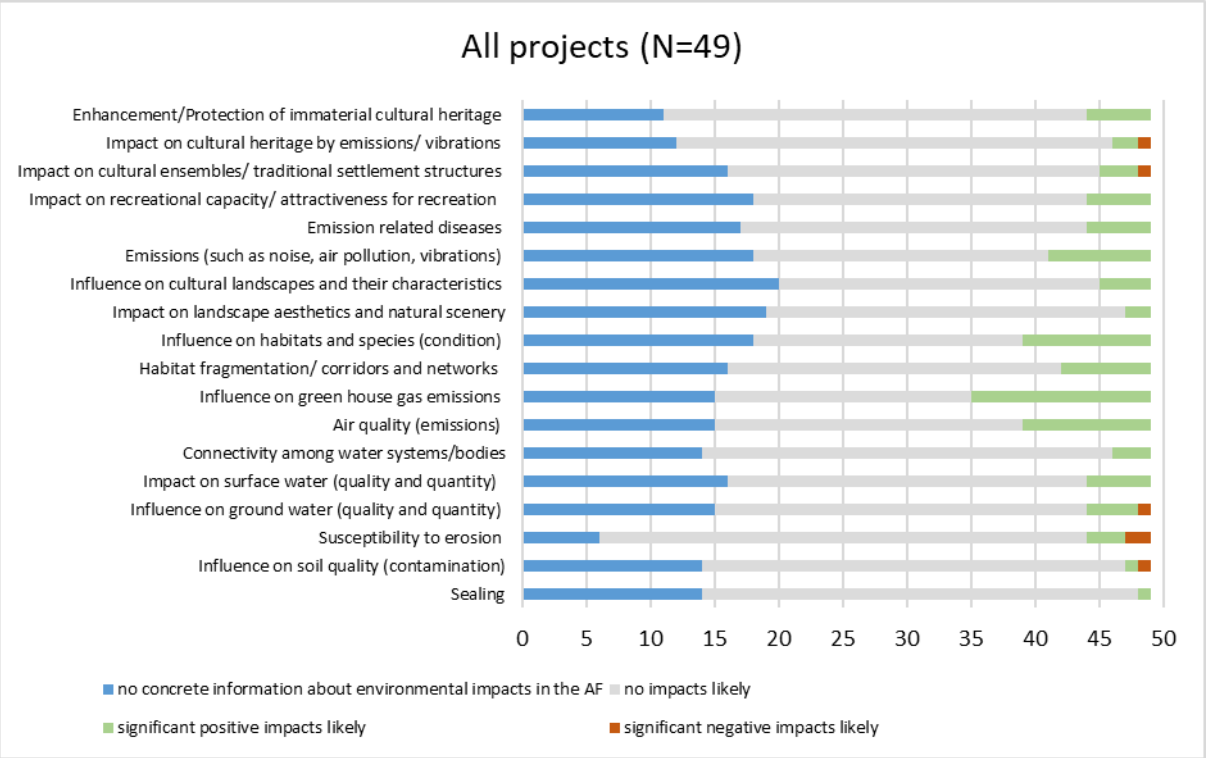

Figure 2: Results of step 2 of SEA Monitoring for all projects funded until July 2019

According to the previous SEA report, mitigation measures for the Alpine Space Programme are not only developed in order to reduce harmful impacts but should have been applied to select projects carefully and consequently prevent negative environmental impacts proactively.

Overall, Figure 3 shows that all mitigation measures described in the SEA report were partly addressed. Particularly, climate change mitigation through environmentally friendly technologies was supported by the programme. Not all mitigation measures where applicable for all Specific Objectives, in the following only those are displayed or discussed for each S.O. that were relevant for careful, environmentally friendly project selection.

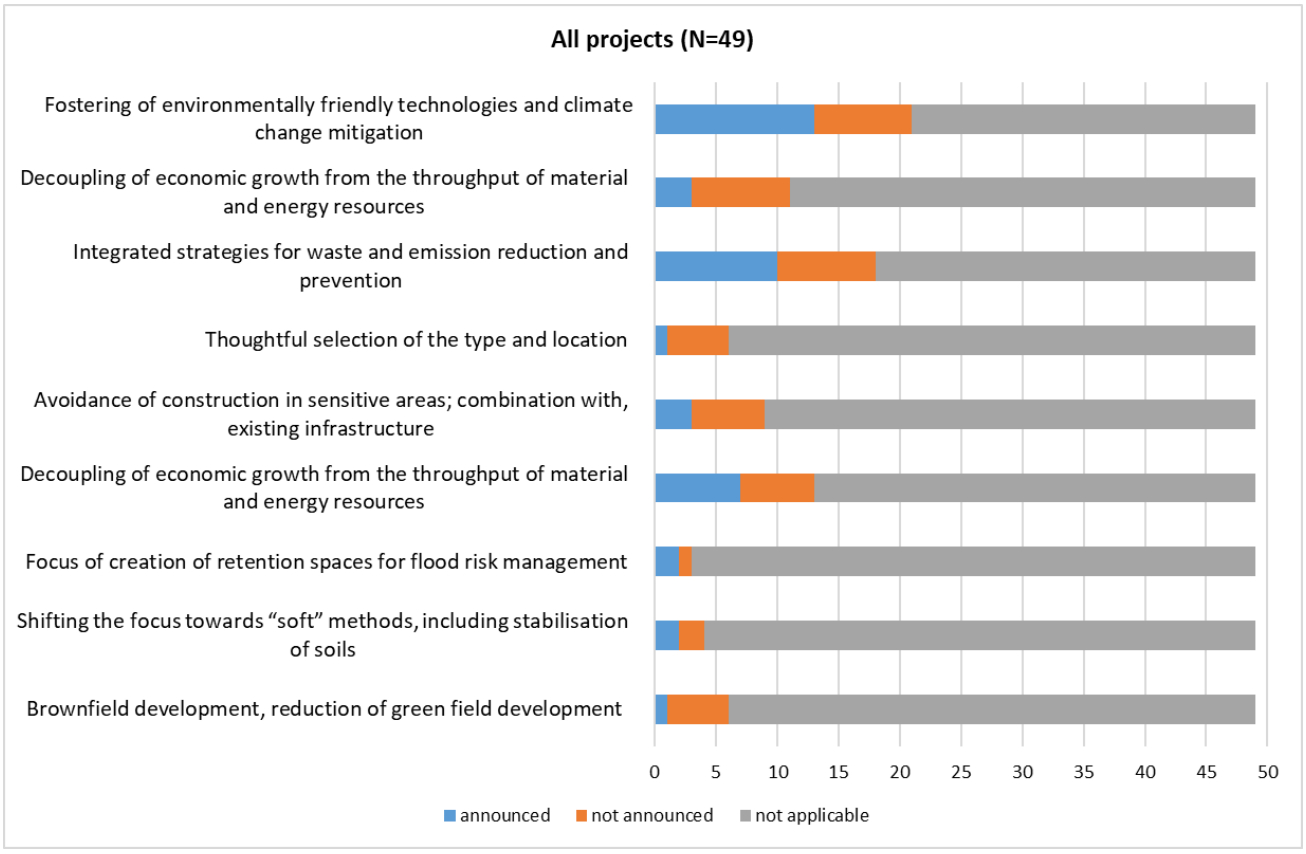

Figure 3: Results of step 2 of SEA Monitoring for all projects funded – consideration of mitigation measures

a. Specific Objective 1.1 Improve the framework conditions for innovation in the Alpine Space

Judging from step two, only a low number of projects under Specific Objective 1.1 are definitely expected to have significant environmental impacts. This picture results from the lack of information on environmental impacts overall in the AFs. For about half of the projects it was not at all possible to find concrete information on environmental impacts (see Figure 4).

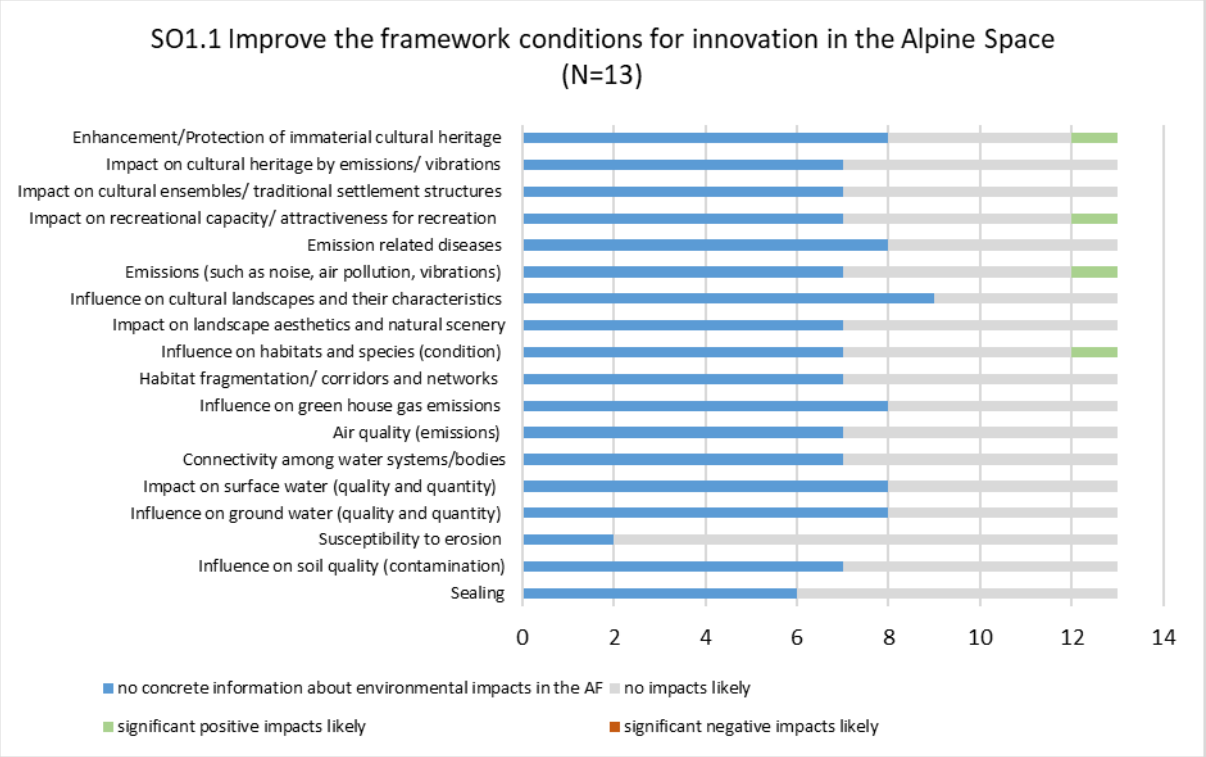

Figure 4: Results of step 2 of SEA Monitoring for all projects funded under S.O 1.1

The description of objectives and intended activities as well as the envisaged outcomes of projects under S.O.1.1 such as **S3-4AlpClusters** partly used the terminology of "sustainability" and "ecosystem" in an economic context only. Partly, formulation of objectives such as in the AF of **SCALE(up)ALPS** suggested a clear link to "green economy". It remained open, however, judging from the AFs to which extent these aspects are topic of the projects. Overall, judging from the SEA environmental report, the environmental impacts of projects funded under this specific objective were expected to be either neutral to slightly positive.

The monitoring particularly reviews the application of mitigation measures for those objectives likely to cause significant negative environmental impacts. To minimize negative impacts from the S.O.1.1 the following selection criteria were suggested: fostering of environmentally friendly technologies, decoupling of economic growth from the throughput of material and energy resources and integrated strategies for waste and emission reduction and prevention. Surprisingly, only the minority of the projects selected under SO1.1 reflect these aspects in the AF (see Figure 5).

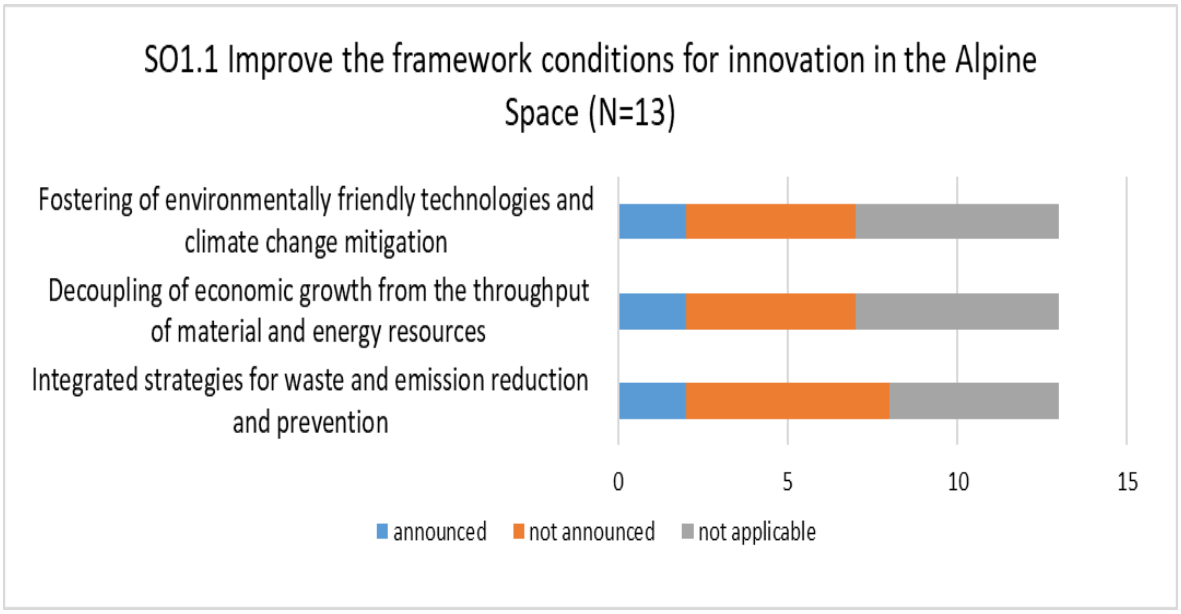

Figure 5: Results of step 2 of SEA Monitoring for all projects funded under S.O 1.1 – consideration of mitigation measures (survey of the AFs)

While interim and final reports contributed less concrete information on the actual consideration of concrete environmental impacts and benefits to improve the environmental sustainability of the projects than expected, the outcomes and in particular the interviews conducted with projects under this Specific Objective contributed important insights. Further review of the activities of those projects' already finished by the time of the monitoring or which were in the final phase showed a diverse outreach and consistency in reaching environmental targets.

Some of the projects such as **SMART-SPACE** or **SMART-VILLAGES** could indirectly lead to slight positive impacts on "population and human health" as well as on "climate and air" through digital innovation. **CARE4TECH** actively addressed reduction of energy consumption in the housing and mobility sector. However, the project addressed environmental and

climate-friendly targets for the agricultural sector only vaguely in one of the key outcome documents despite the agricultural sectors' large responsibility for climate mitigation and preservation of biodiversity ("*CARE4TECH Knowledge Mapping & Classification Methodology on Smart Living Excellences")*. In another outcome document ("*CARE4TECH Cross-Sectoral Alliances for Smart Living"*) the project even refers to the "Third Green Revolution" frequently associated with high loads of pesticides and insecticides. In this context the project completely failed to address that new information and communications technology (ICT) solutions could help farmers to tackle new challenges such as droughts likely to occur more frequently in the near future due to climate change and on the other hand support the reduction of substances which are harmful to biodiversity and human health. This example show that environmental expertise would have been strongly relevant for all projects submitted under the first specific objective, to not only consider thematic aspects which are up-to-date issues (such as smart and climate-friendly mobility) but also review the environmental sustainability of all project foci and activities. The interview partners of S.O.1.1 projects supported this perception and pointed out that in particular observers could play a leading role in addressing project developments/activities which are harmful to the environment and/or increase the beneficial influence on green economy in the future, as the following quote exemplarily illustrates: "*The observers could contribute from a helicopter perspective a new vision on environmental aspects." (*Interview BIFOCAlps, 8/10/2019*)*

The interviews showed that for most projects of the S.O.1.1 the environmental relevance was emphasized by observers or regional stakeholders. **S3-4Alps Clusters** for instance discovered a strong importance of environmental topics through stakeholder involvement in the pilot areas. Therefore, the theoretic acknowledgement of the need to reflect "*Climate change and its foreseeable effects on the environment, biodiversity and on the living conditions of its inhabitants*" (Meier zu Köcker et al. 2017) as one of the four "S3-Diamonds" identified as particularly relevant when exploring synergies for alpine clusters was grounded also on thematic foci among bio economy. In the territories, highly relevant topics on bioeconomy were identified such as alpine building with biogenic materials and low carbon emissions or bio-based plastics. Expertise was integrated from external institutions to project workshops in the pilot regions as the consortium did not reflect the importance of capacity on environmental issues at the time of the application to this extent. Cooperation with these external experts then even led to a new Alpine Space project which focuses

completely on sustainable bio-economy (**AlpLinkBioEco**). By contributing to an improved value-change-circular economy based on wood and agricultural products both AlpLinkBioEco and **AlpBioEco** contribute significantly to the development of green-economy. AlpBioEco showcases how sustainable economic development can be based on alpine core products such as herbs, nuts and apples but also on by-products in order to exploit the full bio economic potential and create a high value chain. A special strength is the combination of diverse sectors and the enhancement of innovative, sustainable product ideas in the area of cosmetics, herbicides, pesticides, pharmaceutic and textile industry. Positively, both projects review energy and resource consumption in order to improve the sustainability of the project considering its whole lifespan. Enhancement of organic production could be a surplus for future products in the same field.

Some projects such as **BIFOCAlps** targeted environmental aspects only marginally in the key outcome documents despite having a concrete thematic link to environmental topics. BIFOCAlps for instance only integrated two environmental indicators in the "S*et of measureable impact indicators*" (Steinwender et al. 2018) without any benchmarking or concrete information on the reduction of emissions or how to achieve a better efficiency level in resource consumption. Only the interview made the full potential of the project's contribution to the reduction of resource consumption obvious. Emphasizing these chances for the Alpine "factories of the future" could have made evident the environmental benefits of innovation in the value chains to a broader audience. While improvements for the environment are partly evident through digital innovation and improved "on demand production" explicit key factors to achieve efficiency in resource consumption and reduce emissions could have enhanced the practical achievements. Again the stakeholders emphasized the need to introduce these relevant innovative issues in a broader context as the following quote from the interview sustains "*The stakeholders e.g. the directorate of the University of FVG, made us think that a new way of manufacturing could be improved when policy makers introduce these topics in new regulations."* (Interview BIFOCAlps, 4/10/2019). They broached the environmental relevance intensively, which lead to the development of a new task in the project: "*Their voice was so intensive that we needed to insert a new task in the WP4. Stakeholders were so eager to understand how we developed and took into consideration environmental issues at local level."* (Interview BIFOCAlps, 4/10/2019). The importance of covering environmental topics is also stressed by key guidance, which

highlights the beneficial impact of technologies to respect the environment the new factory is located in, reduce consumption and emissions. Similarly, in **ScaleUPAlps** the environmental topics were broad from the business sectors themselves into the project and "green economy" turned out to be a key topic although the project was not considering a focus on environmental topics back to the application time. Evaluating the importance of these topics after the project lifetime the lead partner institution replied: "*Enormous! If I had to do it again or improve it I'd definitely focus more on those businesses. I'd definitely advise policy makers to invest more money on those guys. Not only for the environment as I said the sustainability is also social. Also social innovation is important. (…) We have not yet finished our final conclusion because we are still writing them but one conclusion definitely is to put that as new emerging issue in policy recommendation on accelerating green-economy businesses in the Alpine Space."* (Interview ScaleUpAlps 11/10/2019). In the project that is about to finish soon the capacity and expertise on environmental topics was limited, however. Neither did institutions with environmental expertise play a role when business ecosystems of start-ups were analysed. A fact that is regretted by the interviewee: "*This is very unfortunate that environmental institutions play a low role in start-up businesses. There is a lot more to do to get these institutions involved in the business ecosystems."* (Interview ScaleUpAlps 11/10/2019).

Whereas some of the projects recognized the potential of integrating environmental topics throughout the stakeholder involvement, others did not discover the hidden chances. In the interview the interviewee from **C-TEMAlps** stated that environmental topics did not play a role in their project – except for one single business which aimed to find a successor and had a consultation on waste management. The interviewee acknowledged, however, that from today's perspective the consideration of environmental expertise might have been beneficial for some companies as these aspects (energy consumption, waste management, low emissions, …) could be a competitive advantage as the following statement illustrates: "*In the "Alpcafés", where buyers and sellers met, several experts – lawyers, tax advisers etc. – were present. In retrospect including also an environmental focus would have been beneficial*" (Interview C-TEMAlps, 17/09/2019). Overall this project could have been communicated also under the light of contributing to the reduction of sealing and resource consumption as the long-term, on-going use of existing infrastructure/buildings and human resources is encouraged instead of new developments. C-TEMAlps is one of several projects

under this specific objective which definitely contribute positively to the wellbeing of the population due to the preservation of traditional small to medium scale companies.

DesAlps seems to also target environmental achievements by improvements in resource consumption through design thinking. The partner structure would have allowed also emphasizing these topics more. As the project's primary focus was, however, on facilitation and management of design thinking processes without/rare thematic reference in the outcomes, the final impact of the project on the environmental conditions seems to be neutral.

ASIS as one of the most recently started projects is currently on a junction whether to reflect environmental aspects of social innovation inherently and support synergies to enhance both social innovation and contribution to an environmental friendly societal transformation. It is highly recommended to apply this holistic view as neglecting the environmental effects of social innovation can deteriorate the quality of life on the long-term perspective and counteract the reduction of resource consumption as well as climate change mitigation.

Conclusion

Overall, no significant negative impacts could be explicitly identified resulting from the projects themselves under this Specific Objective. On the contrary, partly significant positive impacts for the environmental issues "soil", "water", "human health/population" and "climate/air" were detected. Most of the projects did not cover green-economy topics explicitly in the AF and project idea, but did either include these thematic aspects due to stakeholder involvement or at least discovered some hidden potential during this SEA environmental monitoring. Accordingly, some "hidden chances" were discovered to focus more on multi-dimensionally sustainable green economy with today's knowledge and in today's time of societal transformation.

b. Specific Objective 1.2 Increase capacities for the delivery of services of general interest in a changing society

Projects under S.O.1.2 were seen to have a similar use of the term „sustainability “. The four projects examined focused on services of general interest contributing to improving access to health services. Therefore, none of the projects carried negative impact expectations. “Sustainability” was used to indicate longevity of the implemented initiatives or models. Brief mention of reduction of transportation needs was introduced as a contribution towards decreasing transportation related emissions in the project **INTESI**, yet not further elaborated on or mentioned beyond the AF. The project **PlurAlps** indicated services of general interest to be sustainably integrated territorial development. In regard to increasing the capacity for the delivery of general interest in a changing society, the use of the term “sustainability” was used differently throughout the projects and in a manner that addressed economic and social aspects over environmental approaches.

While the results of PlurAlps concentrates on topics of migration and their integration, the services of general interest and policies under consideration in the results of this project remained within this realm as well. INTESI on the other hand, investigated many social aspects too, but also included public transportation as a focal general service of interest, as indicated in the initial AF. Concrete information on how the measures have actually impacted emission reduction or environmental sustainability is lacking. As Figure 6 indicates, the number of projects addressing environmental impacts within this specific objective was very limited. And within INTESI, even at the end of the project, no concrete information on environmental impacts or emissions can be provided.

Projects outcomes of SO1.2 have potential to improve the ability of concretely reporting positive environmental impacts in service provision. Follow-up on changing behaviors achieved and corresponding changes in emissions would be required.

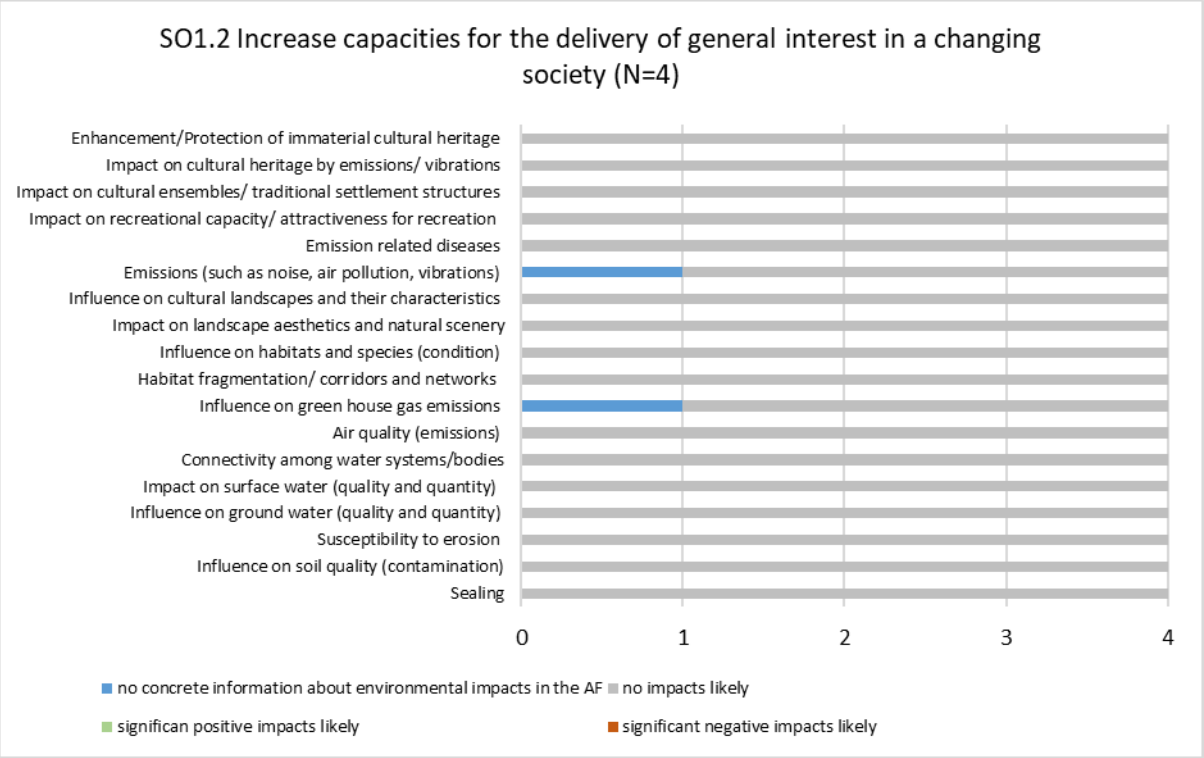

Figure 6: Results of step 2 of SEA Monitoring for all projects funded under S.O 1.2

Conclusion

Considering the specific objective being services of general interest, the analysis confirmed the expectations that neither significant positive nor negative impacts could be identified amongst the projects of S.O.1.2.

c. Specific Objective 2.1 Establish transnationally integrated low carbon policy instruments

According to the core focus of this Specific Objective all projects are contributing significantly positively to the reduction of GHGs, leading also to likely significant positive impacts on air quality. Consequently several projects and their activities imply significant positive impacts on the environmental issues climate/air and indirectly on human health/population (see Figure 7). Judging from the AF of one project (GRETA), first negative impacts on soil and ground water resources could not be entirely excluded. These concerns were irrelevant after careful consideration of the outcome documents.

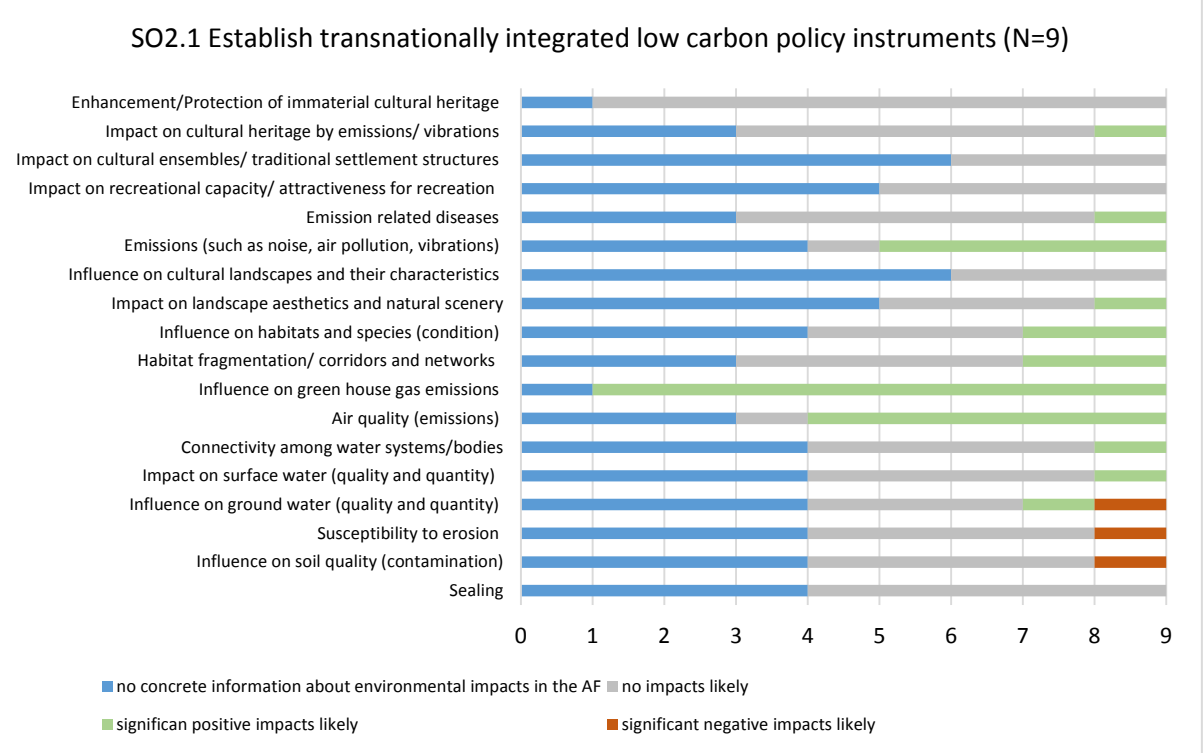

Figure 7: Results of step 2 of SEA Monitoring for all projects funded under S.O 2.1

At the first/second stage of the monitoring also significant positive impacts on the environmental issues flora/fauna/biodiversity were assumed for some projects in particular **CaSCo** and **CESBA Alps**. The monitoring of the outcomes and the interviews showed that in this context chances to create co-benefits for several environmental issues were not taken up to the full extent. Specific information on the importance of reflecting climate change in

forest management and the responsibility of fostering biodiversity to create synergies for climate change adaptation was only partly included in fact sheets of CaSCo (German version of the online-tool) but not described in the core outcome document for ecological and climate friendly public procurement. This core document "*CONSTRUCTION OR RENOVATION, Contracts incorporating Low Carbon Timber*" mentioned possible positive side-effects of regionally processed timber production for biodiversity in the introduction but did not continue the topic any more in the core text (Allibert-Roussat et al. 2018). The interviewee of CaSCo confirmed that, according to his perception, these aspects would deserve greater attention to create awareness also for changing species composition in forest management and reflect it in public procurement procedures. The following quote proofs this perception: *"I must admit that biodiversity was only a marginal topic; also climate change […] I think in the future these are important topics as the restructuring of the forest will lead also to new products"* (Interview CaSCo 08/10/2019).

The project **CESBA** had the aim to improve the overall sustainability of territories. From the AF and the interim reports, the definition of "sustainability" remained unclear, whereas the outcomes and deliverables showed a clear commitment to the UN sustainability goals of the UN 2030 Agenda and EUSALP strategy goals. Positive impact can be directly and indirectly related thus in nearly all environmental aspects which are covered by the so-called "Key-Performance Indicators" such as water and air quality (including emissions), biodiversity and cultural landscapes.

Significant positive impacts on several environmental issues, primarily on water and soil, are expected to result from **GREENCYCLE**, as circular economy deployment can reduce energy and water consumption as well as "greenfield development" among other benefits. The interview showed that core achievements concerned awareness rising through the creation of a knowledge-exchange platform and the final manifesto for cities to focus on environmental sustainability and "*be a lighthouse for others*" (Interview GREENCYCLE 08/10/2019).

Also from the two projects which started only recently **SMART ALTITUDE** and **BB-CLEAN** significant positive impacts are to be expected not only for climate change and air but also positive side effects for other environmental issues such as flora/fauna/water and human health/population.

Negative impacts of geothermal energy production as fostered by **GRETA**, could not be completely excluded from the AF. The follow-up steps of the monitoring clarified, however, that significant negative impacts are not likely. Influence on the ground water level is not to be expected as the project keeps attention to these likely impacts. Due to the near-surface installations impacts on soil stability and the likelihood to destabilization might be low.

Overall the communication and awareness-raising turned out to be the key opportunity but also challenge for several projects funded under this Specific Objective. The identification of most useful information and avoid overload was one crucial aspect. "*It was difficult to communicate the whole topic, more than one single aspect, e.g. not only to think about waste […] or how to include e.g. soil into the whole concept of circular economy*" (Interview GREENCYCLE 08/10/2019). However, also the *"capacities of the stakeholders*" (Interview GREENCYCLE 08/10/2019) to implement the communicated strategies were a critical impact factor. So was the exchange between departments of the same institution.

With its focus on communication between actors of various governance levels to mainstream climate mitigation and low carbon energy planning, **IMEAS** contributes useful tools to facilitate this process and identify and involve suitable stakeholders.

Monitoring of long-term effects would be beneficial and might be possible in some follow-up project on similar topics. **THE4BEES** managed to get feedback within the project lifetime which is promising that activities will be continued and the outreach of the project will last for the next few years as well as the quote illustrates: "*This was the most difficult part. We had some feedback from offices and the social housing. […] They had already a low consumption but managed to reduce it even more. So we had some positive feedback yes"* (Interview THe4BEES 17/09/2019).

Conclusion

According to the core focus of this Specific Objective all projects contribute positively to the environmental issues "climate/air" and also partly to "human health". Consequently, several projects and their activities imply significant positive impacts on the environmental issues climate/air and indirectly on human health/population. Positive co-benefits for other environmental issues such as "flora/fauna/biodiversity" were not fully achieved due to a lack of communication of these aspects in the core outcomes.

d. Specific Objective 2.2 Increase options for low carbon mobility and transport

Five projects submitted under this objective were analysed in step one and two, of which two projects are already finished, whereas the others are still on-going. According to the SEA results, no significant negative impacts are to be expected resulting from these projects. The first monitoring round, based on the AF confirmed the results of the assessment. Indeed, no negative impacts were likely (Figure 8). All five projects want to develop strategies for the reduction of emissions, especially greenhouse gas emissions. Due to the core objective to reduce GHG emissions as such, it is likely that other emissions and related diseases will be reduced as a side-effect, which is not explicitly addressed in the AF though (example project: **ASTUS**). As such, the reduction of GHGs was a selection criterion under this Specific Objective and was therefore announced by all projects in the AF already. Most mitigation activities as such were not applicable throughout the projects funded under S.O 2.2 as no significant negative environmental impacts were expected.

In order to gain multiple benefits and avoid negative side effects it could have been important in this priority to look beyond the core focus. This could for instance include the consideration of the origination of the energy supply for electric vehicles or to consider low impact of new infrastructure related to the follow-up activities of the projects.

For two projects the occurrence of negative environmental impacts could not be completely excluded (**e-MOTICON** and **AlpInnoCT**) judging from the AF as building of new infrastructure might be indispensable. The development of new infrastructure including building activities must be carefully planned and monitored to mitigate negative impacts linked to setting up new infrastructure. In comparison to the positive impacts and viewing the short period and (partly) small size of constructions, these impacts might be negligible. For **e-MOTICON** these uncertainties could be clarified in an interview: *"There is no need for building high voltage lines (…) sometimes it is necessary to enforce the distribution grid, but this is a normal issue for the distributors of energy"* (Interview e-MOTICON 17/09/2019). Critical areas are *"High density areas in cities with many people, more dense energy consumption within a small area; for 1000 people, 100 vehicles"* and *"small villages in remote areas: far from big lines, could not support high touristic pressure with electric car"* (Interview e-MOTICON 17/09/2019). Additionally important is the origin of the energy supply to ensure climate-

neutral/climate-friendly mobility. This issue could not be entirely tackled by the project itself but exemplarily suggestions were elaborated and discussed with authorities. One primary solution, suggested by the consortium, was the obligation for renewable energy supply linked to the permission/commissioning process and funding (if applicable).

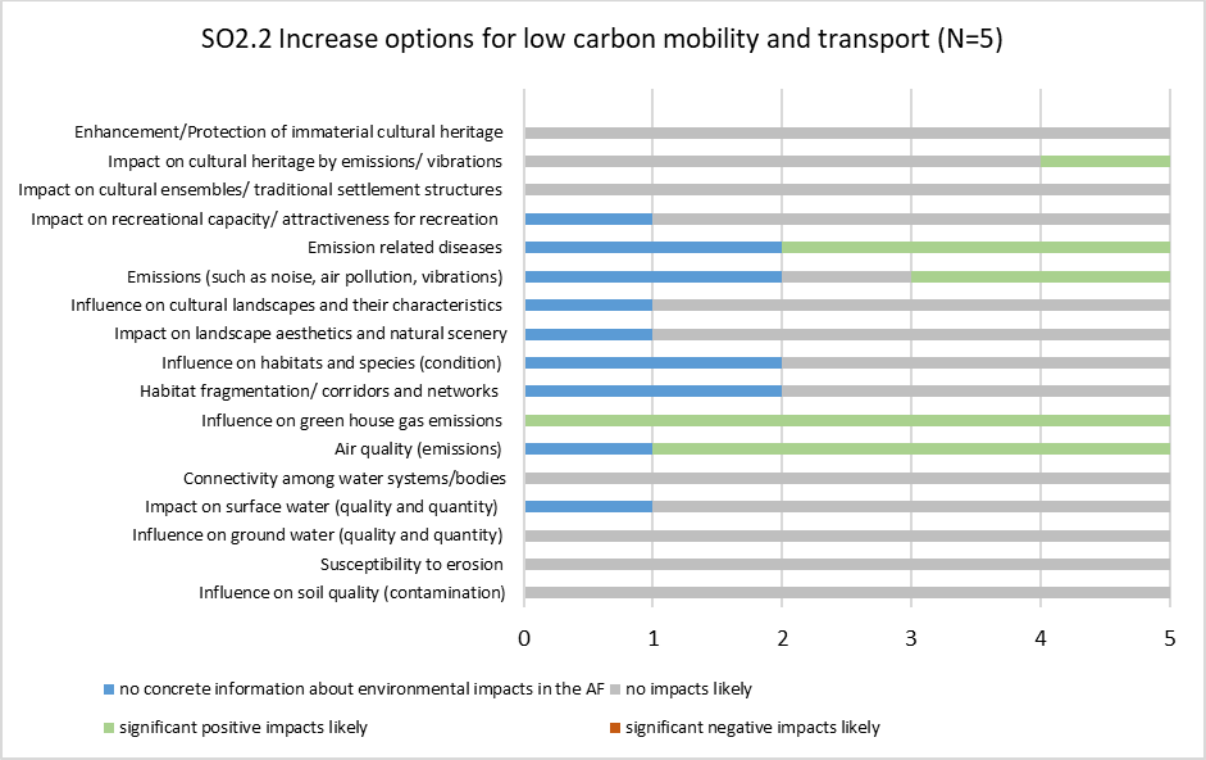

Figure 8: Results of step 2 of SEA Monitoring concerning S.O. 2.2.

Also for **AlpInnoCT**, the outcomes could clarify the situation. Especially the deliverable D.T.3.3.1 *"Vision of Alpine Combined Transport after 2030"* explicitly addressed the need for finishing existing infrastructure projects and forces further ones. The combination of e-transport with short distances is seen as a big chance to reduce emissions and in particular greenhouse gases. Caution to the environmental sustainability when localizing new infrastructure was not explicitly mentioned but is beyond the outreach and responsibility of the Alpine Space project anyway.

For the two projects which started one and a half years ago (**SaMBA**, **MELINDA**), not much information on concrete outcomes is yet available. The clear focus is to reduce individual car traffic either by raising awareness, fostering behaviour change or providing alternative mobility modes such as car sharing etc. The discussion of further positive impacts also on

other environmental issues or mitigation measures, if necessary, could still be integrated in the coming project periods and could be seen as a chance to reflect low carbon policies in the light of other environmental criteria. An example could be to further elaborate the positive effect of reduced traffic on human health or air quality/emissions in the communication of achievements of this Specific Objective overall.

Conclusion

In line with the core focus of this Specific Objective all projects developed strategies for the reduction of emissions (incl. GHG), which also improve air quality and as a side-effect can positively influence human health. No negative impacts were identified from the projects themselves. Some important topics such as the focus on renewable energy as energy supply for electric mobility or the low impact of new infrastructure related to the follow-up activities of the projects would have profited from further concretization/ emphasis.

e. Specific Objective 3.1 Sustainably valorise Alpine Space cultural and natural heritage

Three projects of S.O. 3.1 recently finished, three projects are still running. None are expected to have likely significant negative impacts judging from the AF (Figure 9). All projects under this Specific Objective have either significant positive impacts on "cultural ensembles / traditional settlements" and / or "enhancement/protection of immaterial cultural heritage". Further significant positive impacts were expected for "the influence on cultural landscapes", "recreation capacity" and indirectly also on "flora/fauna/biodiversity" (for example the projects **LOS_DAMA!** and **YOUrALPS)**.

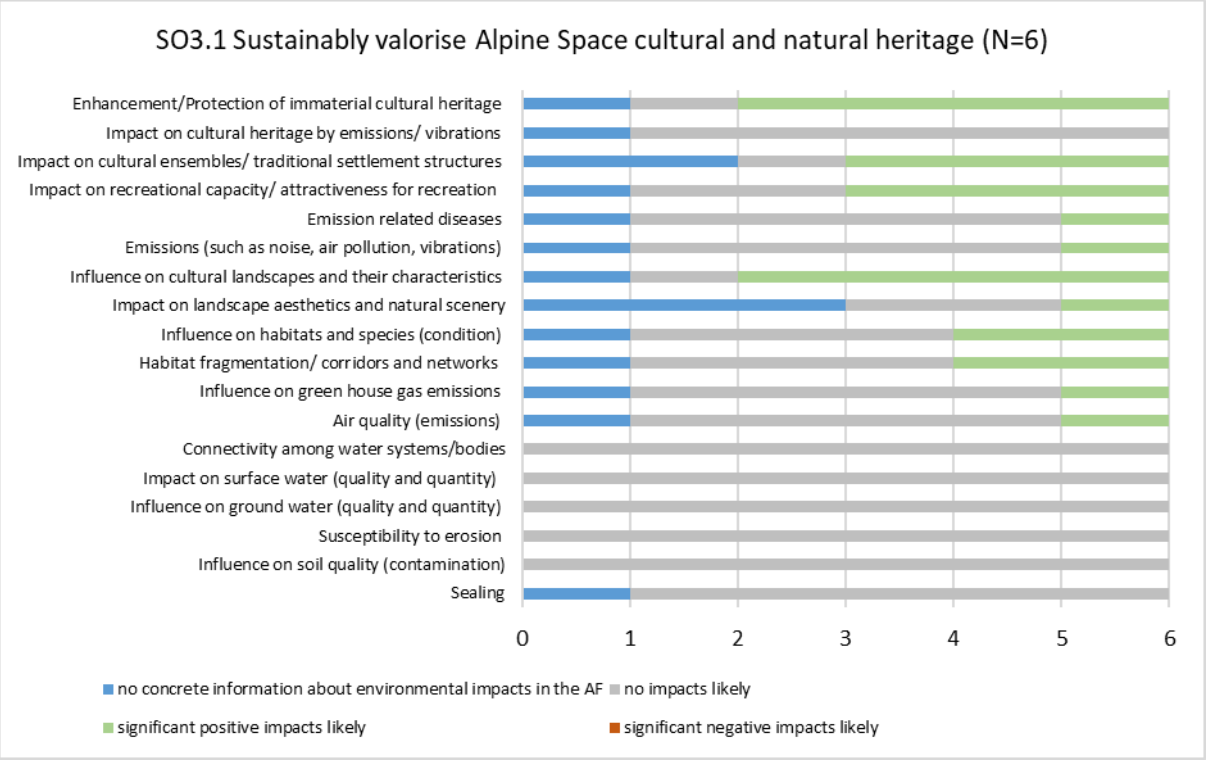

Figure 9: Results of step 2 of SEA Monitoring concerning S.O. 3.1.

These findings go in line with the SEA results which expected positive impacts for this specific objective on landscape (provided the conservation & maintenance of cultural landscape is included); flora/fauna and biodiversity (management of cultural landscapes secures biodiversity and protection against natural hazards); human health (recreation opportunities in protection areas and provided by areas preserved as cultural heritage); cultural heritage (local identity).

For some projects, however, the environmental impacts remained very vague from the information of the AF. One example for these is the project **trAILs**: The main objective of this project is the development of Alpine Industrial Landscapes. According to the AF this development should be "sustainable" but missing a clear meaning what sustainability might mean in this context. The new economic innovation and the focus on touristic development might also lead to undesirable environmental impacts although the project team also acknowledges the protection of cultural heritage and ecological connectivity. Further analysis of first deliverables and especially the interview strongly highlighted this balance between an economic re-utilisation of former Alpine industrial sites and the ecological impacts these follow-up utilisations might have: *"What we are really facing and discussing within the project partners' consortium regarding all the pilot sites is a kind of contrast between on the one hand a transformation that might solve the problem of economic diversification and new economic development and on the other hand the environmental sustainability of transformation. That is something that we face also among the project partners and the idea is testing all the scenarios (one more oriented to the economy, one more orientated to the environment) and then try to merge them. To find out what are the key issues and how to bring all scenarios into one."* (Interview trAILs 04/10/2019)

Also, the focus on the environmental issues needed to be sharpened according to the first results in the pilot sites as the following quote illustrates: *"We try to focus on all the different topics in the AF"* (green/blue infrastructure; soil conservation, biodiversity, cultural heritage) but *"there is an issue becoming now really crucial for our aim, mainly related to the contamination of soil and water systems in relation to former industrial sites."* (Interview trAILs 04/10/2019). The interviewee acknowledged that the Alpine Space Programme leaves enough flexibility to react on emerging topics popping up during the project, although external expertise is needed now for these specific thematic challenges. The interviewee also highlighted that the most important impact yet achieved is awareness raising for ecological issues among the stakeholders and the population in the pilot regions. The stakeholder involvement and associated sensitisation is also a common core achievement of the projects **AlpFoodWay**, **LOS_DAMA!** and **YOUrALPS**, despite different target groups being addressed. **LOS_DAMA!** particularly addresses the peri-urban areas where the need for green space of the urban population is combined with green infrastructure. Whereas the project **YOUrALPS** concentrated primarily on the involvement of young people in rural

mountain areas. **AlpFoodWay** has a bit different focus with the main aim to elaborate the Alpine Food heritage to be nominated by the UNESCO list of immaterial heritage. The sustainable regional development as such is regarded to also have positive impact on environmental issues, but within the outcomes and deliverable the discussion and reflection of environmental impacts is missing. This is a – so far – hidden chance which could be subject to improvement regarding the co-benefits of Alpine Space projects on diverse environmental issues (see recommendations).

The safeguarding of material cultural heritage is the main focus of **ATLAS** and **CHEERS**. These two projects have only been running for about one and a half years and not much outcome was available at the time of the monitoring. **ATLAS** aims at providing the basis for maintaining historic buildings on a level of high value renovations with a low ecological footprint, considering both historic and energetic aspects. Protection of cultural assets at risk of natural hazards is the intention of **CHEERS**. It is not clear yet, if protection from natural risks is involving mainly technical approaches or if the role of the environmental issues (f.ex. enhancing protection forest) is also reflected by the project. Especially in this context, ecological concepts such as green infrastructure could provide not only valuable input, but would also enhance the positive impact on other environmental issues beyond cultural material assets. Here, a link to the projects **GreenRisk4ALPs**, **RockTheAlps** or **Links4Soils** (from S.O.3.2), all dealing with the protection from natural hazards, seems obvious and could be highly beneficial.

Conclusion

All projects under this Specific Objective have either significant positive impacts on “cultural ensembles/ traditional settlements” and/ or “enhancement/protection of immaterial cultural heritage”. Further significant positive impacts are expected for “the influence on cultural landscapes”, “recreation capacity” and indirectly also on “flora/fauna/biodiversity”. The stakeholder involvement and associated awareness-raising is a common core achievement for the projects under this Specific Objective, still the reflection and discussion of the co-benefits on other environmental issues beyond the core projects’ objectives is neglected at the moment.

f. Specific Objective 3.2 Enhance the protection, the conservation and the ecological connectivity of Alpine Space ecosystems

Under this Specific Objective, eight projects were analysed, of which five projects are finished by now. The SEA report stated in 2013: "*In accordance with the core topic and the relevant indicative actions, only positive or no significant impacts on environmental issues are to be expected. The core areas protection, preservation and connectivity are appreciated means to support the Alpine Space Ecosystems*." (Jiricka et al. 2013, p. 119). This could already be confirmed by our monitoring results judging from the first two steps of the approach (Figure 10).

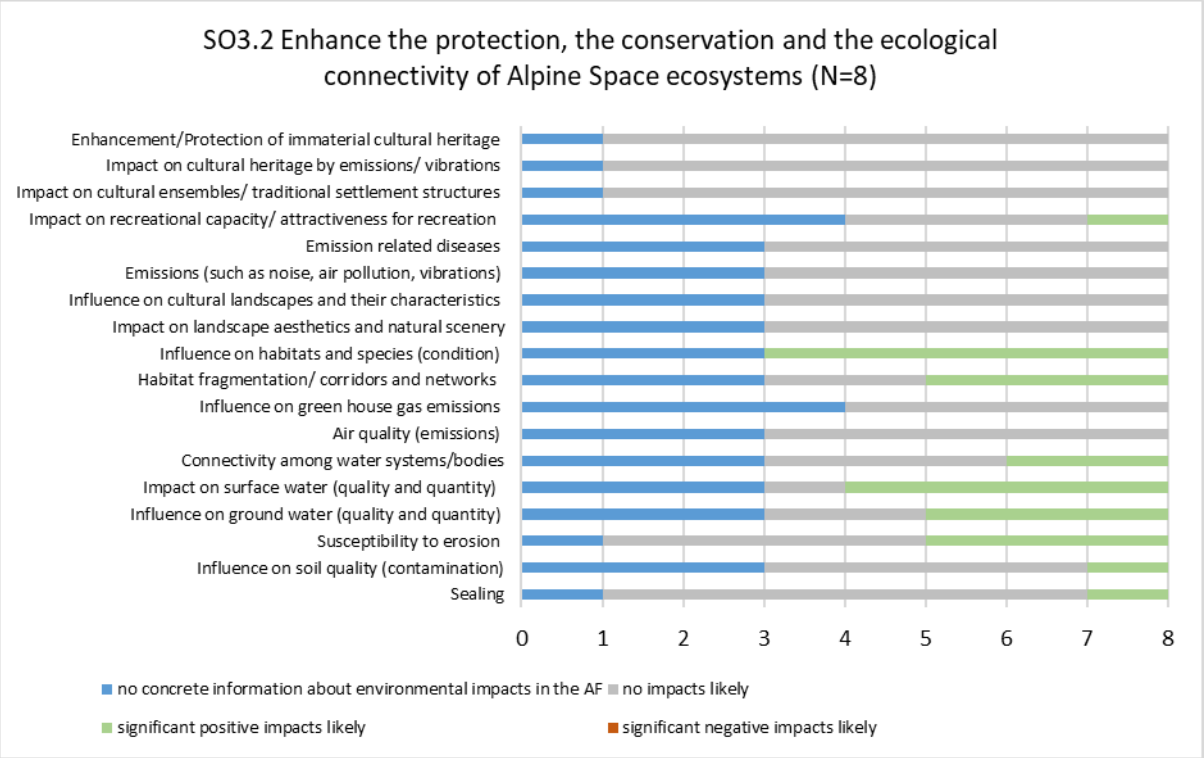

Figure 10: Results of step 2 of SEA Monitoring concerning Objective 3.2.

For some projects, however, the objectives as well as the other sections of the AF were formulated in such a general way that information about environmental impacts was lacking overall, which was surprising for projects under this S.O.. One example for this is the project **AlpES**: This project analysed alpine ecosystem services. As the selection of ecosystem services was done only during the project's lifetime, it was not clear judging from the AF which issues will be tackled. The final report on the other hand very clearly indicated

different environmental topics, f.ex. the ecosystem service indicators used cover topics on water availability and filtration, CO2 sequestration, selected biodiversity aspects and recreation. Especially for these environmental issues, positive impacts are expected.

The positive impacts on flora, fauna and biodiversity of the project **ALPBIONET2030** were already clear from the first monitoring step. The proceeding analysis of the projects outcome and deliverables could only enhance these findings. The importance of ecological connectivity in the Alpine region is stressed also under the light of European policies. Surprisingly the influence of climate change as additional stressor on the connectivity of several species was completely neglected as it seems from the project outcomes. Overall, thematic novelty and innovation seems limited as partly topics are communicated which are well explored in recreation planning and nature conservation.

The concept of ecosystem services is also applied by the projects **Eco-AlpsWater**, **SPARE** and **HyMoCARES**, all in the context of water systems. Definite positive impact on surface water quality and connectivity (as the main focus of these three projects) might go in line with other positive environmental impacts. While from the AF these additional positive impacts were not evident the analysis of the outcomes definitely proved these effects.

SPARE has completed its tasks and produced very valuable databases and descriptions of the ecological status and pressures of Alpine water systems. The concept of ecosystem services is only used to highlight the importance of healthy ecosystems for society in a few words. Nevertheless, the positive impact of this project on providing consistent data and valuable guidelines for decision makers needs to be pointed out.

As **HyMoCARES** has just recently finished, it has produced a list of outcomes where, amongst others, ecosystem services and indicators are defined which are supposed to be in context with river hydromorphological processes. They cover environmental issues ranging from landscape aesthetics, to water related indicators, connectivity, aquatic biodiversity and GHG emissions. **Eco-AlpsWater** on the other hand is only running for one and a half years now and not much information is yet available. The main aim of the project is more the development of new methods and techniques in assessing the ecological status of water bodies.

Synergies among these above-mentioned projects seem obvious and were already established according to the information available.

Other projects, like **Links4Soils** or **RockTheAlps**, focused on one environmental issue (healthy soils and the protective role of mountain forest respectively) for the purpose of hazard prevention and/or reduction, offering possibly positive impacts on many other environmental issues without mentioning them in the AF (healthy soils and healthy forests offer a wide array of positive aspects). **RockTheAlps** focused on rock fall events in the Alps and in the way protective forest can help in their prevention. Advantages of an intact and sustainably managed forest ecosystem in comparison to other types of forests are hardly reflected, neither is the positive side effect on biodiversity, which was hardly mentioned in the deliverables. Looking on the outcomes of **Links4Soils**, however, a wide range of topics was treated and best-practice examples were presented linking the main focus on the intelligent and careful use of the resource soil to the broader context of soil protection in forestry, spatial planning, agriculture, tourism and natural hazards prevention.

As for mitigation measures, the same can be stated as for Objective 3.1 - mitigation measures are barely applicable for the projects selected under this S.O. and therefore also play a minor role in the AFs. This corresponds with the low amount of negative environmental impacts likely to result from the projects' outcomes. Only in a few cases, the criteria became relevant e.g. when hazard prevention topics are tackled in an environmentally beneficial way, such as in the projects **RockTheAlps,** which is a perfect example for a positive application of the mitigation measures in terms of "selection criteria" similar to Link4Soils. **SPARE, HyMoCARES** and **Eco-AlpsWater** attempt to ameliorate the conditions of surface water bodies and could be considered as mitigation for negative impacts of other projects on these environmental issues (e.g. to minimize impacts of hydropower utilization).

In this S.O. one major point also can be made in accordance with the other specific objectives: Stakeholder involvement and awareness raising might be the most important positive impact to foster positive impacts and highlight synergies between co-benefits of different environmental issues.

Conclusion

In line with the core focus of this Specific Objective, no negative impacts could be identified. All projects have significant positive impacts on one or several of the following environmental issues: “Soil/ Land”, “Water”, “Flora/ Fauna/ Biodviersity” and “human health/natural hazards”. Indirect positive impacts can result for “landscape”. Consequently, a wide array of benefits is likely and positive contribution to several dimensions of ecosystem services (regulating services, cultural services, provisioning services, ...). Exploring synergies among the projects could foster the positive impacts even more, especially for awareness rising amongst the local population.

g. Specific Objective 4.1 Increase the application of multilevel and transnational governance in the Alpine Space

Under S.O.4.1 the examined projects showed neither significantly negative nor significantly positive environmental impacts (Figure 11). Due to the nature of the objective, governance, similarly to S.O. 1.2, "sustainability" generally referred to social or economic use of the term. However, the inclusion of relevant stakeholders was mentioned. **GaYa** references the need for sustainable decision making with stakeholders who *"make their voices heard on topics such as environmental protection, sustainable development, […]"*. **GoApply** recognized the supporting environmental protection and resource efficiency as a governance task. So while the projects under this objective do not show direct impacts in their outcomes, there is recognition of the importance of governance structures as a support mechanism for environmental protection in the Alpine Space. Projects under S.O. 4.1 recognized the importance of governance for climate change adaption. Governance brings together actors across sectors and policy levels to band together in decision making and responsibility to shape future adaptation efforts.

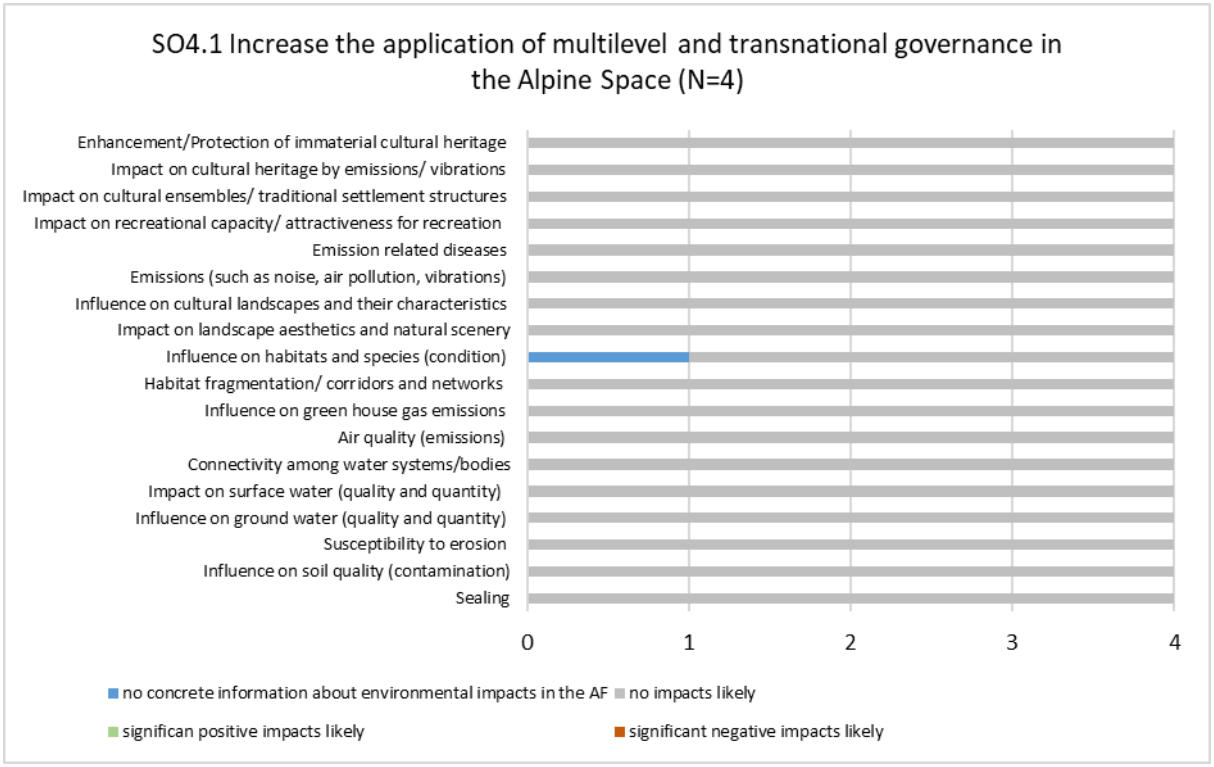

Figure 11: Results of step 2 of SEA Monitoring for all projects funded under S.O 4.1

Conclusion

In accordance with the objectives of S.O.4.1 no significant environmental impacts, neither positive nor negative, were expected. This was confirmed by the analysis. Although governance structures can contribute to environmental improvements broadly, in the analysis at hand it was evident that primarily neutral outcomes result from the projects under S.O.4.1.

5. Discussion of overall outcomes

Overall the prioritization of environmentally friendly development of the Alpine Space Programme and the careful selection of projects according to the environmental criteria, which were among others highlighted in the SEA report, became evident. Several significant positive environmental impacts (can) result from the projects

Before the interviews we compared the self-evaluation on environmental impacts and the achievements of the projects with our results from the first four steps of the monitoring. Overall, similarities predominated. Interestingly partners of the same project evaluated their project's environmental achievements partly diversely. Especially, the mitigation measures were inconsistently scored by the project partners. For example, there were five replies of the project **SPARE** (S.O.3.2) which scored the individual mitigation measures from "Core focus of the project" to "Not relevant" for the same measure (Figure 12). Nearly all S.O. showed the mentioned discrepancies except for S.O. 4.1. were partners consistently scored mitigation measures as not relevant in their projects (which they in fact were because of the focus on environmental topics of this S.O.). The scoring of the indicators showed more consistency with only little variation in answers of partners within the same project.

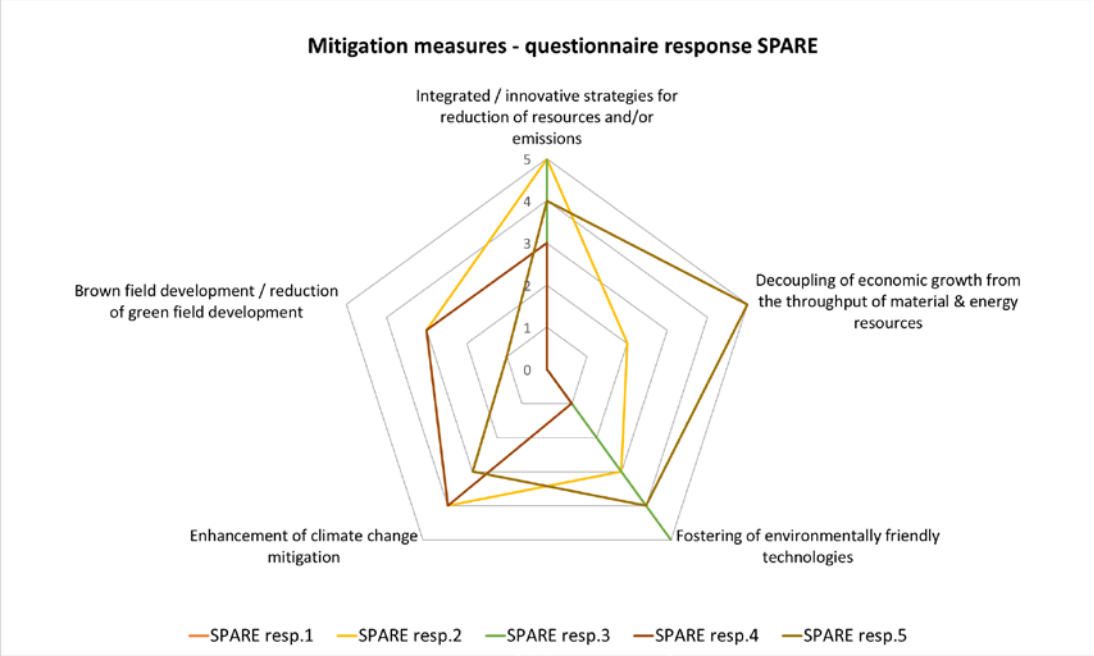

Figure 12: Scoring of mitigation measures based on the responses of the online-questionnaire for the self-assessment. Here the answers of the project SPARE are presented as example. Response 1 and 5 gave the same scoring. 1 = unclear; 2 = not relevant; 3 = partly considered by the project; 4 = covered by the project; 5 = core focus of the project.

Hidden changes and space for improvement regarding the environmental sustainability was discovered from our SEA monitoring partly for projects under S.O. 1.1. For others, particularly 3.1. potential to amplify the positive environmental impact (through interrelationships with other environmental issues) was observed in a few projects.

For the Specific Objective 1.1 the focus on green economy became stronger over the programming period judging from the monitoring results. The projects of the first and second call reflected these topics not or support of an environmentally / climate friendly economic development had a subordinated priority while projects of the last two calls were more dedicated to the overall aims of environmental sustainability (reflecting the divers foci of the calls). Still, however, it turned out that most of the projects, which did not cover green-economy topics in the AF and project idea, did either include these thematic aspects due to stakeholder involvement or discovered some hidden potential during the environmental monitoring. All of them stated they would focus more on green economy topics in case they submitted the project with today's knowledge and in today's time of societal transformation. Projects of Specific Objectives dedicated to foster low carbon policies and mobility as well as to environmental topics showed a positive impact on the environment overall. Although sometimes the opportunities for enhancing these results by also valuing the indirect effects besides the main core project focus on related environmental issues were missed.

Many projects mentioned awareness-raising of stakeholders as a fundamental result for putting environmental issues on the forefront. The complexity and interrelationships between the three sustainability pillars for developing future perspectives in mountain regions was seen as a challenge for communication especially with local population in the pilot regions.

6. Specific recommendations from SEA monitoring

a. Communicate environmental challenges and core environmental objective of the Alpine Space territory

Judging from the interviews some of the projects discovered hidden chances to contribute to the amelioration of the environment in the Alpine Space only during the SEA monitoring. Some of them were enthusiastic to reflect these new ideas and integrate them in up-coming projects. The reason why these topics were not considered before was definitely a lack of information and awareness. Interviewees actively stressed that providing information on environmental aspects would have helped to consider possible synergies their projects could have to improve the environmental situation in the Alpine Space right from the application process. In particular side effects to maximize the positive environmental impacts for several environmental issues became partly evident only in the interviews. Others reflected these issues but did not end up in communicating them appropriately. The majority of projects interviewed were not aware of the existence of the SEA for the Alpine Space Programme despite partly knowing the instrument itself from other contexts.

RECOMMENDATION: **Due to the urging necessity to reflect environmental sustainability as an inherent concept of all priorities, a brief communication of environmental goals of the Alpine Space Programme could be added.**

Key challenges regarding the alpine territories' biotic and abiotic environment, the health and wellbeing of its population and state of its cultural heritage plus material assets as well as objectives how to overcome these problems could be summarized and communicated more prominently in order to encourage reflection of possible integration of environmental aspects in all projects (see also 5.b). An expert feedback accompanying the project (e.g. at certain events from the kick-off until the final workshops) could enhance keeping possible environmental synergies in mind (see 5.c and 5.e).

b. Consider environmental aspects right from the beginning

Most projects fell short in their Application Forms (AF) when addressing environmental aspects concretely, except of those submitted under S.O. 3.2 and S.O. 4.1 as well as partly under S.O. 2.1 and 2.2 regarding the mitigation of GHGs. In the current state of the AFs, information, inserted in the section (environmental) sustainability, contained some misleading use of terminology and very vague formulations. Some referred only to the project's management instead of the project's activities and outcomes when addressing environmental sustainability while others used the terms for economic purposes only. In order to fully achieve the environmental sustainability of the funding programme the AF still leaves space for improvement.

Particularly, for projects submitted under S.O. 1.1, which were most likely to impair also significant negative environmental impacts, a clearly defined section with thematic aspects to contribute to the concept of "green, multi-dimensional sustainable economy" (according to the mitigation criteria) might have been beneficial.

RECOMMENDATION: Applicants could rank the expected contributions of the project to the environmental sustainability if they received information on the environmental challenges and core objectives (see 5.a.) This forecasting self-evaluation on positive contributions to environmental sustainability could be either generally relevant for all priorities or – to be more effective – cover those aspects which are most important in the thematic context of the priority (Specific Objective).

As support for this section of the AF, information could derive from a new non-technical summary of the SEA report dedicated to the applicants (e.g. "*How to further enhance the environmental sustainability of the Alpine Space Programme*") and additionally, from key documents in the field of the priority such as the "*Action Programme for a Green Economy in the Alpine Region"* (Palenberg et al. 2019) or the "*Climate-neutral and Climate-resilient Alps 2050*" declaration of Innsbruck (Permanent Secretariat of the Alpine Convention 2019). This information should be communicated or referenced within the call text.

Suggestions as developed in Figure 13 refer to the topics of the past Alpine Space Programme but could be valuable support also for the up-coming Programme.

Please specify to what extent the following topics will be covered in your Alpine Space project:

	Core focus 1	Covered 2	Partly covered 3	Not relevant 4	Unclear 0
Awareness raising on greener value chains					
Decoupling of economic growth from the throughput of material & energy resources (e.g. CE)					
Integrated/ innovative strategies for the reduction of GHG-emissions (climate change mitigation)					
Brown field development/ reduction of sealing/ land consumption					
Transfer/Communication and promotion of „green solutions“					

Figure 13: Example of a self-evaluation section in the AF suitable in particular for S.O. 1

In the self-evaluation process of the monitoring (questionnaire) participants of the same project partly filled out the questionnaire in a differing way. This might not only have been related to the participant's role in the project consortium but also to its personal professional background and expertise which made the participants of the same project judge the environmental impacts differently.

Following the experience of the self-evaluation on behalf of the monitoring we strongly recommend to add a short explanation on the criteria (topics) included in this self-evaluation.

Overall contribution to one or many of the four core principles to enhance the environmental state of the Alpine Space territory could be a bench-mark for self-evaluation of future applications:

- **Improvements to the ecological condition and connectivity**
- **Decrease of pollution and deterioration**
- **Enhancement of multifunctional land use**
- **Reduction of resource consumption**

c. Foster the integration of adequate environmental expertise and institutional capacities

In particular the interviews revealed that environmental expertise became more relevant over time in some projects for which these topics were not considered at all during the phase of the application. These consortiums included environmental expertise through invitation of external experts in the field.

RECOMMENDATION: **In order to maximise co-benefits either for diverse environmental issues or for several dimensions of sustainability (Sustainable Development Goals) we recommend requesting the compulsory involvement of environmental expertise (relevant to the specific project themes) either by project partners or (and) observers.**

d. Encourage the identification of synergies – even beyond one Specific Objective

We discovered that projects covered aspects/solutions which could be an important input to encourage the environmental sustainability of others. Networks established under the Alpine Space projects can help for capacity building and sustain the importance of dedicating resources for these novel important topics. If not already in place, we would highly recommend to encourage these concrete exchanges of thematic capacities.

RECOMMENDATION: **A beneficial approach could be "twinning or clustering of projects" in order to enhance knowledge-transfer and exchange between projects of the same programme period under the same Specific Objective (which partly already happened in the last programming period subject to this monitoring). For this purpose shared workshops with projects with a focus on Green Economy, Nature Conservation or related topics or invitation of experts from their consortiums to project activities could enhance the integration of novel eco-innovative topics. Benefits could also be achieved when "matching" projects of two or more specific objectives which consider a thematic field from multiple perspectives (e.g. forestry, protection forests, ecological connectivity, sustainable consumption, and sustainable public procurement).**

Judging from the Monitoring results the following projects' findings could create synergies and overlaps which could be beneficial from an environmental point of view:

THE4BEES and PEACEAlps – ICT Technologies to influence consumer behaviour and training on energy saving could be complementary to those technical solutions focusing on energy efficiency of public buildings (partly same target groups in both projects, complementary core topics).

CaSCo and GREENRisks4Alps – challenges to alpine forests due to climate change are only marginally treated in the core outcomes of CaSCo. On the contrary these emerging risks are a core focus of GREENRisks4Alps. Despite one being orientated towards diverse interests of forest management, one primarily towards wood production and the other towards protection against natural hazards, knowledge exchange on how to tackle key challenges for alpine forests might have been beneficial.

IMEAS and several other projects attempting climate change mitigation – core topics and findings of IMEAS can enhance communication and mainstreaming of the topics elaborated in other projects and/or support the identification of appropriate stakeholders at various governance levels in the field of low carbon energy planning

SMART ALTITUDE and THE4BEES – Alpine mountain huts and reduction of energy consumption through influencing the visitors behaviour was one of the core foci of THE4BEES. SMART ALTITUDE focuses on smart grid solutions and small-scale-decentralized energy production. Both projects integrate innovative ICT solutions in the field of energy consumption (snow-data analysis, heating habits, fuel consumption, etc.) and develop solutions for alpine touristic infrastructure, though.

SaMBA, ASTUS, MELINDA and e-MOTICON – the reduction of individual car traffic, the change in behaviour and the use of e-mobility is complementary in many aspects. The synergies in their results could lead to valuable impact also after the projects' lifetime.

CHEERS and GreenRisk4ALPs, **RockTheAlps or Links4Soils** – The protection of cultural heritage from natural hazards is a clear goal of CHEERS, therefore the connection to other projects also dealing with the protection from natural hazards, seems obvious.

Best-practice example of exchange of information exist already, one of which is **HyMoCARES**, **Eco-AlpsWater** and **SPARE**. This occurs especially as some project partners are involved in more than one project (partly as project partners, partly as observers).

Synergies could also be useful when communicating the project's results if they are thematically complementary to address a full "package" of results and recommendations for practice (e.g. from governance to communication and action in the field of low carbon energy planning) or to address diverse stakeholder groups in the same thematic field or if the project's core theme(s) are similar but focused on different groups of society/ sectors.

e. Encourage to communicate the environmental achievements

Environmental topics and achievements were wide-spread in the outcomes of the Alpine Space Programme among all priorities. However, even some of the projects, which were particularly dedicated to environmental objectives failed to communicate their efforts in achieving co-benefits for several environmental issues and/or reported environmental topics inconsistently.

Co-Benefits (e.g. to enhance biodiversity) were acknowledged for instance in the introduction but never elaborated/explained concretely in the following sections. Similarly projects mentioned environmental aspects in their tools but failed to communicate what is meant respectively how to achieve these objectives. In particular some projects in the field of economy or transport could have profited from a profound explanation how to achieve environmental objectives (e.g. the reduction of emissions) and not only included this topic as an indicator in an assessment scheme without any additional information on strategies/concrete examples how to improve the environmental condition.

RECOMMENDATION: Illustration of environmental achievements is important to raise awareness for the positive impacts achieved under the Alpine Space Programme and to enhance the consideration of these topics beyond the individual project. Projects should check the consistency of the information on environmental aspects and provide sound information how to achieve these targets instead of using "tag words" and leaving those who apply the tools without concrete hints. Accompanying contributions by

environmental expert(s) could check and enhance this consistency and discover "hidden chances" of some outcome documents.

f. Make the interim reports more informative about environmental achievements

One of our monitoring steps included the analysis of the interim reports for detecting positive and / or negative environmental impacts. It turned out that this step did not provide further thematic insights as the information provided by the projects covered only administrative and technical issues.

RECOMMENDATION: In order to achieve an added-value for the mandatory environmental monitoring according to the SEA Directive, the self-evaluation on environmental topics could be continued in the mid-term and final reports to keep the environmental targets and achievements in mind and allow projects to adapt their implementation outcomes if necessary and/or seek additional environmental expertise if necessary. To this aim sections could be integrated to review the work packages (or overall project's) impact on the environment (either quantitatively or projects describe shortly their environmental achievements, impact on the environment and/or how they minimize/avoid negative environmental impacts).

Figure 14 summarizes the mix of recommendations to foster and further enhance the sustainability of the Alpine Space Programme according to the results of the SEA Monitoring:

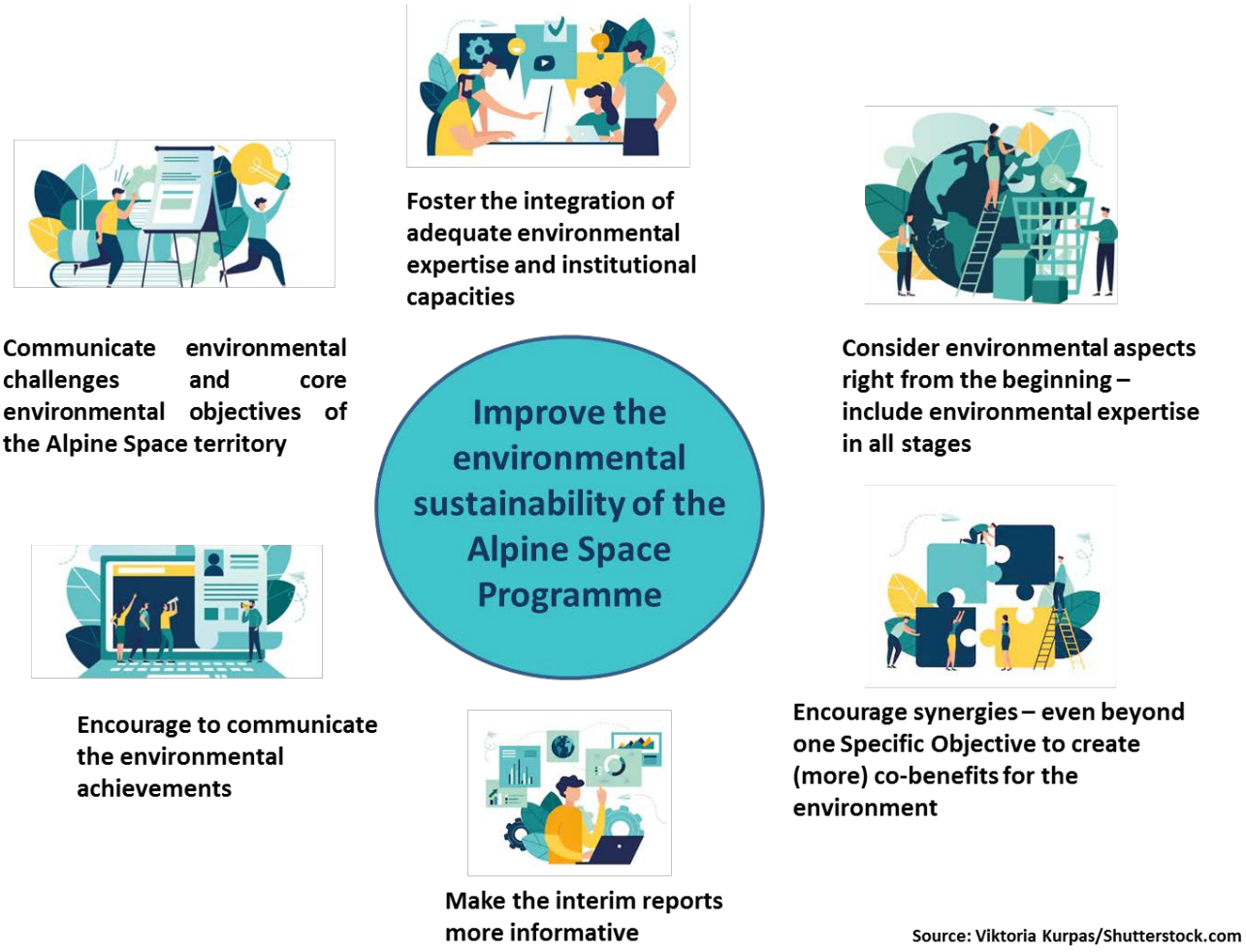

Figure 14: Overview of recommendations to further enhance the environmental sustainability of the Alpine Space Programme

7. ANNEX – Interview questionnaires and reports

In the following, the interview guidelines are presented, which were sent to the project partners. The first part, with general questions, was the same for all projects. The second part was specified to each project interviewed by the monitoring team.

Interview Guideline – Environmental Monitoring

Monitoring of the Alpine Space Programme 2014+

Experts of the University of Natural Resources and Life Sciences Vienna are carrying out a first **environmental monitoring in compliance with the Directive on the Strategic Environmental Assessment (SEA) (2001/42/EC)**. Results of the monitoring are supposed to provide a basis for the elaboration of the third SEA of the Alpine Space Programme (2021-27).

Monitoring is a fundamental concept in the European precautionary environmental planning. Identifying unexpected impacts at an early stage is a key objective. Therefore on the one hand, the emphasis is on the examination of the results of the program/plan and/or interim results of it, in order to be able to, if necessary, take remedial measures to improve the programs'/plans' environmental impacts in case unforeseen negative impacts are evident. On the other hand, the focus is on the learning effects for future planning to foster the environmental sustainability of the Alpine Space Programme.

In order to discuss likely impacts and also in particular to fully discover the positive environmental outreach of the Alpine Space programme, interviews with a selected number of projects are carried out. Thank you very much for your availability in taking part in this process!

On the following page the major themes of the general part I are outlined. We will send a final version of the guideline, which is specific to your project only (part II) by the end of this week (Friday 13th).

The interviews will take approx. twenty minutes and will be considered as background information for the final report of the monitoring. Interviewees will be kept anonymous in the report as well as in any other (scientific) communication.

Part I - General Questions:

I. **Were you aware of the Strategic Environmental Assessment (SEA) before the announcement of this environmental monitoring?**

   a. If so, how far did the results of the SEA influence your project idea/proposal/outcomes?

   b. If not, did you consider other sources of information on environmental sustainability during the preparation of your project proposal and/or the duration of your project? Which were those most relevant for your project?

II. **How did you perceive the relevance of environmental topics in the Alpine Space call (your project belongs to)?**

   a. Please name the most important environmental aspects, which you perceived as import according to the call when drafting your proposal?

   b. If no environmental aspects were relevant from the call, how far did you consider environmental topics/impacts in/of your project proposal nevertheless?

   c. Which of these environmental aspects maintained/ changed their relevance during the project lifetime and why?

III. **Did the Application Form encourage you/your team addressing environmental aspects of you project? Would you suggest any improvements to enhance the environmental sustainability of project selection?**

IV. **How far did the composition of your project consortium influence the consideration of environmental impacts?**

   a. Did you reflect the inclusion of environmental expertise explicitly when drafting the proposal?
   b. Which partners/observers contributed environmental expertise primarily (and on which aspects/impacts)?
   c. Did you lack environmental expertise and if so, would you include other project partners/observers which could contribute more to these topics?

V. **What are the most important achievements of your project to foster environmental sustainability?**

Part II - Specific Questions BIFOCAlps:

Your project BIFOCAlps is dedicated to the manufacturing sector, with many thematic areas. Sustainability is a key issue for some of them. Innovation is often linked to environmental issues (e.g. in the mobility manufacturing sector).

I. The resource consumption level as well as the emissions volume is part of your indicator system. For the benchmarking firms should compare their efficiency with the previous production period.

   Did you discuss/provide supportive information to encourage the reduction of resource consumption?

II. Overall topics related to environmental sustainability are scarcely addressed in your project outcomes although “sustainability” is used as a goal already in the application document.

   How far was environmental sustainability part of the discussion in the consortium?

   How important were these topics for your case studies (stakeholders/firms)?

PART II - Specific Questions CaSCo

Two tools are mentioned the Low Carbon Timber toolkit and the "Holz von hier" toolkit

- **What are core purposes of the toolkits and whom do they address primarily?** *Why are they only accessible through login?*
- **How do the toolkits differ?**
- **Which environmental impacts (positive and negative) are explicitly addressed in the toolkit through the indicators?**
- **Which institutions outside the project team did apply already the training concept applied under CaSCo? How was their feedback?**

Next to benefits for the reduction of GHGs the impact on biodiversity is mentioned in the outcomes (in the introduction)

- **Which recommendations for forest management result from the project to achieve positive impacts on biodiversity?**
- **Why did the project not explicitly refer to these topics more in detail in the outcomes?**
- **How far were climate change impacts and adaptation to it a topic in CaSCo (e.g. drought, pests)?**

PART II - Specific Questions C-TEMPAlp

Main focus of the project was how to increase the probability of finding successors for SME's, also beyond national borders. Possible positive and negative impacts on environmental indicators were not discussed in the outcomes.

- **Did the consortium discuss environmental impacts/aspects of green economy (e.g. low energy consumption/ environmental standards of the building) which are crucial/ relevant in context of finding successors? If yes, which aspects were discussed?**
- **Which environmental benefits of maintaining the existing SMEs (e.g. prevention of sealing because of use of existing buildings, safeguarding cultural heritage and benefits for the local population/employment) and their infrastructure where discussed?**
- **Were environmental regulations and/or policies discussed in context of finding successors for SME businesses?** *Example: Bavaria's RTI policy fosters Clean Tech – resources preserving energy-, transport-and environmental technologies*

Part II - Specific Questions GREENCYCLE:

GREENCYLCE is a multifaceted project which could be a bench-mark project for "sustainable" economic development. Your good practice

- **Your toolbox was tested by pilot projects implementation in each partner city. It comprises a high number of relevant documents/websites/online tools.**
    a. How was the feedback of the cities on the usability?
    b. Which thematic areas were covered most importantly in the pilot regions?

- **Which thematic aspects of CE were the most challenging according to your project results and discussions at project events?**

- **What is the expected outreach after project lifetime (long-term strategies, cooperations …)?**

- **The "market place" of the GREENCYCLE homepage contains only one file so far.**
    a. What was the main purpose of this section and what will happen to it in the future?
    b. Did you exchange with other Alpine Space projects of the same Specific Objective?

PART II - Specific Questions S3-4AlpsClusters

The final report of S3-4AlpsClusters mentions climate change and impacts on flora/fauna/biodiversity which should be tackled by the clusters

- **Did the consortium discuss concrete impacts/criteria on these topics?**

- **Did the consortium elaborate any concrete recommendations to foster the environmental and climate friendly benefits of clusters?**

Transformative activities towards green economy were addressed in the final outcome

- **Which opportunities of a circular bio-economy were discussed?**

- **How have these topics been communicated to the broader audience within the project's outreach?**

Part II - Specific Questions ScaleUPAlps:

- **Did you discuss green economy and/or excellency in reduction of environmental impacts through improvements in compliance to environmental standards as a relevant topic for start-ups in the Alpine Space area?**
- **Did the core topics of the start-up businesses in your pilot territories relate to environmental aspects?**
- **When mapping business ecosystems – did environmental institutions play a role in your partner territories?**

PART II - Specific Questions THE4BEES

- **Why did you choose your particular target groups involved in the project (e.g. mountain hikers)?**
- **How was the stakeholder's feedback on your CC Labs? Did the project contain any longer-term monitoring on the behaviour change of the participators in the labs?**
- **Are IT tools / ICT solutions elaborated under TH4BEES transferable to other areas?**
- **Are there any recommendations/ awareness raising elements contained which encourage the stakeholders to climate friendly behaviour in several aspects of their daily lives (e.g. not only focusing on the visit of the mountain hut)?**
- **You mention data visualisation as a strong tool to encourage behaviour change – which ways of visualization worked out best for each target group? Are there differences in the communication strategies which worked best between the target groups?**

PART II - Specific Questions trAILs

In the Application Form and Project description on the website, you write about "green / blue infrastructure"; contributing to "soil conservation", "biodiversity" (ecol. Restoration), "cultural heritage";

- **As the project is now running for about 1,5 years, are there any concrete examples about how you contribute to these issues mentioned above?**
- **Which role did positive and/or negative environmental impacts of the follow-up utilization** *(f.ex. fostering tourism / building touristic infrastructure)* **play in the discussions of the consortium?**
- **Which information provided the basis for the assessment of the environmental condition?**
- **What happened in case of opposed judgements of the relevance of environmental topics for the site?**

- **Have you discussed the regional development also in the light of future dynamics, such as climate change adaptation/ mitigation, renewable energy production/supply?**

PART II - Specific Questions e-MOTICON

In the outcomes of your project, you address the need for collaboration among different public authorities involved in spatial planning (energy, environment, traffic, etc.) as to mitigate negative effects.

- **Which negative effects did you discuss concretely within the consortium during the project? Have you also discussed solutions/mitigation measures respectively specific recommendations for planners?**
- **Have you discussed the localisation of new installations (CS) in context of environmental impacts (positive and negative) concretely with planning authorities in one (several) of your case study areas?**
- **You suggest environmental planners of the PA's to take part in the process – which core topics they should focus on?**

Regarding E-Mobility the energy supply is a crucial topic. You partly addressed the share of renewable energies as well as innovative (local/regional) solutions for energy production.

- **What options for renewable energy production exist/were discussed in the territories (case study areas) involved in your project?**
- **Which recommendations did the consortium discuss (and develop/communicate to stakeholders) to foster the share of renewable energy (in particular decentralized small scale) in combination with the extension of e-mobility?**