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Réunion de la Conférence alpine
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ANNEX

2 Activity Report of the Alpine Climate Board for the period 2023-2024

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ACTIVITY REPORT OF THE
ALPINE CLIMATE BOARD
FOR THE PERIOD 2023-2024
(BETWEEN THE XVII AND XVIII MEETINGS OF THE ALPINE CONFERENCE)

1. Overview of the mandate given by the XVII Alpine Conference

Summary of the objectives according to the 2023-2024 mandate
• Continued implementation of the Alpine Climate Target System 2050 with a particular focus on its prioritised implementation pathways, definition of potential gaps as well as options for stronger involvement of lead institutions and support by potential donors • Focus on cross-cutting areas of the Climate Target System 2050 and enhancement of cross-sectoral cooperation between the established communities, including the promotion of new project ideas and a stronger focus of the activities on "blind spots" of the sectoral approach and potential conflictual aspects (e.g. renewable energy production/environment) • Further development of the implementation communities for example through further developing the online exchange platform to the needs of the communities • Furthering of the uptake of the topic climate-neutral and climate-resilient lifestyles in appropriate ways • Continued exchange on new developments, e.g. impacts and consequences of the war in the Ukraine, with the focus on the need for an energy transition in compliance with the Alpine Convention and its Protocols, and emerging trends at transnational and global level (e.g. IPCC reports) and elaboration of subsequent proposals for adjustments to the implementation pathways in collaboration with the other TWBs, if necessary

2. Meetings

Summary of the meetings held (date, place, main topics and milestones)
• 16th meeting on 24 January 2023, online: Presentation of the programme of the SI Presidency; discussions on the implementation of the new mandate; identification of the three cross-sectoral hotspots to focus on: energy, nature-based solutions (NbS) and lifestyles • 17th meeting on 16/17 May 2023, Vienna (AT): Discussion on all cross-sectoral hot-spots; preparation of Workshop on Climate and Biodiversity; Workshop on activities in the field of the NbS hot-spot • 18th meeting on 17 October 2023, online: Discussion of a draft booklet on energy governance; preparation of a Workshop on the NIMBY (not-in-my-backyard)-phenomenon in the energy transition and of the lifestyle trainings • 19th meeting on 18/19 January 2024, Munich (DE): Discussion on the future tasks of the caretakers; fine-tuning of crucial chapters of the energy booklet; first collection of ideas for a study on NbS governance; summary of the lifestyles trainings

- 20th meeting on 16/17 May 2024, Maribor (SI): Presentation of final version of the booklet on energy governance; information on the project application for the small-scale call of Alpine Space Programme on Governance; overview of the study on NbS in the Alps; discussion of the 2025-2026 mandate
- 21th meeting on 12 September 2024, online: Finalisation of the 2025-2026 mandate; adoption of the booklet on energy governance; presentation of the stocktaking update; information on the progress of the study on NbS; decision on topics for upcoming Webinars

3. Activities carried out

Activities carried out with their outputs and results, highlighting their contributions to the relevant priorities of the Multi-Annual Work Programme 2023-2030

- Cross sectoral hot-spot Energy (Contribution to all three MAP priorities):
    - Booklet on „Cross-sectoral energy governance. How cross-sectoral and integrated governance approaches can accelerate the transition towards climate-neutral and climate-resilient Alps"; insights on the elements of an integrated energy governance along five "energy nexus"
    - Workshops "Cross-sectoral approaches to support the energy transition in the Alps" (27 March 2023, online) and "The Energy Transition and the NIMBY phenomenon" (4 April 2024, Salzburg, AT)
- Cross-sectoral hot-spot NbS (Contribution especially to MAP priorities on "Climate" and "Biodiversity"):
    - Study on NbS governance in the Alps (financed by the German Environmental Agency; project implementation by CIPRA International and Ifuplan; elaboration of the input paper "Nature-based Solutions and their Governance Structures for Climate Action in the Alpine Region; in-depth report due in January/February 2025)
    - Start of the project "AVadapt. Assessment of climate change impacts on alpine infrastructure and mountain sports and development of adaptation measures taking into account the potential of nature-based solutions" (by Club Arc Alpin with financial support from the Austrian Federal Ministry for Climate Action), running until October 2025
- Cross-sectoral hot-spot Lifestyles (Contribution to MAP priorities "Climate" and "Quality of life"):
    - Webinar "Climate action and lifestyle: Explaining and overcoming barriers to climate action" (15 December 2022); Hands-on training: "Engaging Stakeholders for Climate Action: How to better consider the human factor and make use of positive narratives" (17 October 2023 online, 6 November 2023 in Bolzano/Bozen, IT and 12 January 2024 online); two sessions at AlpWeek (24 & 26 September 2024 in Nova Gorica, SI)
    - Project application for small-scale call on governance (Alpine Space Programme): "HumanFactor" - Closing the Implementation Gap in the Alps: Putting the Human Factor at the Center of Sustainability Transitions": dealing with bridging the implementation gap, developing a skillset, working with multipliers who are active in the field of socio-ecological transformation (e.g. mountaineering associations) (led by the Austrian Federal Ministry for Climate Action); project approved and running until autumn 2026

- Caretakers: Supporting thematic communities working towards the implementation of the CAP 2.0; network management and new ideas for a more feasible structure; meeting of caretakers on 7 March 2024 online
- Workshops and Webinars: ABB+ACB Workshop "Alpine Biodiversity through the Climate Lens: Nature-based solutions, biodiversity data and best practices" (5.10.2023, online); Webinar "Permafrost Thawing in the Alps: New insights on risks, monitoring and hazard management" (28.9.2024) (both targeting MAP priorities "Biodiversity" and "Climate"); Webinar "Spatial Planning and Climate Change in the Alps" (25.11.2024)
- Stocktaking report: Update on projects/activities dealing with mitigation and adaptation in the Alps

4. Cooperation

Cooperation developed with other Alpine Convention bodies and further relevant partners and processes, and resulting benefits
• Cooperation with SI Presidency (especially for the 20th meeting of the ACB, where an exhibition on long term impacts of the climate change, done in the framework of the project IP LIFE CARE4CLIMATE, was displayed, and for the climate change education activities) • Cooperation with various TWBs of the AC (ABB for the common workshop; PLANALP for the Interpraevent conference); invitation to all Chairs of the TWBs to support the implementation of the Climate Action Plan 2.0 • Cooperation with Oxalis (FR), Protect our Winters (AT) and Intersectoral School of Governance (DE) for the application for the Alpine Space Programme call • Cooperation and mutual information exchange with EUSALP AG8 about activities relevant to the Alpine Climate Target System 2050 and promotion of alignment of the AG8 work programme towards relevant implementation pathways of the CAP 2.0 • Cooperation with Lead of EUSALP AG 9 (CasaClima) for the booklet on energy Governance

5. Communication

Communication measures and outreach activities carried out, specifying their respective target groups
• Communication: Providing communication material (updated slides in 5 language versions) for our members and caretakers („ambassadors" for the ACB/CAP 2.0) • Regular updates of the www.alpineclimate2050.org website • Presentations of the ACB at various events by the Chair, members and the Permanent Secretariat: UNFCCC (COP27, COP28, COP29 and Expert Dialogue on Mountains and Climate Change), Interpraevent 2024 (including active participation of ACB members in conference workshop on NbS for (climate) risk management), C3S NCP Forum (2nd Forum of the National Collaboration Programme of the Copernicus Climate Change Service), ISPO Munich (International trade fair for sports and outdoor) (presentation and discussion of the topics "Alps, Sustainability and Sports")

6. Attachments

List of the documents attached to this report, such as papers proposed for approval by the XVIII Alpine Conference (thematic reports, guidelines, statements etc.) and supporting documents (workshop proceedings, survey reports, communication materials etc.).
• *Booklet „*Cross-sectoral energy governance. How cross-sectoral and integrated governance approaches can accelerate the transition towards climate-neutral and climate-resilient Alps*"* • *Input paper* "Nature-based Solutions and their Governance Structures for Climate Action in the Alpine Region" • *Report "*Stocktaking Update 2024. An information source for further developing the activities of the Alpine Climate Board" • Programmes of webinars and training sessions

Cross-sectoral energy governance

How cross-sectoral and integrated governance approaches can accelerate the transition towards climate-neutral and climate-resilient Alps

Alpine Climate Board
of the Alpine Convention

Mandate 2023-2024

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IMPRINT

This report is the result of the Alpine Climate Board's mandate, chaired by Austria and was elaborated by Helen Lückge (Climonomics, DE), Maren Meyer and Benjamin Auer (CasaClima Agency, IT) and Katharina Zwettler (Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology) with inputs from the members.

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Executive summary

Looking beyond sectoral scopes to accelerate the energy transition

The Avoid-Shift-Improve approach which prioritises demand-side action linked to avoidance of energy consumption and improvement of energy efficiency is the guiding logic of activities related to the energy transition at the level of the Alpine Convention. The Energy Protocol and the Climate Action Plan 2.0 (CAP 2.0) in particular serve as starting points at Alpine level. These are closely linked to the European Framework with the European Green Deal and the "Fit-for-55" package which are based on the "energy efficiency first" principle.

Looking at the current trends related to the energy transition, we need to accelerate our efforts. Advanced dynamics and alliances can be achieved with the help of new cross-sectoral and integrated governance approaches. Linking the energy transition to activities in other sectors can give new impulses to the energy transition and ensure a higher political and public acceptance. With this report, the Alpine Climate Board (ACB) explores opportunities for strengthening energy governance approaches to support the transition to climate-neutral and climate-resilient Alps.

Five "energy nexus" as spotlights for cross-sectoral energy governance

The report provides insights along five "energy nexus", showcasing interfaces between the energy sector and other sectors with high Alpine relevance. For each energy nexus, case studies and an analysis of ongoing governance challenges highlight common success factors and features with Alpine transfer potential:

- Nexus "Energy and Tourism": Even if stakeholders in the tourism sector see the need for action, they often lack the capacities/know-how to take the first steps to launch integrated transformation processes. Additional support is necessary, especially focusing on key stakeholders with a strong local knowledge and networks. Additionally, focusing on vulnerable tourism regions at lower and medium altitudes can help link the energy transition to broader regional transformation efforts.
- Nexus "Energy and Mountain Agriculture": The case studies illustrate the potential role of agrivoltaics and emphasise the importance of transregional and transnational coordination and knowledge transfer from pilot projects to facilitate policy-making. Also, the analysis highlights the effectiveness of a bottom-up approach that involve local farmers – supported by scientific and financial systems, demonstrating its potential for other regions.
- Nexus "Energy and Spatial Planning": Moving from spatial to integrated planning processes requires the involvement of many new stakeholders, including private actors and civil society. Participation and local know-how are crucial for developing win-win approaches and preventing acceptance issues. A consistent data set and common knowledge base are essential for integrating energy and spatial planning.
- Nexus "Energy and Water": The case studies provide insights into governance challenges linked to the development of hydropower projects – especially with respect to the design of participatory approaches. They highlight the need for real "open-ended" processes, the full and transparent disclosure of information as well as the objective to focus on projects with "win-win" characteristic for local territories.
- Nexus "Participation and Financing": Energy communities and financial participation models strengthen local acceptance of energy-efficiency and renewable energy projects. Knowledge transfer and common guidelines, supported by local energy advisories are crucial for initiating energy communities. Establishing network structures to facilitate the exchange of experiences is important, also to overcome challenges related to differing national framework conditions.

Recommendations and follow-up proposals for the ACB

The analysis of successful energy governance projects emphasises the importance of cross-sectoral collaboration and a stronger role of participatory approaches. The energy nexus give an indication as to the need for further action. For some activities, it seems to be especially important to deal with them at the level of the Alpine Convention as they are linked to other areas with a high relevance for the Convention. The following generic activities are relevant for all five energy nexus:

- Cross-sectoral governance is new for all stakeholders and a **continuous exchange on good practices, success elements, and lessons learned** provides added value at all policy levels and for stakeholders from the public and private spheres as well as civil society.
- The local and regional levels play an important role for all cross-sectoral activities, especially when it comes to designing co-creative and participatory approaches. Thus, the **municipal level needs to be better integrated into all activities of the Alpine Convention and the needs of local stakeholders need to be better reflected**.
- The **empowerment of key stakeholders** is a crucial step for initiating transformation processes. The Alpine Convention could work more closely with relevant stakeholder groups in terms of empowerment and information.

Detailed proposals for follow-up activities are provided in the full report and were considered for the new mandate of the ACB 2025-2026.

Political need for action: Support needs beyond the ACB

Looking at the main insights and follow-up proposals, the energy paper also reconfirms the need for action as defined in the CAP 2.0 and provides some insights into the need for political actions:

- **Energy coordinators:** The important role of a strong network of regional energy coordinators is reconfirmed as many activities require some sort of caretaker/moderator/project manager. As this network of regional energy coordinators is still struggling with developing a business model, a solution could be jointly developed at the level of the Alpine Convention.
- **Find a common voice at European level:** Many activities in the different energy nexus have a clear link to multi-level governance and especially the European framework. In this respect, it seems sensible to put more efforts into making the Alpine needs and Alpine viewpoints more visible at EU level. It would be sensible to further develop an Alpine-wide position on hydropower development and to make the Alpine needs more visible at European level. This could be embedded in a broader position with Alpine claims on the European energy system.
- **Regulatory and financial incentive frameworks:** Some success factors for improving cross-sectoral energy governance are related to regulatory or financial frameworks, which also need to be addressed at national or even EU scale. In this respect, the Alpine countries should further exchange best practices and solutions on how to improve both regulatory and market-based instruments. With a common top-runner approach, the Alpine countries can go beyond the existing European framework.
- **A crucial role for participatory approaches:** The governance analysis in this paper highlights that successful energy projects need to be developed in close collaboration between public and private stakeholders and civil society. Communication and capacity-building formats at level of the Alpine Convention should be further developed, with the explicit objective of strengthening the implementation community of the Alpine Climate Board and ensuring that new multipliers "beyond the existing bubble" are reached.

1 Starting point and need for action

Avoid – Shift – Improve: The guiding logic of the energy transition in the Alps

The term "energy transition" is often understood as a shift from a fossil-based towards a renewable energy system. According to the logic of the Avoid-Shift-Improve (ASI) approach, however, two strategies should be considered with higher priority – the *avoidance* of energy consumption as well as the *improvement* of the energy efficiency of existing technologies and energy services. The IPCC AR6 reiterates the need to take demand-side action and to consider all levels of the ASI-model (IPCC 2022a).

This ASI approach is indeed the guiding logic of activities related to the energy transition at the level of the Alpine Convention. The Energy Protocol and the Climate Action Plan 2.0 (CAP 2.0) in particular serve as starting points. With its Energy Protocol from 1998, the Alpine Convention was a frontrunner for implementing the principle of prioritising avoidance over shift and improvement. The hierarchy of the Energy Protocol is based on the approach "save energy – improve energy efficiency – develop a renewable energy system". The Contracting Parties want to promote more environmentally compatible energy use and focus on energy saving and the rational use of energy (Art. 5, paragraph 2, Energy Protocol). In addition, they have committed themselves to the promotion and preferential use of renewable energy sources under environmentally and landscape compatible conditions within the scope of their financial possibilities (Art. 6, paragraph 1, Energy Protocol). The topic of an overarching sustainable energy strategy in the Alps was given a stronger focus at the XII Alpine Conference in Poschiavo (September 2012) with the establishment of an Energy Platform for 2013-2014. This Platform came up with the vision "Renewable Alps".

Based on these starting points, the Climate Action Plan 2.0 (CAP 2.0), prepared by the Alpine Climate Board (ACB), proposes specific implementation activities in the field of energy with four dedicated implementation pathways (IP). As a priority, in 2020 the XVI Alpine Conference agreed to promote the creation of an Alpine-wide network of regional energy coordinators as well as pilot actions on climate-neutral lifestyles and business models. In addition, pathways to strengthen "Energy democracy" and the "Alpine administrations as forerunners and models for the energy transition" are included in the CAP 2.0. In combination, these pathways are also in line with the ASI approach. With the action on climate-neutral lifestyles and business models, the CAP 2.0 also considers *Avoid* strategies, which require more systemic changes and are thus more difficult to achieve (Novy & Barlow, 2022).

Embedding Alpine-wide action within the European framework

The activities developed at Alpine level support the European Union's ambitious framework for the energy transition. With the European Green Deal, adopted in 2019, the European Union committed itself to become a global leader in the fight against climate change. The overall goal is to make Europe the first climate-neutral continent by 2050.

To cut greenhouse gas emissions and to move towards a climate-neutral European energy system, reducing unnecessary energy consumption, switching to renewable energies, and improving energy efficiency are the key principles to be applied in policy and investment decisions. The European Green Deal and the "Fit-for-55" package which supports its implementation are strongly based on the "energy efficiency first" principle. The *Avoid* strategy is subsumed under this approach. The second pillar of the European framework is the decarbonisation of the energy system with a shift to renewable energies, including all energy consuming sectors.

Major targets for the deployment of renewables at national level, including sectoral targets and benchmarks, are defined by the revised Renewable Energy Directive (RED III), and efficiency targets are provided by the amended Energy Efficiency Directive. To deliver on the European Green Deal, the Commission proposed a revision of the Renewable Energy Directive in July 2021, raising the 2030 target to 40% (up from 32%) as part of the "Fit-for-55" package. Less than a year later, in

view of the Russian invasion of Ukraine and the need to further step up Europe's energy independence from fossil fuels, the Commission proposed to further increase this target to 45%. On 30 March 2023, a provisional agreement was reached on a binding target for 2030 of at least 42.5% but aiming for 45%. The new Directive (EU) 2023/2413, which makes these targets legally binding, entered into force in November 2023.

To speed up the roll-out of renewable energies, the European Council adopted an "Emergency Regulation" in November 2022 which aims at accelerating the permit-granting process and the deployment of renewable energy projects, with a focus on building-integrated solar installations and rooftop solar, repowering projects, heat pumps, and grid expansion projects (thus renewable energy projects on already sealed/developed land). This Emergency Regulation introduces the concept of "overriding public interest", which means that renewable energy projects could be presumed to have priority over other policy objectives when assessing the balance between the expansion of renewables and other environmental and societal interests, such as the protection of biodiversity or landscapes. This concept needs to be carefully interpreted – especially when considering the energy transition in sensitive environmental settings like the Alps, as the Emergency Regulation might have direct effects on the implementation of the Birds, Habitats and Environmental Assessment Directives (SEA, EIA). The frameworks established by the Emergency Regulation were prolonged for 12 months by the European Commission in November 2023 (valid until mid-2025).

The cross-cutting characteristics of the energy transition

Even if the complexity of decarbonisation and especially the energy transition as a key component is recognised, most of the time the energy system is still understood as a mono-sectoral and mostly technological 'single issue'. But looking at the many interfaces that accompany energy production, infrastructure and transport, storage and consumption, it is short-sighted to think about energy only in terms of a sectoral policy without considering the transformation of spatial and settlement structures, the consumption in buildings as well as mobility and transport, the distribution of activities in space (centralisation and dispersion), and the lifestyle themes linked to energy consumption.

When looking at the detailed steps of the pathways in the CAP 2.0, many interfaces with other sectors become visible. To support the implementation of the CAP 2.0, it thus seems crucial to take:

- A more detailed look at the interfaces between the sectors, identifying potentials for synergies (also with other environmental objectives) but also conflicts and trade-offs. Even if this cross-sectoral approach is relevant at the European scale, the need for action is especially high for the Alpine region, as an integrated energy transition affects many fields of action with specific Alpine characteristics: mountain agriculture and forests, water, tourism, transport and, of course, the links to spatial planning.
- A broader approach to energy governance and management of the energy transition: an integrated energy transition requires a more participative approach, as indicated in the pathway "Energy democracy". This collaborative approach also needs to be developed in view of the cross-sectoral interfaces.
- A closer look at synergies between the energy transition and climate adaptation measures, e.g. recognising that green infrastructure contributes to energy efficiency as well as energy saving or acknowledging that decentralised and small-scale renewable energy structures (like solar panels on buildings and sealed areas) increase climate resilience, disturbance tolerance, and security of supply.

Objectives of this input paper

The ACB has identified the energy transition as one hotspot for cross-sectoral climate action. During a first workshop held in March 2023, one discussion dealt with the topic of "governance" and

cooperation, i.e. which new structures – institutional ones but also loose associations and partnerships/alliances – are needed to implement the energy transition, especially at the interfaces with other sectors of relevance for the Alpine Convention. This input paper is the follow-up of this discussion and has the following objectives:

- Provide insights into the elements of an integrated energy governance which are most relevant for the Alpine Convention according to its past agreements and activities. These insights are presented along five "energy nexus", showcasing interfaces between the energy sector and other sectors with high Alpine relevance.
- Highlight case studies that successfully build new governance structures across sectors and policy levels in the Alps: What success factors can be identified? What barriers have to be dealt with along the way?
- Synthesise the main insights from the analysis, recommendations for further steps, and inputs for the political dialogue.

Energy transition in the Alps – Status quo: Where do the Alpine countries stand on the way to a climate-neutral energy system

For the European Union to become a carbon-neutral economy by 2050, decision-makers need reliable energy data to define, implement, and monitor the effectiveness of energy policies. The CERVINO platform has been created for this purpose to cover the Alpine region. It facilitates the exchange and visualisation of energy data within the Alpine territory. In this section, some of the main indicators of Alpine energy data – aggregated at EUSALP level – are highlighted.

Final energy consumption per country

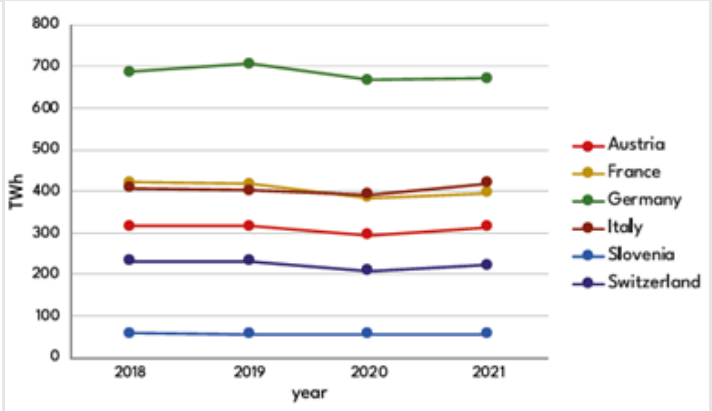


Figure 1: Final energy consumption per country in the Alpine region varies due to distinct economic structures and geographical factors. Despite the political efforts at European level, final energy consumption is not decreasing. More energy efficiency measures are required to meet the EU targets.

Renewable electricity capacity installed per country

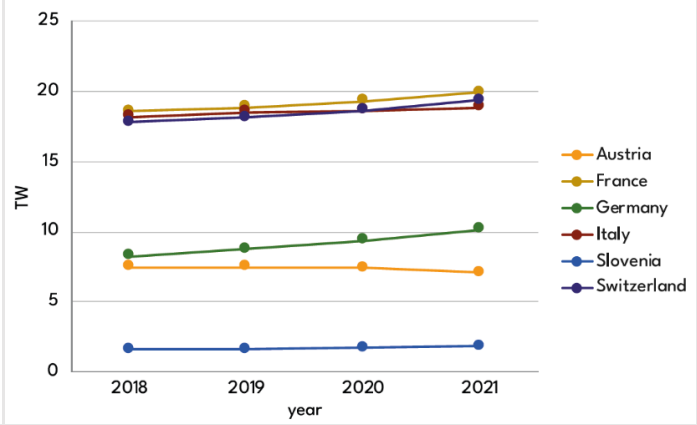


Figure 2: The Alpine region showcases a significant increase in electricity renewable capacity installed. The trend is promising and shows large political and financial support in the renewable sources throughout EUSALP.

Renewable electricity production by source

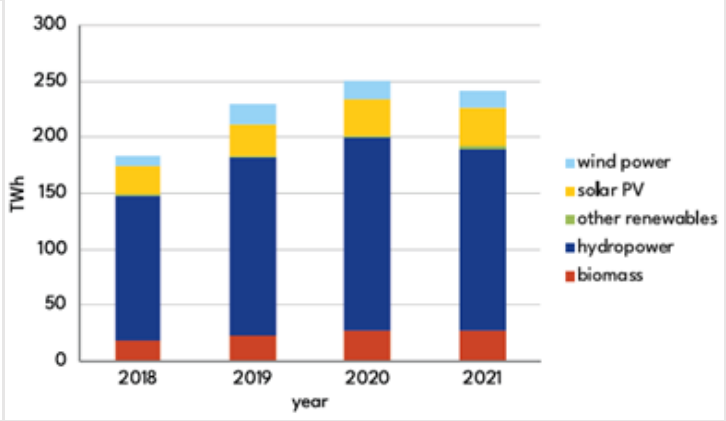


Figure 3: *Hydropower is the dominant renewable electricity source in the EUSALP perimeter, but further development is limited. Overall, the trend of renewable electricity production is positive, but seasonal fluctuations occur.*

The CERVINO platform has the potential to be used as an Alpine-wide decision-making tool to support decision-makers in their planning.

The energy data collection for the Alpine region 2023 was carried out as part of the CERVINO project, co-funded by the European Union. The data is accessible at:

https://alpine-energy-data.eu

cervino alpine energy data platform

2 Rethinking the energy governance frameworks in the Alps

The energy transition as complex problem

Over the last decades, increasing globalisation and connectivity, the need to deal with multiple crises as well as a shift between previously established geopolitical balances has increased complexity and thus uncertainty for stakeholders from all sectors and at all policy levels. As global megatrends are cross-cutting and affect economies, societies, and the environment in a far-reaching way, the development of strategic approaches cannot be addressed by a single organisation acting alone. Cross-sectoral and multi-level approaches are necessary to develop joint and coordinated approaches (Emerson & Nabatchi 2015, p. 7; Ansell & Gash 2007, p. 2; Buttkereit 2009, p. 17). Recent literature concludes that "the continuation of planning, policy-making, and negotiating for solutions within the existing set of institutionalised rules and habits complicates planning for an uncertain future" (Roggema 2020, p. 264-265).

Indeed, the transition towards an efficient and renewable energy system can be seen as THE complex transformation process because it implies deep changes in structural framework conditions that determine our current ways of living, working, and economic activities (APCC 2022). It requires new governance approaches beyond "institutionalised" and traditional governance frameworks to make "transformation by design" happen.

Looking at the Alpine Climate Target System 2050 as well as the CAP 2.0, the energy transition is one major societal transformation process on the way towards reaching the objectives of climate-neutral and climate-resilient Alps. As energy has little value in itself and rather creates added value in the different sectors of energy consumption (transport, buildings, industry, agriculture, etc.), the energy sector is by definition closely interlinked with other sectors. As a strategic action field, the energy transition requires a "consensus-oriented" decision-making which enables the different stakeholders to contribute to the transition (see Fligstein & McAdam, 2011, pp. 3; Ansell & Gash 2007, p. 2). At the same time, the energy transition also requires an adjustment of frameworks and processes in the planning-related sectors: for instance, considerations of the energy transition need to be mainstreamed into spatial planning, but also into nature and landscape protection.

Good governance approaches for the energy transition, however, should not only keep an eye on potential synergies but also the relevant trade-offs and conflicts, and how these can be overcome. Shifting away from fossil fuels towards local renewable energy sources leads to considerable changes in the overall energy system. The energy transition means that we substitute the often imported non-renewable energy sources with renewable, ideally local ones. This process of internalisation can lead to conflicts if not governed wisely: we have to use more local resources to satisfy the energy needs of public, private, and economic actors. We will need more energy production plants and a change of economic structures from large-scale energy companies to more local/regional structures. And we will need to question structural framework conditions that generate excessive and constantly increasing energy demand. Especially in the sensitive Alpine environment, this requires smart solutions which are acceptable for all stakeholders – considering local *know-how*, the characteristics of specific sites and locations as well as the needs of economic and social stakeholders. Involvement of civil society thus becomes a crucial factor for a successful energy transition.

Understanding governance in the frame of the energy transition – governance concepts and mechanisms

In general terms, governance is the sum of the many ways in which individuals and institutions, public and private, manage their common affairs. It is a continuous process through which conflicting or diverse interests may be accommodated and cooperative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions have either agreed to or perceive to be in their interest

(Commission on Global Governance 1995). Governance thus involves the "steering and coordination" of socio-political processes with the aim of managing interdependencies between different actors, levels, and sectors. A governance system is composed of elements such as: actors (organisations, individuals; public, private, intermediate), structures (bodies, working groups, networks), levels (government, administration, territorial), sectors, institutions (rules, agreements, arrangements), resources (financial, human, knowledge), and the processes connecting them (e.g., information, communication, decision-making, financing, participation, implementation, reporting) (Pütz et al. 2019). Energy governance is linked to the way that energy-related decisions are made and implemented; it especially relates to the horizontal interplay of sectors and the vertical interplay of policy levels (Pütz et al., 2019; Knieling 2016; Okereke et al. 2009).

In comparison to "government", governance includes processes of steering and coordination which transcend organisational boundaries, including the boundaries of state and non-state actors. Governance does not substitute the more regulatory, hierarchical, top-down forms of traditional governmental decision-making and planning. Rather, it widens this understanding by putting a much stronger emphasis on non-hierarchical, collaborative, participatory, voluntary and informal modes of collective decision making and steering as well as on facilitating, enabling and empowering actors. Both approaches are complementary rather than exclusive (Lexer et al. 2022). Accomplishing the energy transition requires both "good governance" and "good government" and improving the ways government and governance act together (ÖROK 2021). "Transformation by design" needs both, broad alliances across different actors, interests and social groups, and the "will to coerce" (Bärnthaler forthcoming).

The literature in political science differentiates between different governance concepts, which are all relevant when looking at the energy transition in the Alpine region:

- Multi-level governance: Here, the focus is particularly on the interdependencies of different policy levels (EU, national, regional, local) and their institutional structures (Möltgen-Sicking and Winter 2019, p. 8). Multi-level governance thus relates to the ways that actors at various levels interact, communicate, cooperate, and coordinate their decisions and actions (Lexer et al. 2022). Vertical coordination is a main means of achieving multi-level governance.
- Cross-border governance: In the Alps, the cross-border aspect of multi-level governance takes on a specific importance, given the many challenges and solutions which need to be addressed through a common approach.
- Cross-sectoral governance: This includes governance mechanisms that aim at a horizontal coordination between different economic or societal sectors and stakeholders. The existing boundaries of the sectors need to be overcome to better consider synergies and trade-offs.
- Collaborative governance: A governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programmes or assets (Ansell & Gash 2007, p. 3). This includes cross-sectoral governance and engaging stakeholders from different economic sectors as well as civil society.
- Institutionalism: Decision-making processes of actors are influenced by existing or developing formal and informal institutions. Formal institutions include legal frameworks and binding rules. Informal institutions, on the other hand, refer to social and societal norms that are used in decision-making processes.
- Governance of specific policy fields: Each policy field can be understood as a specific "policy arena" and has its own governance structures and mechanisms. The literature on environmental governance seems most relevant for the ACB and its work, and many of the

challenges connected with the energy transition can be explained by the specific characteristics of this policy field (e.g. the concept of public goods).

Expanding "government" through new forms of "governance" also requires innovative mechanisms of coordination and steering. "Hierarchy" mechanisms (i.e. political responsibility to establish framework conditions, rules, and specific policy instruments) alone are insufficient. This holds true for the process of the energy transition, as public policies alone have not been sufficient to achieve a comprehensive shift away from fossil fuels in the last twenty years. Also, the "market and competition" mechanism has so far failed to deliver an efficient solution, especially as it neglects to consider the specific needs of dealing with public goods and the many interlinkages with civil society.

The literature on collaborative governance identifies two other important governance mechanisms which, looking at the policy field of energy governance, seem highly relevant:

- "Knowledge" becomes a central resource in the governance discourse with regard to multi-level and collaborative governance. When dealing with complex problems, the extension of the knowledge base becomes crucial and "collaborative learning" appears important (Roggema 2020, p. 270)
- "Networks" can be understood as a "counter-model" to hierarchy and competition as they are based on trust, commitment, and reliability, with the focus on providing well-being for the group (Möltgen-Sicking and Winter 2019, p. 16). Roggema (2020, p. 280) states that "according to the multi-level perspective, change starts in the locus of radical innovations where novel configurations appear".

Management and leadership of collaborative governance processes

In accelerating the energy transition, the concept of collaborative governance allows the systematic analysis of the involvement of state and non-state actors in collective decision-making processes (Sedlacek et al. 2020, p. 2). As it includes initiatives which are introduced in a top-down manner (e.g. via regulations or financial incentives) as well as bottom-up initiated energy responses, the question of how to manage and lead collaborative governance processes arises. New formats, arrangements or mechanisms need to be developed to consider the different needs and cultures of the participating stakeholders because hierarchical leadership structures are not sufficient to enable a stronger participation of civil society and achieve broad social acceptance. At the same time, stakeholders from the public and private/economic spheres face difficulties in "tuning in" to specific participatory or co-creative approaches.

The literature on collaborative governance highlights the need to identify key stakeholders ("change agents") who can serve as mediators and moderators in the collaborative process (Sedlacek et al. 2020, p. 2). Also, coordinative facilitators are needed to better organise the multi-stakeholder communication and collaboration processes. In some cases, new structures may be needed, which can mean a reorganisation of existing structures or at least additional coordinative facilitators (Sedlacek at al. 2020, p. 10).

Leading questions for the ACB paper on energy governance

Considering this short background on energy governance, the specific challenges and characteristics, and the different governance types and mechanisms, the following three overall topics and leading questions can be formulated for guiding this paper of the ACB:

1. Moving from "government" to "governance" and improving their interplay in the field of the energy transition: With the illustration of the five "energy nexus" and especially the insights from the best practices, we want to gain a better understanding of success factors for new governance types.

- Which governance types and specific formats have proven successful to accelerate the energy transition in the Alps? What level of institutionalisation can be seen in these new formats?
- What success factors can be identified to improve multi-level and cross-border governance?
- How can collaborative governance contribute to the energy transition in the Alps? What role does the interaction between different economic sectors, public authorities and civil society play?

2. Governance mechanisms: Which mechanisms beyond the more classical mechanisms of "hierarchy" and "price and competition" are used in successful governance approaches in the Alps? Which specific insights can be derived on making use of the governance mechanisms "knowledge" and "networks"?
    - The role of knowledge: How is the mechanism of "knowledge" considered in the different government approaches? What role does collaborative learning play to enable a better use of the broad level of local and contextual know-how?
    - The role of networks: What role can the more informal and loose networks play? How can they be used effectively to improve local commitment and acceptance?
3. Management and leadership: What insights can be derived for successfully managing and leading collaborative energy governance, especially when it comes to integrated approaches across different sectors?

Contributions of the "spotlights" in this paper

This paper looks at five different "energy nexus", each of which constitutes an important interface between the energy sector and another sector with specific Alpine relevance: Energy and tourism, Energy and mountain agriculture, Energy and spatial planning, Energy and water as well as participation and financing of the energy transition.

For each "energy nexus", several case studies (grey boxes) provide insights into the above-mentioned leading questions and the overall objectives of the paper. In addition to the experiences from the case studies, information on ongoing "Governance Challenges" (blue boxes) provides insights into implementation barriers and solutions from experts and from recently initiated projects. The analysis highlights that finding suitable case studies differed between the energy nexus; it was particularly challenging for the ACB group to identify adequate case studies for the energy nexus where conflicts regarding nature and landscape play a role. This was especially the case for the energy and water nexus.

The case studies and "governance challenges" were selected on the basis of a survey with ACB members and the broader ACB community as well as desk research and selected expert interviews with the project team. The case studies were not selected on the basis of specific best practice criteria or thresholds. They need to be understood as "spotlights" on specific activities, highlighting many success factors, but also the difficulties in implementing cross-sectoral approaches.

For each nexus, the green boxes include additional information/food for thought.

Further inspiration on energy governance and its application in the Alpine region:
At Alpine level, several projects and activities have already analysed issues related to energy governance. Most of them focused on specific governance elements (e.g. participatory approaches or multi-level governance) but were still embedded in a broader and integrated perspective:

- Good practice examples for land use and nature conservation-compatible renewable energy projects in the Alps (https://www.alpconv.org/en/home/topics/energy/, 2016): This report analyses participatory processes that involve civil society and the general public and identifies factors for successful participatory formats.
- IMEAS ASP Project – Integrated and Multi-level Energy models for the Alpine Space (https://www.alpine-space.eu/project/imeas/): Managing the transition to sustainable energy plans holds many challenges for all governance levels. The interdisciplinary project team of IMEAS developed a methodology and practical guidance for the creation and integration of roadmaps based on multi-level approaches connecting actors from different economic sectors, governance levels, territories, and countries.
- INOLA Project – "Energiewende gemeinsam gestalten" (Shaping the energy transition together) (https://inola-region.de/hp1/Startseite.htm): This project develops a regional concept for an integrated energy transition in the German "Oberland" region.

If you are looking for some scientific background:
The following scientific articles are recommended for more detailed background information on collaborative governance in general and integrated energy governance in particular:

- Ansell & Gash (2007): Collaborative Governance in Theory and Practice. In: Journal of Public Administration Re-search and Theory 18 (4), p. 543–571.
- Roggema (2020): Planning for the Energy Transition and How to Overcome the Misfits of the Current Paradigm.
- Pütz, M. et al. (2019): Climate adaptation governance in the Alpine Space. Transnational

3 Energy nexus 1: Energy and tourism

The CAP 2.0 already highlights the role of tourism as key economic activity for a large share of Alpine municipalities and illustrates its many interfaces with other sectors. Indeed, tourism itself is not a clearly defined sector of the economy, but rather a form of consumer demand that affects various sectors, in particular the hotel and gastronomy, transport, and retail industries in the destination regions. This means that energy demand in the tourism sector must also be considered through these sectoral perspectives, which has indeed already been done in the Alps in specific previous activities of the Alpine Convention:

- Energy demand in hotel and gastronomy: Under the German Presidency of the Alpine Convention 2015-2016, an "Alpine Energy" online platform for knowledge transfer on energy efficiency in the hotel and gastronomy businesses was developed, providing information on funding opportunities as well as many tips for energy savings. The "ClimaHost" contest, which was organised in 2019 and 2022, rewarded good practices in mitigation and energy management in Alpine accommodation and restauration structures.[1]
- Tourism mobility: The Transport Working Group developed several activities on sustainable mobility that included specific insights into tourism mobility. For example, the report "Reduction of Mobility Demand and Shift to Environmentally Sustainable modes"[2] from 2020 showcases many projects linked to tourism mobility. In addition, the 2022 report on the "Potential analysis of existing and new technologies for the promotion of a sustainable passenger transport in the Alpine region" illustrates the role of alternative vehicle technologies and information and communication technologies (ICT) in tourism mobility (e.g. electric buses, autonomous vehicles, integrated information and ticketing).[3]

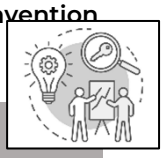
However, these activities focused on the level of specific stakeholders, i.e. individual gastronomic businesses and mobility service providers or were limited to the sectoral approach. A holistic point of view on how the energy transition can be better achieved in Alpine tourism regions has not yet been investigated. With the case studies, we aim to shed some light on innovative approaches in model regions and highlight their main insights and lessons learned about how to improve energy governance at the interface of energy and tourism.

These insights will support further activities for bringing to life the implementation pathways of the CAP 2.0. For example, the case studies from the Pinzgau Region and Les Orres provide insights into developing the pathway "IP_Tou1: Development of a coordinated vision for climate-neutral and climate-resilient Alpine tourism". At the same time, they also support the energy pathways as they highlight specific solutions for setting up cross-sectoral energy management systems in tourism regions.

[1] Please refer to the latest stock-taking report of the ACB for more information on these activities ##Link##

[2] https://www.alpconv.org/fileadmin/user_upload/Organisation/TWB/Transport/Transport_Annex2_AT-CH_Reduction-of-mobility-demand.pdf

[3] https://www.alpconv.org/fileadmin/user_upload/Organisation/TWB/Transport/3-Report_technologies_FIN.pdf



Case study: "Towards 100% renewables in the Pinzgau tourism region"

The Pinzgau is a model region for achieving the energy transition in tourism regions. The main goal is to shift to a 100% renewable energy system by 2040. The model approach was developed through three steps which were each linked to funding programmes at national level in Austria: the first project "VorTeil" was a scoping study on transition processes in tourism regions with a strong focus on stakeholder analysis. The following research project "CleanEnergy4 tourism" (CE4T) focused on ski lift operators launching the transformation process. In particular, the project analysed the potential for maximising energy efficiency, utilising flexibility options, and optimising the integration of renewables. This project developed a new level of trust and information (e.g. energy scenarios and an energy monitoring dashboard) so that further stakeholders (local energy providers, a transport service company, municipalities, and regional authorities) were motivated to join the third project "100% Erneuerbarer Pinzgau" (100% renewable Pinzgau) under the programme "KEM-Modellregionen" (climate and energy model regions of the Austrian Climate and Energy Fund). In a fourth project, all stakeholders involved developed a scoping plan for implementing a living lab (under the Austrian TANZ programme).

Main insights/lessons learned for improving governance structures and mechanisms

- The governance mechanism "network/trust" was used effectively: Starting with a "core group" of key stakeholders with an important economic and political function in the region helped to develop a good level of trust and commitment.
- Collaborative governance played an important role throughout the activities: Co-learning and co-creation was at the heart of all activities, e.g. when developing relevant tools for better managing the regional energy system, developing a common narrative to guide activities or using methods of co-creation to identify potential activities for the living lab.
- The project also provides insights for successful multi-level governance: It shows that a starting point/initial impulse often depends on public programmes (at national or regional level). In the Pinzgau, the CE4T project provided a professional framework for stakeholders to approach the topic and to develop first strategic approaches. Moving towards implementation, the local level became more and more important as local knowledge was necessary to bring all relevant stakeholders on board and to develop customised activities.
- Cross-sectoral governance: A smart approach to improve understanding and co-learning between the different economic sectors but also between the public and private sphere was the development of business models for each of the identified activities: the business models give specific insights into the future role of different economic stakeholders and thus address the "fear" of economic uncertainties.
- Managing the governance structure: For the living lab, a new governance structure is proposed to provide a "caretaker function", i.e. a managing structure with a contact person foreseen as an "information hub".

"The stakeholder analysis is crucial for launching new cross-sectoral energy initiatives. You need to identify key stakeholders who can serve as a "crystallisation point" and door-opener. In our case, the ski lift operators were the key stakeholders who launched the regional transformation process."

Dr Tanja Tötzer, project manager, Austrian Institute of Technology

Managing obstacles along the way: Obstacles and barriers linked to stakeholder involvement were successfully overcome through the smart step-by-step approach of the activities. In the final step, however, funding is becoming a hurdle as the implementation of the living lab requires a considerable co-funding from the participating municipalities.

Activities with a link to the tourism pathways in the CAP 2.0: Offers real tests on the role of energy communities (for tourism operators), lead project on climate-neutral tourism packages, several training and capacity-building formats for tourism operators.

Sources:
Interview with Tanja Tötzer (25.07.2023), Project manager, Austrian Institute of Technology (Mail: tanja.toetzer@ait.ac.at)
Project websites: VorTeil (ffg.at), CE4T (ffg.at), 100% erneuerbarer Pinzgau » Klima- und Energie-Modellregionen (klimaundenergiemodellregionen.at) and TANZ (ffg.at)

Case study: "Developing a smart grid for tourism regions – the Living Lab "Les Orres"

Les Orres is one of the major ski resorts in the Southern French Alps and was the first resort to conduct a full energy audit of a ski resort and develop an integrated energy management system for ski operations (as part of the Interreg ALPSTAR project). When joining the Smart Altitude actions in Les Orres, new actors benefit from some financial incentives, which is important to lower barriers to participation. However, it is even more critical to demonstrate that the business model is sustainable even without such incentives. To enable this approach, Les Orres and its partner, the energy company EDF, placed a strong focus on providing the initial technical set-up for a smart grid approach: with the help of the smart grid, energy production and energy demand in the resort can be balanced, and peak demand (with high energy prices) can be reduced through demand management (load shedding) measures (e.g. by slightly reducing the speed of the ski lifts, or by temporarily disconnecting the base heating in administrative buildings without affecting staff comfort). The smart grid approach required the bringing additional stakeholders on board to create more flexibility in the system. This process, as part of the Smart Altitude project, brought many insights for energy governance.

Energy key facts:
- Electricity consumption reduced by 20% (i.e. 121 MWh/year)
- Savings of up to 25% of energy bills (and even higher in specific fields such as public lighting)

Main insights/lessons learned for improving governance structures and mechanisms

- Multi-level governance: At a local level, there is often a gap between the interest in getting involved in energy management and the technical capacity. To overcome this gap, programmes/projects at EU or national level are necessary – the Interreg projects ALPSTAR and Smart Altitude made this possible for Les Orres and the other participating tourism resorts. After the initial starting point, the projects "on the ground" can then deliver insights back to national and EU level about relevant barriers and recommendations for overcoming them. For example, in Les Orres, the specific regulation on the self-consumption of electricity was seen as hurdle and recommendations were addressed to national-level decision-makers.
- Cross-sectoral governance: The smart grid approach requires the inclusion of stakeholders from different sectors: the more energy consumers are included in the grid, the higher the flexibility. This, however, required a strong level of understanding to be built about the different stakeholders. In Les Orres, especially the interface between the energy system and housing/buildings needed smart approaches for engagement (see obstacles below).
- Mechanisms: The governance model in Les Orres builds strongly on the "price" mechanism with the development of business models and the financial argument as a first entry point. Once stakeholders have joined the approach, additional tools are used to strengthen engagement and trust.
- Managing the governance structure: Due to the technical approach in the "Les Orres" case study, the operator of the smart grid SEMLORE is the main manager of the governance structure.

"Setting up an Alpine mountain id is a complex task. The more energy consumers and producers are included in the grid, the higher the flexibility. But as the inclusion of additional stakeholders brings with it new hurdles, the management of the project becomes more and more challenging."

Managing obstacles along the way: The project allowed the identification of a number of barriers to the creation of a full mountain smart grid: 1) setting up green energy production (PV, hydropower) was initiated, but exceeded the timeline of the project; 2) regulatory constraints – at least in France – in self-consumption settings made it impossible to adopt a fully operational smart grid approach; 3) private collective housing in ski resorts (a major energy consumption sector in French ski resorts) requires a decision by the board of owners to join the proposed participation in a "smart grid" project – something very difficult to obtain. Single housing operators and the municipality (public buildings and premises) were integrated, allowing the benefits to be measured that could be expected from a smart grid approach.

Activities with a link to the tourism pathways in the CAP 2.0: Les Orres is a case study for the pathway IP_E3 "Supporting low-carbon/low-energy Alpine lifestyles and business models" and insights for IP_Tou2 "Coaching and capacity building for climate proofing Alpine tourism".

Sources:
Interview with Yann Bidault, YB solutions (01.08.2023), Project manager of Smart Altitude (Mail: ybsolution@sfr.fr)
Deliverable on Activity A.T2.3 "Smart Mountain Grid" Living Lab (Les Orres) Online: https://www.alpine-space.eu/project/smart-altitude/ and toolbox: https://smartaltitude.eu/

Insights into "governance challenges": Developing the Smart Ski Resort approach
Thoughts from Stephan Juen, founder of the Smart Community association

The Smart Community Association wants to transfer the Smart City approach to ski resorts and tourism areas under the term Smart Ski Resort. On the way there, one has to deal with a multitude of obstacles. Some solutions and thoughts on innovative/pragmatic approaches are presented in this short interview with Stephan Juen.

ACB: What new challenges did you encounter when you transferred the smart city approach to the ski resort level?

Stephan Juen: The economic perspective plays a very strong role at the ski resort level. A commitment must be financially attractive in the short term. That's why we initially focused on renewable energy generation projects. Ski resorts have a very high potential here. Short-term financial support, e.g. in the form of seed capital, would help overcome the initial phase with high demand for external support.

ACB: What are the main obstacles in introducing the Smart Ski Resort approach?

Stephan Juen: In addition to the financial obstacles, we encounter many regulatory obstacles. For example, the framework conditions for renewable energy communities in Austria do not allow the involvement of large companies. Since many destinations fall under the definition of a large ski resort, players that have a particularly high potential are excluded.

ACB: In one of your case study regions - the small ski resort in Heuberge/Grisons - you tested a co-design process as a starting point for a Smart Ski Resort. What was your experience with this process?

Stephan Juen: In this co-design process, project ideas are further developed with the local stakeholders. After the process, the most important pillars on which a project submission can be prepared are identified. For example, with the Heuberge we were able to develop two project ideas together with all relevant stakeholders: small wind turbines on the poles of a ski lift and the conversion of diesel shuttle buses to new electric buses, combined with a local energy community to generate the necessary electricity. We have already received a funding commitment for the e-mobility project from the responsible Federal Office of Transport.

ACB: What innovative solutions are necessary – from your point of view – to overcome the barriers?

Stephan Juen: Above all, we need a more targeted framework for the development of new energy communities in ski resorts – also allowing energy communities that reach across municipal boundaries. But we also need to work on social innovation, e.g. to better enable pioneers to develop their ideas. People feel pressure to act and need better support to take the first steps, especially in smaller ski resorts and in lower and medium altitude areas, which are already facing the effects of less snow. Financial support for the elaboration of these first steps would be very beneficial. Fortunately, the co-design process for Heuberge was funded by the Innovationbooster Swiss Smart Cities. Without seed money funding, it is hardly possible to bring together the relevant stakeholders and work with them to collect ideas and formulate a project from them. There is potential co-funding of several hundred thousand euros at the EU level, but it is (almost) impossible to get 20,000 euros in a simple way to build a project foundation at local level. An already existing willingness to commit to a project could be developed further, as in the case of the ski resort Heuberge/Grisons.

Source: Interview with Stephan Juen, founder of Smart Community (13.9.2023)
(Mail: stephan@smartcommunitysuisse.ch)

Main insights: common success factors and features with Alpine transfer potential

The case studies and analysis of ongoing "governance challenges" provide some insights into common success factors with the potential for transferability throughout the Alpine region. Some first insights can also be gained into how the Alpine Convention can support this transfer:

- Initial impulse through national/EU programmes: Even if stakeholders see the need for action, they often lack the capacities/know-how to take the first steps to launch integrated transformation processes. In the case studies, national and/or European funding programmes have provided a "safe space" for starting cooperations, accompanied by experts from the field.
  → Initial coaching sessions would be necessary to help tourism regions along their way
- Start with key stakeholders: In both analysed case studies, the cable car operators as key economic stakeholders were the starting point for the cooperation. They have a comprehensive knowledge of the local context and a strong network and can thus serve as facilitators and moderators for the further process.
  → To roll-out activities at Alpine level, work more strongly with cable car operators and enable exchange between them
- Look at vulnerable territories: Many Alpine regions at lower and medium altitudes that already face challenges from reduced snow levels have launched strategic approaches for their regional transformation. These regions could be supported by the Alpine Convention, especially to identify the territorial added value of linking the energy transition to other transformation processes.

Some highlights from activities in Alpine towns:
The members of the Alpine Town of the Year Association are committed to the energy transformation and have also launched activities related to the decarbonisation of their tourism activities:

- Brixen: Certification of the Global Sustainable Tourism Council, including the annual calculation of the carbon footprint and the organisation of major events as "Green Events" (further information is available here).
- Tolmin, Soča Valley: Received the Slovenia Green Destination Gold label; the sustainability report highlights many measures dealing with tourism mobility and energy use.

Further inspiration and food for thought:
If you are interested in learning more about successful energy governance at the interface between energy and tourism, these initiatives and projects can offer additional information and impulses:

- Climate-neutral tourism region Grisons: Information on how to put tourism destinations on a path towards climate-neutrality, including guidelines and step-by-step information: https://klimdest.fhgr.ch/
- Results from an online workshop on renewable energies in ski resorts (only in German): https://www.smartcommunity.pro/smartskiresort
- The project "Percorsi itineranti intorno al Monte Bianco": where a public-private partnership realised a project to discover and travel around the Espace Mont-Blanc in an environmentally sustainable way: https://www.grandcombin.vda.it/ProgettiedIniziative/ProgettiEuropei/Itinerance/Presentazioneservizio/tabid/4207/Default.aspx

If you are looking for some scientific background:
The following paper provides a good overview on energy governance in tourism areas:

- Sedlacek et al. (2020): Collaborative governance in energy regions - Experiences from an

4 Energy nexus 2: Energy and mountain agriculture

The CAP 2.0 underlines the importance of moving mountain agriculture towards an innovative "laboratory" in which climate-neutral farming and production techniques are being tested. In this context, the Alpine Conference has recognised the importance of further linking mountain agriculture with other sectors to ensure synergies. Energy efficiency and the expansion of renewable energy is crucial in this context.

The Working Group on Mountain Agriculture and Mountain Forestry has contributed to the concrete operationalisation of the Alpine Climate Target System 2050 and the CAP 2.0 in the last few years and has already taken an ambitious cross-sectoral approach in its activities. One past activity looked at the definition of new connections and interactions between sustainable mountain agriculture, the sustainable management of mountain forests, tourism, and biodiversity in an Alpine context, as well as developing sustainable urban-rural relationships. The Working Group also aimed to analyse and strengthen sustainable value chains in the forestry and farming sectors by involving the relevant actors, thus taking a collaborative governance approach. A focus was also placed on linkages between mountain farming and forestry and the urban centres.

Agricultural activities, by nature, interact with the atmosphere in multiple ways: they are sources of greenhouse gases due to the use of fossil fuels as energy and emissions from livestock, and are linked to chemical processes in plants and soils. At the same time, agricultural lands can also act as sinks of greenhouse gases in overground and underground biomass.

Mountain agriculture and renewable energy are often intertwined in the Alpine region: mountain farming combined with the installation of renewable energy system (RES) plants ("prosumers" = simultaneous producers and consumers of energy) can improve, in terms of technical and financial viability, energy supply in remote regions through the establishment of off-grid systems, microgrids, and energy storage solutions. Beyond self-consumption, the energy produced can be fed into the grid to reduce the carbon intensity of the regional/national electricity mix.

Additionally, farmers in mountainous regions can introduce energy-efficient agricultural equipment, such as electric tractors or farm machinery, which can be powered by renewable energy sources. This reduces the environmental impact of farming operations and lowers operational costs.

The decentralised energy production of RES contributes to the economic development and attractiveness of mountain regions through skilled job creation and the diversification of income.

The following case studies were chosen to shed light on ongoing governance practices as well as challenges in the nexus of "energy and mountain agriculture". In particular, the examples aim to raise interest in diving further into the complexity of local energy production in the hands of mountain farmers. This approach could strengthen the autonomy of Alpine regions with the ultimate goal of lowering the energy dependency of mountain areas and fostering their resilience vis-à-vis external energy shocks.

The insights ought to give inputs into the implementation of the pathways of the CAP 2.0 in a cross-sectoral manner. In particular, the examples demonstrate how climate-neutrality in agriculture can be nudged through concerted efforts. Also, the case study of the governance challenge to accommodate "agrivoltaics" into existing policies intends to point out new possible fields of actions in the framework of the CAP 2.0. This is especially applicable for the intended support for pilot actions for decentralised energy solutions in the Alps connected with the piloting of low carbon business models as envisaged in the "energy pathway".

Case study: Climate-neutral agriculture in the Canton of Grisons,

The project "Klimaneutrale Landwirtschaft Graubünden" (climate-neutral agriculture Grisons) is a pioneering initiative focusing on the development and implementation of sustainable agricultural practices in the Swiss canton of Graubünden. The main aim of the project is to introduce and test innovative practices and technologies to reduce greenhouse gas emissions in the agricultural sector.

A wide variety of innovative agricultural practices are being tested, reflecting the multiple ways in which agricultural activities and the climate interact.

With specific reference to the energy nexus, the pilot farms are implementing, for instance, measures to substitute diesel fuels with sustainable fuels; install combined heat and power (CHP) plants for heat and electricity; test innovative PV power plants and biogas facilities; produce plant coal; acquire electricity-driven machines; optimise energy consumption when using machines. The experiences collected from these projects allow a proper evaluation under consideration of environmental, technical, and economic viability.

Energy key facts:

Agriculture contributes 12% to the Canton's greenhouse gas emissions. Considering current and projected trends in industry and traffic sectors, agriculture could become the biggest greenhouse gas emitter in the future.

Main insights/lessons learned for improving governance structures and mechanisms

- Multi-level governance: The initiative joins forces with institutions from different levels: farmers, agricultural support organisations, cantonal government, academia. All of them contribute to the steering of the project and support it within their specific fields of competence. The cantonal government provides the policy framework and vital funding for the initiative.
- Collaborative governance: The bottom-up approach from the start of the initiative proved to be crucial for the success and broad acceptance of the project; the impetus for the project came from the grassroots, in particular from committed organic farmers in the canton. This commitment fitted well with the climate strategy of the canton of Graubünden, which was developed at the same time, which is why the project was positively received and financially supported. Communication, education, and knowledge exchange were central in ensuring broad participation – in fact, 130 farms competed for 50 spots to become pilot enterprises.
- Cross-sectoral governance: Throughout all activities, the various actors involved exchange ideas and experiences and directly feed into the project steering. Activities are clustered along two main areas: compulsory area A includes five days of training per year, for which farmers receive financial compensation. In optional area B, planning and implementation of pioneer projects are carried out on the test farms. It is important that these are selected by the enterprises themselves. Communication and public relations work are also an integral part of the project.
- Mechanisms: The project is successful by creating partnerships between farmers, farmers' associations, government agencies, research institutions and other relevant stakeholders to support the implementation of the measures and mobilise resources for the project. Capacity building is strengthened through training, and a strong engagement from farmers is ensured by adopting a consistent bottom-up approach and the competitive selection process. Financial compensation for enterprises is crucial.

"We let the pilot enterprises test new practices in absolute freedom. We want to see whether practices that show promising results in theory do work in practice. Failure is permitted."

Gianluca Giuliani, project manager "Klimaneutrale Landwirtschaft Graubünden", Flury & Giuliani GmbH

Managing obstacles along the way: Monitoring the effectiveness of pilot actions in terms of greenhouse gas emissions saved, or energy saved, is not always easy. The implementation of the pilot

projects exhibits significant variations in both their nature and effectiveness. Rather than assessing them solely in terms of numerical emissions reductions, their evaluation should be based on factors such as feasibility assessment, socio-economic sustainability, know-how improvement and transfer, and other relevant criteria.

Activities with a link to the agriculture pathways in the CAP 2.0: The case study highlights how a bottom-up approach and a network of local and small-scale farmers can implement the pathways "IP_Agr2: Moving to organic and climate-friendly methods in Alpine farming".

Sources:

Catalogue of ideas "Klimaneutrale Landwirtschaft Graubünden" (German language only): https://www.klimabauern.ch/ideenkatalog

Pioneer enterprises: https://www.klimabauern.ch/portraits

Interview with Gianluca Giuliani, project manager "Klimaneutrale Landwirtschaft Graubünden", Flury & Giuliani GmbH (07.09.2023) (Mail: gianluca.giuliani@flury-giuliani.ch)

"It is crucial to recognise that emissions reduction from agricultural activities represents just one aspect of a more comprehensive perspective. We must also emphasise the interconnectedness between agriculture and factors like biodiversity, landscape protection and preservation, climate resilience, and more."

Gianluca Giuliani, project manager "Klimaneutrale Landwirtschaft Graubünden", Flury & Giuliani GmbH

Case study: Agricultural chambers as knowledge providers and facilitators of the energy transition

The "energy efficiency in agriculture" platform is an initiative by Energie Steiermark and the Chamber of Agriculture of the Land Steiermark (Styria). The objective of the cooperation is to advise agricultural businesses on how to become more energy and resource efficient by making greater use of renewable energy technologies and advancing the energy autarchy principle. The platform also focuses on the green mobility transition in agriculture, a sector that will play a key role in shifting the agricultural sector towards climate neutrality.

Transregional governance: The regional chambers of agriculture in Austria collaborate in a close network. In the energy field, they focus on the creation of synergies to diffuse good practices and knowledge through the creation of joint communication materials within the network (brochures, videos, social media content). The network is also a pool of actors to start common cooperation and research projects.

Collaborative governance: Chambers of agriculture act as facilitators of working groups. Between 20 and 40 farmers from the same branch of agriculture cluster together to form a working group. The working group leader is a professional figure working in the chamber of agriculture. The working groups serve as "safe havens" to discuss obstacles and problems and to find common solutions. The networking of the farmers is an important tool to transfer knowledge. Site visits, seminars and conferences with a technical focus on specific areas of agriculture play a very important role.

"Three important priorities will emerge in the coming years in the intersection of agriculture and energy: Increasing the energy efficiency of farms by taking a closer look at the overall energy concept, the practical and technical implementation of regional energy communities and the mobility transition for commercial vehicles.

Thomas Loibnegger, Chamber of Agriculture, Land Steiermark

Sources:

Interview: Thomas Loibnegger, Chamber of Agriculture Land Steiermark, head of project "Energieeffizienz in der Landwirtschaft"

Contact: Thomas.Loibnegger@lk-stmk.at

Further details: http://www.e-landwirtschaft.at/

Insights into governance challenges: Accommodation of agrivoltaics in a cross-sectoral and multi-level policy design

Agrivoltaics is a multi-land use method that combines agriculture with the production of solar energy. Some test areas have been installed over the last years. Yet there is no clear definition of agrivoltaics in regional, national, and European legislation. Agrivoltaics regulation is complex due to the interlinkages of agriculture, energy, and economic policies and their matching with landscape protection and resource management. PV panels can have a positive impact on the yield of crops and plants as well as soil quality and contribute to a more efficient water management due to their protective shading effects and shielding from extreme weather events. At the same time, Agri-PV diversifies the income of local farmers that sell the electric energy to the grid and shows untapped potentials for local smart grid development in rural and mountain areas.

Agrivoltaics creates conflicts of interests regarding the reconciliation of landscape protection. This is even more the case for sensitive Alpine landscapes. The Agri-PV sector needs further research and piloting and a common vision to prevent greenwashing and to create acceptance in affected societies.

"The pivot conflict in agrivoltaic policies concerns the combinatorial possibilities of technology applications in agriculture and their effects on the landscape".

Wolfram Sparber, Head, Institute for Renewable Energy, EURAC

Sources:

Interview with Wolfram Sparber, Head, Institute for Renewable Energy, EURAC.
Fraunhofer ISE, Agrivoltaics: Opportunities for Agriculture and Energy Transition, A guideline for Germany, April 2022.
Chatzipanagi, A., Taylor, N. and Jaeger-Waldau, A., Overview of the potential and challenges for Agri-Photovoltaics in the European Union., EUR 31482 EN, Publications Office of the European Union, Luxembourg, 2023, ISBN 978-92-68-02431-7, doi:10.2760/208702, JRC132879.
Technologie- und Förderzentrum im Kompetenzzentrum für Nachwachsende Rohstoffe (TFZ): Agri-Photovoltaik – Stand und offene Fragen, Berichte aus dem FTZ 73, 2021.

Insights into governance challenges: Integrating innovative energy solutions in traditional agricultural buildings – The Alpine pasture Monte Fontana Secca Col de Spadaròt

The Alpine pasture Monte Fontana Secca and Col de Spadaròt – a 150-hectare mountain meadow in the Monte Grappa massif is currently being restored to once again take up its productive, ecological and historic-cultural function. The project is being implemented by the Fondo per l'Ambiente Italiano, the National Trust for Italy – thus including an educational function at the heart of the project. From 2025 the pasture will serve as an educational and training centre for the public, pupils and students dedicated to mountain agriculture and pastoralism: a heritage of culture, knowledge and practices, which the FAI intends to preserve and recount. The restoration not only includes the reactivation of the landscape and historical buildings (bringing the typical Burline cows back to pasture), but it will also serve as lighthouse projects for an autonomous energy and water supply in mountain agriculture.

Innovative energy solutions – Building-Integrated PV

As the site will be restored to its historic-cultural function, the visual impact of a self-sustaining energy system should be minimised. After a detailed evaluation, the project will now build on Building-Integrated-Photovoltaics (BIPV) applied to the roof (250 square metres of PV "film" on the

roof, 29.4 kWp), an integrated battery for storage and an additional generator for electricity production.

Cross-sectoral governance – Agriculture, energy, and nature protection go hand-in-hand

- **Multi-level governance:** Regarding governance, the project followed a territorial multi-level approach, creating a territorial relationship between the main subjects and stakeholders in the area with the objective of enhancing the Grappa area through the recovery and promotion of local mountain pasture activities. The National Trust for Italy (FAI) together with the Municipality of Quero Vas developed a strong visionary picture for the mountain pasture that also mobilised actors and funding beyond the affected area.
- **Including local knowledge is key:** The National Trust for Italy (FAI) has chosen to include in its working group local professionals who have a profound knowledge of the issues involved in intervening at high altitudes and the importance of a design that starts from the local context. This has enabled FAI to approach restoration work with a wealth of indirectly acquired skills that has been fundamental for an effective intervention that respects the area.

Sources: https://fondoambiente.it/news/monte-fontana-secca-il-progetto-di-restauro-e-valorizzazione

Main insights: common success factors and features with Alpine transfer potential

The case studies and "insights into governance challenges" shed some light on common success factors with potential for transferability throughout the Alpine region. Also, some first insights can be gained on how the Alpine Convention can support this transfer:

- The agri-PV case study illustrates the challenges of the further expansion of renewable energies in cross-sectoral governance structures. Increased coordination at the trans-regional and transnational levels can contribute to solving the governance challenge of accommodating agri-PV into a shared legislative and normative framework. In particular, the transfer of knowledge between technical pilot projects appears to be of the utmost importance. Technical certainty gained through piloting and testing in this area will facilitate policy-making and legislative processes.
- The case study "Climate-neutral agriculture" illustrates the single steps required to set up a successful cooperation project from the bottom up, and the challenges which are encountered in a complex field such as mountain agriculture. The success of the bottom-up approach from farmers, coupled with the scientific and financial support system in place, showcases the potential for transfer to other mountain regions.
- The case study on the Alpine pasture on Monte Grappa highlights some questions that emerge at the interface between the energy transition and the conversation of cultural and natural heritage.

Further inspiration and food for thought:

- If you are interested in learning more about pilot applications linked to Agri-PV, follow this project:
  SYMBIOSYST investigates innovative systems that go beyond the idea of solar energy production and agriculture as two separate sectors and find a new synergy where land and crops and PV can have a mutually beneficial relationship. The project develops different PV solutions for open field and greenhouse agriculture and their demonstration in four agricultural scenarios in three different countries.
  www.sybmiosyst.eu
  Contact: david.moser@eurac.edu
- If you are interested in a study regarding the expected benefits, advantages and disadvantages of Agri-PV, read the scientific output of this small-scale study in Bavaria:
  Agri-Photovoltaik – Stand und offene Fragen, TFZ-Bericht 73, 2021. https://www.tfz.bay-

5 Energy nexus 3: Energy and spatial planning

Spatial development and spatial planning on all levels have a considerable influence on every dimension of the energy transition. This comprises energy demand, energy consumption and energy efficiency of settlement and mobility systems, the utilisation of spatial potentials for decarbonised energy production, storage and transmission, the opportunities for supply with renewable energies, and the climate resilience and sustainability of the energy system. Indeed, the consideration of energy in formal and informal planning processes and instruments (from local development planning to urban planning, urban design competitions and infrastructure planning) has been an important topic at national and European level (Rehbogen und Strasser 2021, p. 1).

However, the way to ensure a true "mainstreaming" of energy into spatial planning processes remained relatively unclear for a long time, and it is only recently that some successful activities have become visible. These illustrate that spatial planning can contribute to the energy transition via the following mechanisms:

- Reducing the energy demand and energy intensity of spatial structures and mobility systems through sustainable settlement development: Spatial planning can become a considerable lever for reducing energy consumption through compact and mixed-use settlement structures, but also through providing standards for energy efficiency in buildings or the use of green roofs and facades. Avoiding excessive land take, urban sprawl and dispersed settlement patterns, and forcing inward-oriented settlement development reduces the energy consumption of buildings, technical infrastructure, and mobility. Moreover, higher settlement densities favour a cost-effective centralised renewable energy supply (e.g., building-integrated solar facilities, district heating and cooling systems), and generate density-related efficiency gains (APCC 2023; ARL 2021). Achieving such energy-optimised settlement structures requires the coherent and coordinated use of spatial planning instruments from regional to local levels.
- Spatial planning at local level to fully exploit de-centralised renewable energy production potentials on already intensively used land: The maximum possible utilisation of renewable energy potential on buildings (roofs, facades), other built objects and already sealed areas (e.g. parking spaces, streets) should be given priority in the deployment of renewables in green and open spaces. This is possible through a stronger use of zoning and building development plans and can be supported by the amendment of building regulations. Strategies to mobilise such renewable energy potentials within existing settlement areas require new and specific governance approaches.
- Designating priority areas and "Renewable Acceleration Areas" for deployment of renewable energy sources through spatial planning at regional level: Based on the identification and assessment of renewable energy production potentials, the "zoning" of suitable areas and priority areas for renewable energy production in regional plans plays a crucial role for the deployment of renewable energies. The requirements of the RED III are in line with the aforementioned zoning criteria. Similarly, it is an important energy-related task of spatial planning at regional, or even higher levels to identify and secure areas needed for electricity transmission corridors and storage facilities (ÖROK 2021). Moreover, the use of biomass for renewable heating networks needs to be planned at regional level, considering regional energy production and consumption. The impacts of climate change on renewable energy production potentials, on the demand for land and on the suitability of areas should be considered in assessments of spatial energy potentials.
- Designation of exclusion zones for renewable energy production: Before designating priority zones for renewable energy deployment, it is important to identify and rule out "No Go" areas. These are, in particular, ecologically sensitive areas and protected areas of high ecological value (e.g., IUCN categories I – IV). RED III makes it possible to exclude certain regions or technologies from the application of the directive under certain conditions.

- Securing multi-functionality of green spaces in planning decisions: Consideration of different functions of green and open spaces and balancing diverse, and often competing or conflicting interests in the use of land, are core tasks of spatial planning. Against the background of climate change, pressures are increasing on green and open spaces for various uses as is the importance of their multi-functionality. "Zoning" of priority areas for renewable energy production should thus carefully consider the different functions delivered by green spaces, including other functions of high public interest. This requires the further development of robust and transparent criteria, methods, and procedures for evaluating, selecting, and balancing different functions of green spaces as well as of competing interests in their use (ÖROK 2021).
- Considering climate-resilience in energy-related spatial planning: The energy transition creates substantial additional land demand for energy production, transmission, and storage infrastructure. In order to ensure that the necessary public investments in new energy infrastructure do not become "sunk investments" over the next decades, they should undergo climate-proofing. The selection of sites, locations, and transport corridors for critical renewable energy infrastructure should thus involve an assessment of climate change impacts to safeguard climate resilience and safety against extreme weather risks, climate-induced natural hazards, and cascading impacts.

The specific characteristics of the Alps pose additional challenges to mainstreaming the energy transition into spatial planning. The topography, the limited availability of usable land, and the needs of the sensitive mountain environment and landscape can be additionally challenging. Cross-border spatial planning also needs to be considered. An overview on how cross-border spatial planning is organised is provided in the latest report of the Spatial Planning and Sustainable Development Working Group (WG SPSD) of the Alpine Convention, titled "Cross-border spatial development in the Alpine Convention area".[4]

Since its establishment in 2020, the WG SPSD has been working very concretely on the implementation steps of various pathways of the CAP 2.0. In the current mandate 2023-2024, the following steps, among others, are being prioritised: IP_SP1: Step 1a: Definition and provision of data on the impacts of climate scenarios on land use; IP_SP1: Step 1c: Discussion paper on growth and shrinking for climate-sensitive spatial structures in the Alps and workshop on growth and shrinking processes in the Alps; IP_SP1: Step 3: Alpine-wide survey on the challenges for the land-saving targets in the Alpine countries (based on the survey of land-saving targets carried out in the mandate period 2021/2022); IP_SP1: Step 4: Guide for municipalities to assess and activate intra-municipal development potentials.

The ACB aims to continue and intensify its strong cooperation with the WG SPSD. The next mandate period could open a window of opportunity to work on the nexus "energy and spatial planning".

Besides the close cooperation with this WG, the ACB has also joined forces with CIPRA AT on the topic of NIMBY ("Not in my backyard"). In 2024, a workshop was organised, bringing together stakeholders from different interest groups dealing with energy-related issues (energy suppliers, NGOs, renewable energy entrepreneurs, scientists etc.). The workshop was guided by a moderator and a mediator, aiming at enabling a profound discussion of different interests concerning the change in energy supply, development needs, and planning processes.

The following case studies highlight some successful projects where the energy transition was successfully integrated into spatial development processes or larger territorial transformation processes. They all provide insights for further developing the implementation pathways of the CAP 2.0, especially IP_SP1: Alpine-wide concept "Spatial planning for climate action". Also, some

[4] https://www.alpconv.org/fileadmin/user_upload/Organisation/TWB/SPSD/Assessment_study_Cross-border_Cooperation.pdf

case studies as well as the short interview point out some specific challenges for the Alpine region, especially the trade-offs between energy planning and nature and landscape.

Case study: a territorial approach to the energy transition:
TEPOS -CV– Territoires à énergie positive pour la croissance verte

The national network of Positive Energy Territories (TEPOS) was led at the national level by the French environmental association "CLER-Network for energy transition/Réseau pour la transition énergétique" (https://cler.org/), which brings together more than 150 actors committed to the energy transition in their territory (communities, project leaders and local actors).

In the Auvergne-Rhône-Alpes region, the TEPOS-CV network (Territories with positive energy for green growth) brought together, until 2021, around forty territories recognised for their exemplary actions in terms of the energy transition. Their efforts were supported in part by a subsidy programme from the State, ADEME, and the Region. The network included 41 territories representing 56% of the region's overall population, including certain large cities (Saint-Etienne, Grenoble, Geneva metropolitan area). The continuation of this territorial animation is currently being redefined to include the main lessons learned.

Energy key facts:
- 56 % of the regional population of Auvergne-Rhône-Alpes now lives in a TEPOS-CV region
- Up to 30% energy reduction was achieved in some TEPOS regions

Main insights/lessons learned for improving governance structures and mechanisms

- **Multi-level governance**: The energy transition requires shared responsibility between the state and local authorities. As a starting point, specific funding must be provided to support local actors in initiating and managing the local transition process.
- **Cross-sectoral governance**: An integrated approach must include all sectors concerned in the territorial approach, taking into account the specific characteristics and needs of the region (e.g. agriculture, forestry).
- **Collaborative governance**: Bringing together actors from different sectors and different territories strengthens the dynamic of collective learning, making it possible, in particular, to take into account social aspects (for example linked to housing).

Activities with a link to the tourism pathways in the CAP 2.0: TEPOS can be seen as example for implementing the pathway IP_SP1: Alpine-wide concept "Spatial planning for climate action".

"Above all, this initiative has improved coordination: at local level between urban and rural areas for example, and at regional level, with common and shared objectives, regular meetings with all the territories, technical support, experience sharing, skills development, etc."

Catherine Premat, Head of Territorial Projects, Auvergne-Rhône-

Sources: TEPOS Factsheet by Auvergne-Rhône-Alpes, Article with first assessment of TEPOS (Balaye et al. 2018)

Case study: Spatial energy planning for the new heating age:
SEP – Spatial Energy Planning

In the lighthouse project "SEP – Spatial Energy Planning", the provinces of Vienna, Styria, and Salzburg worked together since 2017 on developing the basis for planning for a spatially optimised development of heat supply infrastructures, taking into account the local conditions such as the existing energy infrastructure, land use, and energy resources available from renewable sources or waste heat. This project was developed under the leadership of the SIR (Salzburg Institute for Spatial Planning) in the frame of the research initiative "Green Energy Lab" and together with more than 20 partners from three Austrian regions, among them the regional governments, cities, universities, energy agencies, and the regional energy suppliers.

The building blocks that were created were then incorporated into the digital HEATatlas – cartographic information layers on energy demand, energy supply infrastructures and renewable energy supply potentials – and the automated analyses for defined administrative processes. The atlas shows the complex interconnectedness of energy systems, facilitating the long-term planning of energy and infrastructure coupled with higher investment security. This data can be used for the smallest spatial individual building as well as consistently for other units such as areas, municipalities, regions, and countries. In addition, a HEATapp prototype was developed that allows for automated queries and can be used in three specific application forms of public administration: area development, spatial planning, and monitoring of energy strategies.

A concrete product in this project is an inventory of energy and spatial data for each municipality, resulting in a document of 40 pages including 87 graphs/values/map excerpts. In a first step, the team figured out for which energy planning issues the municipalities has its own decision-making authority and what questions arise from there. In a next step, models were developed. Results are then shown in the inventory. Together, this inventory document and the offer to discuss the content with experts at SIR supports municipalities in their spatial planning processes. An important step taken in parallel was the addition of a clause on the need to consider energy-related topics when taking relevant spatial planning decisions, e.g. new local development concept (clause in the new building law in Salzburg and in the spatial planning law).

Main insights/lessons learned for improving governance structures and mechanisms

- One of the overall aims was the standardising and efficient provision of data: to ease the comparability, the update of models, and the roll-out (entry points into legal instruments).
- Supporting municipalities with well-developed and manageable information applicable to the local level is crucial to make use of the project results. In addition, it makes sense to realise such a project at the provincial (or a higher) level and to assure that the data is collected and stored in one specific place (GIS of provincial state).

Managing obstacles along the way:

- High dependency on decision-making processes at regional/national level; lack of national legislation
- High dependency on available human resources and competencies to establish a project within a manageable time frame; efforts toward the project aim must be constant and long term
- Recognising the impossibility of perfect data (both quality and availability) and challenges with GDPR (e.g. due to different interpretation across countries)
- Models (scenarios) are central and at the same time very complex; challenge of bringing complexity to the ground in science in such a way that individuals can make a political decision based on it (translation work is needed)

"The integration of our findings in relevant spatial decisions must not be an expense for the municipalities."
Alexander Rehbogen, SIR

Activities with a link to our pathways in the CAP 2.0: Insiders can be used to further develop activities for the pathway IP_E4 "Alpine administrations as forerunners".

Sources:
Interview with Alexander Rehbogen, SIR - Salzburg Institute for Regional Planning and Housing; Homepage https://greenenergylab.at/en/projects/spatial-energy-planning/

Project website: https://waermeplanung.at/; https://greenenergylab.at/en/projects/spatial-energy-planning/

Insights into "governance challenges": Accelerating the development of wind energy in Bavaria – the "wind caretakers" and their role in multi-level energy planning
Main messages from an expert exchange with Stefan Drexlmeier, Energiewende Oberland

Especially in the southern part of Germany, the expansion of wind energy has been stalled for several years. This is often due to conflicting viewpoints on how to prioritise the use of scarce and valuable land and on low acceptance from the public. Local know-how, about both the spatial planning and the relevant stakeholders and their needs and critical viewpoints, is needed to overcome this hurdle and to bring forward project proposals for wind energy which find support at local level. The Bavarian Ministry for the Economy has launched the initiative of "wind caretakers" (WindKümmerer) which support the development of wind projects at the county level ("Landkreis").
Stefan Drexlmeier from Energiewende Oberland has supported the set-up of the "wind care-takers" and provides some insights into key success factors but also difficulties:
ACB: What was your motivation to support the "wind caretaker" concept? Where do you see the added value of this approach?
Stefan Drexlmeier: The "wind caretakers" are important to bring more local knowledge into the planning of wind energy. They also serve as a model for other renewable energy sources and for the energy transition in other sectors. For me, one success factor lies in the fact that the "wind caretakers" are represented, in most cases, by the regional energy agencies. This guarantees that they can build on their local knowledge and are already well accepted at regional level due to their neutral position. Also, it should be noted that the specific regulations for the "wind caretakers" are rather flexible, so they can support municipalities in a targeted way, depending on actual needs.

ACB: What are the difficulties that the caretakers have to deal with?
Stefan Drexlmeier: The situation in Bavaria, especially in the Alpine region, is more difficult than in other German areas. For example, in my region, a large share of the land is dedicated as a nature-protection area and smart solutions have to be developed to deal with conflicting land uses.

ACB: Are the "wind caretakers" also in charge of implementing the new "Wind-an-Land" law which foresees a designation of 2% of the area as a wind priority area? (see below for further information)
Stefan Drexlmeier: No, the "Wind-an-Land" law has to be implemented by the regional planning associations ("Regionale Planungsverbände") which are another governmental entity. This brings along some difficulties as different stakeholders work on a similar target. Also, we are looking at the frameworks of the new EU mechanism "Go-To areas for renewables" [further described as "Renewable Acceleration Areas"] which will also lead to new requirements in prioritising specific areas. Here we see the need for a better integrated multi-level governance that ensures that the local and regional entities can focus on their job without dealing with too many different reporting and financing frameworks.

Background:
Development targets for onshore wind energy have been more than tripled by the German government for the coming years in the frame of the new EEG 2023. Recently, the main obstacle to expansion has been that too few areas have been designated for wind turbines. This dilemma is linked to the German federal structure and the different responsibilities of the federal and regional level. While the national level is responsible for the strategic coordination of the energy transition, the regional level ("Bundesländer") has to provide the necessary frameworks for spatial planning and for the designation of relevant areas. And here, the regional level often encounters conflicts, as negative trade-offs are considered at regional/local level while the benefits of the wind projects often go beyond the regional level and profit stakeholders outside the region.

In order to solve the land problem, the federal government recently launched a new so-called "Wind-an-Land-Gesetz" (WaLG), the core of which is a Wind Energy Land Requirements Act (WindBG) (BGBl. I p. 1353). The goal of the law is to provide a total of 2% of Germany's land area for

onshore wind energy by the end of 2032, with an interim goal of 1.4% by the end of 2027 (Bundesregierung, 2022). To this end, the federal states are given specific requirements as to what proportion of their land area they must designate for onshore wind energy by the end of 2027 and the end of 2032 (Annex 1 WindBG).

Sources:
Information by the German Ministry for Economic Affair and Climate Action:
https://www.bmwk.de/Redaktion/DE/Dossier/ErneuerbareEnergien/wind-an-land.html
Article by "Wirtschaftsdienst" with background on the new national regulation with assessment
Further information on the "Wind caretakers"
https://www.lenk.bayern.de/themen/energiewende/doc/Infos_Windkuemmerer_20.pdf
Interview with Stefan Drexlmeier, Energiewende Oberland (10.10.2023) (drexlmeier@energiewende-oberland.de)

Insights into governance challenges: Renewable energies in Alpine protected areas

Thoughts from the ALPARC network – ALPARC Team (Michelle Geringer, Project Manager)

Plans at EU level to accelerate the energy transition by defining the development of RES as an "overriding public interest" have led to numerous energy-related amendments, particularly in Germany, Austria, and Switzerland. In the Alps, such developments have created uncertainties regarding possible land-use conflicts between the expansion of infrastructure for renewable energy production and nature conservation – in particular in protected areas.

The network of protected areas ALPARC has launched a survey to obtain information on the status quo and the potential of renewable energy sources in protected areas as well as the conflicts that came up during the realisation of projects. The survey also provided insights into how to improve governance and planning mechanisms in protected areas. Most of the Protected Areas (PAs) that were surveyed are nature parks and national parks.

- Planning instruments: With respect to energy governance in protected areas, the survey revealed that spatial planning instruments have proven to be key in protecting PAs from the new development of energy infrastructure. At the same time, the results of this study also showed that the lack of spatial planning options can lead to an uncontrolled expansion of RES. This can be seen in the fact that most hydroelectric power plants located in PAs today were mostly built before the park's establishment.
- Zoning of PAs is an important feature: Only national parks and biosphere reserves have specific zones that allow a graduation of protection objectives. Nature parks, on the other hand, do not have any zoning models. RE installations are generally not permitted in core and buffer zones, and only under strict regulations in the development zones of biosphere parks. PA managers in Austria see problems with the expansion of wind power in mountainous areas, as there has been very high pressure for the construction of wind farms in the vicinity of some PAs. The introduction of new zoning instruments (e.g. minimal distance between PAs and wind parks) would help to avoid conflicts. Further measures may include the governance of PAs with transboundary areas and the need for strict environmental impact assessments (EIAs), etc.
- Participatory approaches: Furthermore, the results of the survey suggested that participatory approaches around the RE development in protected areas need to be organised in a new way. The nature parks/PAs as key stakeholders should be involved in the project at the earliest stage possible or should even initiate the first information event. This would ensure a discussion of crucial questions that come up with RE development in natural parks such as: 1) How do we want to develop the area (tourism, energy production, etc.) and how is this compatible with the strategic orientation of the different protected areas? 2) How do we address the inherent conflict between RE development and landscape protection, and 3) What can the protected areas contribute themselves to improve energy efficiency and what measures are necessary to reach this?

The survey also highlights specific "points of conflict" and ongoing discussions which need to be addressed in governance:

- Self-supply vs. larger projects with feed-in potential: Almost all surveyed PAs are producing electricity from RE sources in the park perimeter and are generally in favour of the transition to REs. However, it is important to differentiate as most renewable electricity comes from small installations (PV systems or mini hydropower plants) for self-supply. The construction of energy infrastructure that goes beyond self-supply is seen as critical in the survey and should be excluded in national parks. The difficulty and complexity can be seen in recent initiatives, for example in Switzerland. Accelerated by a recent decision of the Swiss government, photovoltaic systems on open spaces are subsidised by up to 60% by the state. As only those systems that feed some of their electricity into the grid by the end of 2025 will benefit from

these subsidies, there is a great rush to finalise projects and there is only limited time for participation. In the canton of Valais, for example, the expansion of Grengiolssolar was approved in December 2023. If the project goes ahead, the Binntal Landscape Park could lose two park communities and thus also its park status.

- Finding a balance between the different objectives: The interests of PAs including biodiversity conservation and the energy transition towards renewable energy should not be played off against each other. On the contrary, sustainable solutions can be found through good governance, the early involvement of all key stakeholders in the planning process, and focusing not only on economic benefits. In this sense, the first priority has to be the protection of PAs and biodiversity and then expanding RE in coordination with this.

From our point of view, good governance is needed for a fast transition towards renewable energy without compromising on other important objectives such as the conservation of biodiversity and the protection of protected areas. We also see the need to consider the whole Avoid-Shift-Improve approach: prioritising energy savings and energy efficiency is essential before implementing new infrastructures, especially in protected areas.

Source: ALPARC (2023): Renewable Energies in Alpine Protected Areas - Technical Report, https://www.alparc.org/alpine-resources/renewable-energies-in-alpine-protected-areas

Main insights: common success factors and features with Alpine transfer potential

The case studies and analysis of ongoing "governance challenges" provide some insights into common success factors with potential for transferability throughout the Alpine region. Also, some first insights can be gained into how the Alpine Convention can support this transfer:

- Mainstreaming the energy transition into spatial planning processes requires the consideration of many new stakeholders. Indeed, spatial planning becomes integrated planning (as in the TEPOS case study), involving private actors and civil society.
  → This also needs to be reflected in the activities of the AC.
- Moving from spatial to integrated planning processes (i.e. planning processes that deliberately consider the interfaces between sectors) increases complexity for all stakeholders. The analysis both from TEPOS as well as the German experience with the 2% wind target show that "regional caretakers" could be helpful in facilitating the process (here we have a direct link to the pathway with the energy coordinators).
- Participation is key to developing territorial win-win approaches: the insights from both Bavaria and the ALPARC survey highlight the need for participatory approaches and the consideration of local know-how. It seems important to develop a joint local or regional vision on how further renewable energy development can be integrated into nature and landscape and how spatial planning instruments can build on such a vision (e.g. including "Renewable Acceleration Areas" or "No Go" areas/topics and some frameworks for developing specific projects). This also prevents each project facing acceptance difficulties at a later stage due to the "NIMBY" (not in my backyard) phenomenon.
- The case studies and governance insights also highlight that a consistent set of data and a common knowledge base (as shown in the SEP project) are important for further integrating energy and spatial planning. This needs to include different spatial dimensions as well as the interfaces between the different sectors.
- As a further critical aspect, the case studies provide some insights into multi-level governance in the frame of spatial planning for renewable energies: in some countries, development targets are defined at national level, but the regions are responsible for implementation – without considering the different characteristics and needs of the regions. In this

respect, the specific frameworks of the Alpine regions could be better highlighted to take away some pressure from the Alpine regions and to identify projects which are acceptable.

Further inspiration and food for thought:
If you are interested in learning more about successful energy governance at the interface between energy and tourism, these initiatives and projects can offer additional information and impulses:

- The IMEAS project (Integrated and Multi-level Energy models for the Alpine Space) under the Alpine Space Programme developed a dedicated web platform, building a community of people and institutions that share tools and experience to support successful low-carbon energy transition strategies.
- The RegEnergy project - Renewable Energy Regions under the Interreg North-West Europe Programme takes a similar approach as TEPOS and provides a detailed guide for developing Renewable Energy Partnerships.

If you are looking for some scientific background:
The following papers provide a good overview of the interface between energy and spatial planning

- De Pascali, P. and A. Bagaini (2018): Energy Transition and Urban Planning for Local Development. A Critical Review of the Evolution of Integrated Spatial and Energy Planning
- Roggema R. (2020): Planning for the Energy Transition and How to Overcome the Mis-

6 Energy nexus 4: Energy and water

The Alpine water system takes on an important cross-sectoral, cross-boundary, and cross-cutting function in mitigation as well as adaptation strategies. Water systems are extremely interlinked, and many Alpine river systems are transboundary. This leads to specific challenges for an integrated water and flood management, which are multiplied due to the close interlinkage of Alpine waters with the energy system – indeed hydropower is by far the main source of renewable energy in the Alps. In 2020, there were more than 5.000 hydropower stations in the Alpine area – producing about 85.000 GWh of electricity. In Austria (70%) and Switzerland (60%), the major share of electricity stems from hydropower (CIPRA International 2021, p. 6). Switzerland has already exhausted 95% of its hydropower potential and only has around five per cent of unused water bodies left.[5]

The balance between the positive aspects of clean hydropower and its negative impacts on water quality, nature and landscape is a difficult one and became very obvious during the development of this chapter. The stakeholders involved in the Alpine Climate Board and other Thematic Working Bodies of the Alpine Convention, but also the interview partners and experts involved in developing the chapter, had very different viewpoints on the economic, ecological, and social potential and related impacts of hydropower and good solutions to deal with them. It proved extremely difficult to find acceptable case studies and conclusions for this energy nexus on energy and water and there seems to be a great need for further consolidation.

A framework for the discussion is provided by the relevant guidelines and statements as developed by the Alpine Convention and its working bodies and should also guide the discussion on energy governance related to hydropower:

- The "Water Management in the Alps" Platform of the Alpine Convention (2009-2019) had a strong focus on the topic of hydropower. It developed a "Situation report on the hydropower generation in the Alps" with a focus on small hydropower (2011) and, on this basis, specific guidelines for the use of small hydropower plants in the Alpine region, the application of which was evaluated in 2019.
- The Water Management Platform also organised bi-annual international conferences on "Water in the Alps", some of which focused on hydropower and the conflicts around water management in the Alps (2016, 2018, 2020).
- The Water Declaration as adopted by the XVI Alpine Conference in 2020 reconfirms the agreement to develop hydropower in line with different upstream and downstream interests along the waterbodies, with the protection of remaining naturally preserved river courses and river stretches of the Alps and, of course, fully in line with implementing the objectives of the EU Water Framework Directive. Regarding small hydropower plants, the Water Declaration reconfirms the main recommendations of the "Guidelines on small hydropower". It also calls for an intensification of cross-border cooperation in water management, which will be crucial for finding a compromise between the different water utilisation interests upstream and downstream with differencing interests throughout the year. This approach is also highlighted in the Alpine Climate Action Plan 2.0.

With the growing need to accelerate the energy transition, the further development of hydropower capacity in the Alps is also being investigated and explored by different stakeholders. Given the already high relevance and capacities of hydropower generation, the remaining potential is estimated to be rather limited, and new projects or extensions of existing infrastructures need to be carefully developed. Indeed, the EUSALP Energy Survey (Eurac 2017, p.40) summarises that in most of the Alpine territories, there is a low expectation of additional production from hydropower (52%). Only 6% of the Alpine territories see a large remaining potential in hydropower generation. But pressures to develop additional hydropower capacities are high, especially as hydropower not

[5] https://aquaviva.ch/de/news/was-hat-die-globale-biodiversitaetskrise-mit-der-trift-zu-tun

only has a specific relevance in the Alps themselves but also contributes to the functioning of the European energy system. Pumped hydro storage in particular has the potential to bring more flexibility to a renewables-based European electricity grid. This is highlighted by the updated list of Projects of Common Interest (PCIs) in the field of trans-European energy infrastructure which was published by the European Commission in 2021.[6] This list includes, for example, the capacity increase of hydro-pumped electricity storage in Kaunertal (AT; as part of the priority corridor North-South electricity interconnections – which is a highly controversial project at local and regional level). As is already the case, however, this function can also be achieved by a variety of other energy storage and load management methods. It thus seems important to analyse the needs and capacities of hydropower for the European energy system in a broader context and to ensure that this European dimension is considered in discussions at Alpine level. A good balance needs to be found between the benefits of hydropower, potential alternative flexibility options, and the negative impacts on Alpine nature, biodiversity and landscape.

The development of this chapter and discussions with the members of the Alpine Climate Board reflected the large challenges around the topic of hydropower and of bringing together the stakeholders and interests of both the energy system and the environment. It proved difficult to find acceptable case studies to be highlighted in this report as many infrastructure projects cannot be seen as successful in terms of energy governance in the Alps. It was eventually decided to highlight the hydropower plant in Stanzertal as good practice in terms of municipal participation and local embeddedness. The case study of the Swiss Roundtable on Hydropower shows what a participatory approach could look like in the development of new large-scale infrastructure, but also analyses some of the shortcomings and lessons learned. This case specifically demonstrates the challenges of finding common solutions that support both the energy transition and nature protection/the preservation of biodiversity. In addition, the case study from Annecy demonstrates that water has many more roles in the Alpine energy system beyond hydropower and shows how Alpine waters can be integrated into local heating and cooling systems.

The contents of this chapter thus need to be interpreted in a slightly different way than the other chapters. They are not sufficient to come to final conclusions or even recommendations on the topic but rather provide insights into governance challenges and topics that need to be discussed in more detail at the level of the Alpine Convention.

Case study: A collaborative approach to hydropower planning and development. The Municipal Power Plant Stanzertal in Tyrol (Gemeindekraftwerk Stanzertal)

Hydropower is the backbone of reliable electricity generation in Tyrol. Around 6.500 GWh of energy is currently generated from hydropower every year. This corresponds to around 26% of the current final energy demand in Tyrol[7]. The "Energy Autonomous Tyrol 2050" strategy foresees the installation of additional hydropower capacity to meet the growing needs of renewable electricity. The "Stanzertal Municipal Power Plant" can be seen as a good practice example as the project was developed in a participatory approach including all municipalities of the territory and including all local information available on potential negative impacts. Thanks to an effective sharing of responsibility and tasks in the planning and construction phase, it was possible to develop the power plant in a very short timeframe – only five years between the initial discussions and the start of the operation of the power plant.

Energy key facts:
- Electrical production: 52 GWh/year
- Green electricity for 15.000 households
- Flexibility option with storage tunnel

[6] European Commission (2021): COMMISSION DELEGATED REGULATION (EU) 2022/564 of 19 November 2021 amending Regulation (EU) No 347/2013 of the European Parliament and of the Council as regards the Union list of projects of common interest.

[7] Strategie "TIROL 2050 energieautonom": https://www.tirol2050.at/unser-ziel/erneuerbare-energien/wasser/

Today, the Stanzertal hydropower plant, as a diversion power plant on the Rosanna River in West Tyrol, provides a standard annual capacity of 52 GWh and supplies green and regional electricity to 15.000 households in Tyrol. The financial participation model guarantees that the added value of the power plant remains in the region. From a technical point of view, the power plant can also be seen as good practice as it provides a feature to meet the rising flexibility needs of a renewable energy system: a storage tunnel with a volume of around 48.000 m³ allows it to shift the production of almost 8 GWh from times of low demand to times of high demand.

Main insights/lessons learned for improving governance structures and mechanisms

- Collaborative governance: The project can be seen as a success factor in terms of participation and involvement. All local municipalities were included from the initial planning steps and different options were openly discussed in the beginning. The municipalities also profit from the financial participation, thus offering the potential to achieve a real win-win for the different stakeholders.
- Cross-sectoral governance: Compensation measures were developed with the support of environmental planners and consultants. The measures are designed in a way to minimise the impact on agricultural land – thus avoiding conflicts with this sector.
- Managing the governance process: The aim of joint project development is to utilise the strengths of each partner. The municipalities are best placed to assess which projects are possible and sensible in the region. The project developer brings their expertise in the technical, economical, and ecological design of the project. The financial strength and expertise for operational management and electricity marketing is provided by the energy suppliers.
- Governance mechanisms: The success of the project crucially depends on the "knowledge" mechanism as all local know-how and expertise is bundled in the joint project development team.

Pictures: Power plant (left) and fish ladder (right)

Activities with a link to the water pathways in the CAP 2.0: Even if the case study has no transboundary character, insights from the planning process of the municipal power plant Stanzertal can be seen as a case study for the pathway "IP_W1: Implementation of an Alpine-wide approach for mainstreaming climate change into transboundary water management" as it provides insights into successful collaborative governance approaches related to water management

Sources: Wasserkraftwerk Stanzertal (2015): Festschrift zur Inbetriebnahme – Wasserkraft aus dem Stanzertal für das Stanzertal; http://www.wasserkraft-stanzertal.at/index.php/downloads.html

Case study: Roundtable Hydropower – The Swiss approach to a coordinated hydropower planning

Energy key facts:
- 16 priority projects for hydropower production in Switzerland were shortlisted (result of the Roundtable Hydropower and the subsequent parliamentary resolutions)
- Total capacity: 2 TWh/a

To support the Energy Strategy 2050, the net zero climate target, and the security of supply, the former Swiss Federal Councillor Simonetta Sommaruga initiated a Roundtable on hydropower in summer 2020. This Roundtable was composed of decision-makers from environmental associations (WWF Switzerland, Pro Natura Switzerland, the Swiss Fishing Association SFV, and the Foundation for Landscape Protection), the Cantonal Conferences (BPUK, RKGK, and EnDK), and industry (Swisspower, Swiss Small Hydro, Axpo, VSE, and SWV). All parties involved were prepared to discuss the topic and set up a working group to develop the basic principles. Initially, the mandate for the working group was formulated in a manner that all stakeholders could see the added value in participating, i.e. it included both objectives related to biodiversity and landscape protection and the restoration of existing infrastructures but also openness to identify potential new sites for hydropower development. In the second stage of the process, the mandate for the working group was specified and the expansion target for seasonal storage production of 2 TWh/a, including compensation measures, was defined.

Keeping to a tough deadline in the second stage of the process (August – October 2021), the working group developed a transparent evaluation methodology, collected all available data and evaluated a total of 33 potential hydropower projects. Evaluation indicators were related to nature and biodiversity protection as well as to the energy system. For the final joint statement published in December 2021, a shortlist of priority projects was developed. With their signatures, the participants of the Roundtable committed themselves to support the further process: for the short-listed projects, in-depth energy, economic and ecological clarifications are to be carried out and negotiations are to be initiated between the environmental associations, the operators, and the Cantons. For these in-depth clarifications, the joint statement includes framework conditions regarding ecological criteria and relevant “No Gos”.

Politically, the Roundtable was successful as it resulted in a joint statement and a common basis for further project development. The opportunity to fully participate in the further process of hydropower development and the establishment of a binding set of framework conditions for ecological compensation measures was also welcomed by the environmental associations. Only towards the very end of the process was the group of environmental associations unable to speak with one voice.

Two short interviews with Kurt Fluri (President of the Swiss Foundation for Landscape Protection, as a participant of the Roundtable) and Julia Brändle (WWF Switzerland, as a participant of the working group) highlight major success factors but also difficulties of the governance approach. The lessons learned from the Swiss Roundtable provide some insights for similar processes in other Alpine regions and countries.

ACB: The Roundtable started as a promising approach supported by all environmental organisations. What was your initial motivation to join?

Kurt Fluri: We initially warmly welcomed the approach of the Roundtable. Instead of providing a proposal on new hydropower projects and relevant compensation measures in a top-down manner, the Roundtable had the objective of finding a common solution on the basis of a participatory approach.

Julia Brändle: We welcomed that the initial invitation aimed at a dialogue to improve both energy supply security and biodiversity aspects. We saw it as an opportunity to lead the highly politicised debate on hydropower expansion in a more fact-based way. In a setting where most water bodies suffer heavily from over-exploitation, we wanted to ensure that further hydropower development focuses on low-impact locations and that ecological criteria for hydropower development and for restoration of existing infrastructures are included in political recommendations. Beyond short-listing power plants, our aim was to develop a common understanding of framework conditions and approaches under which the further expansion of hydropower could be acceptable – for people and nature. Also, contributing learnings from prior stakeholder processes and finding support for measures reducing the cumulative negative effects of hydropower on Swiss water bodies was an important motivation.

"The Roundtable provided the opportunity to work with all relevant stakeholders towards a common framework regarding further hydropower development. We were able to develop (1) an accepted methodology for a joint assessment of projects including "No Go" criteria, (2) some shared recommendations on biodiversity and landscape protection including restoration of existing hydropower plants, and (3) an approach for additional measures to reduce cumulative impacts of hydropower use. For us, this package is what counts – much more than the shortlist of projects which found high media interest."

Julia Brändle, WWF Switzerland

ACB: From your point of view, what were the major success factors of the Roundtable approach?

Kurt Fluri: The Roundtable was supported by a "neutral" mediator with significant expertise in high-level negotiations. This was a success factor in this difficult setting and given the tough timeline.

Julia Brändle: A focus on common "societal" goals on which most participants could agree in principle, and a clear mandate that included both biodiversity and energy aspects. The experienced, independent mediator was essential in helping reach agreement on a set of rules for collaboration and communication and a methodological approach. Also, the solution to have two layers with a more political Roundtable and a working group composed of technical experts was a smart approach. The high level of combined subject and methodological expertise, and available experience with similar planning approaches at cantonal level, helped us to develop "neutral" evaluation approaches within a relatively short time frame – for the discussed projects as well as for measures for biodiversity and landscape protection. These can also be used for future discussions.

ACB: What were the more critical aspects related to the final joint statement and the different attitudes towards it?

Kurt Fluri: Even if we fully supported the approach of the Roundtable, as the Swiss Foundation for Landscape Protection we ultimately decided not to sign the joint statement, as one very critical project was included as a main cornerstone of the shortlist. The project "Gorner" (in Valais, above Zermatt) is the largest project included in the shortlist but has the greatest negative impact on nature and landscape. The rest of the shortlisted projects are supported by us, so a compromise on this project would have led to a different situation.

Julia Brändle: The signatory NGOs were also very critical about including the Gorner project due to its potential impact. Therefore, the declaration included a cautionary statement that more in-depth assessments and a consideration of lower impact alternatives are needed before any decisions are made. Some more time in the final fine-tuning and decision phase would have been helpful to work towards a statement shared by all participants. The pre-defined quantitative hydropower target also remained disputed. Finally, the declaration only painted part of the picture:

what did not make it onto the shortlist, and why it was only published at a later time, leaving unnecessary room for interpretation. Overall, however, we think the package paints a way forward for a more balanced hydropower development that minimises impacts and accelerates restoring already affected ecosystems.

ACB: What framework conditions need to be considered when assessing the governance approach of the Roundtable?

Kurt Fluri: This decision needs to be seen in a generally critical situation where the development of renewable energy projects is being accelerated in Switzerland (with the Mantelerlass Energie) and environmental NGOs see a risk that their rights to appeal are weakened.

Julia Brändle: The Roundtable took place amidst high political pressure to expand hydropower – despite significant existing damage to Swiss water bodies and a very low remaining unexploited potential. Originally, it aimed at identifying projects that could benefit from a new financial support system. Also, there is no planning power at federal level for either energy or biodiversity conservation. A stakeholder agreement in such a setting can provide valuable guidance for subsidy design, regional planning, and permitting procedures. However, the Roundtable focused narrowly on supply security targets. How Switzerland can maintain a minimum "net of life" for biodiversity was not covered, despite the pressing biodiversity crisis. From our point of view as environmental organisations we thus see a need for a process with the same political weight and urgency to delineate priority areas or projects for nature protection and restoration.

"The approach of the Roundtable was a promising attempt: instead of developing a proposal for additional hydropower in a top-down manner, the participatory approach was aimed at finding a compromise and at identifying projects with the least environmental impact. But the pre-defined quantified target for additional hydropower capacity can now be seen as "disruptive factor" in this approach as it put a high pressure on finding large-scale projects."

Kurt Fluri, President of the Swiss Foundation for Landscape Protection

ACB: From your perspective, what are the lessons learned from the Roundtable regarding collaborative governance? What elements could be interesting to transfer to other Alpine regions and countries?

Kurt Fluri: From our point of view some framework conditions for the Roundtable could be improved: 1) The timeline for the process was too dense and there was a lot of pressure to come to a result. Some more time could have helped to answer the open questions and to come to a joint solution fitting for all participants. 2) The pre-defined target was a barrier to a good compromise. It would have been easier to develop a target within the cooperation, after reviewing all the details, 3) The shortlist of projects could have been better prioritised according to legal and environmental feasibility.

Julia Brändle: The Roundtable shows that a participative approach can be promising to reach balanced solutions on contentious issues, such as large infrastructure or energy planning. For it to work, a willingness and commitment to include and listen to relevant perspectives, and finding shared objectives around which collaboration can happen is essential. A clear timeline and mandate may help if it covers all relevant viewpoints. Developing a shared and balanced "system view" helps to reach accepted solutions and requires respective expertise and data. Developing shared frameworks, criteria, and approaches may provide benefits beyond the immediate outputs. In this

regard, I consider building understanding and trust and learning from each other to be an underestimated benefit of such processes. They might prove equally valuable further down the line as a joint declaration itself. If I would do it again, I would place a stronger focus on how results could or should (not) inform policy-making, and work towards strengthening respective commitments of participants.

Sources:

https://energeiaplus.com/2023/03/30/der-begleitgruppen-prozess-zum-runden-tisch-wasserkraft/?translateto=en

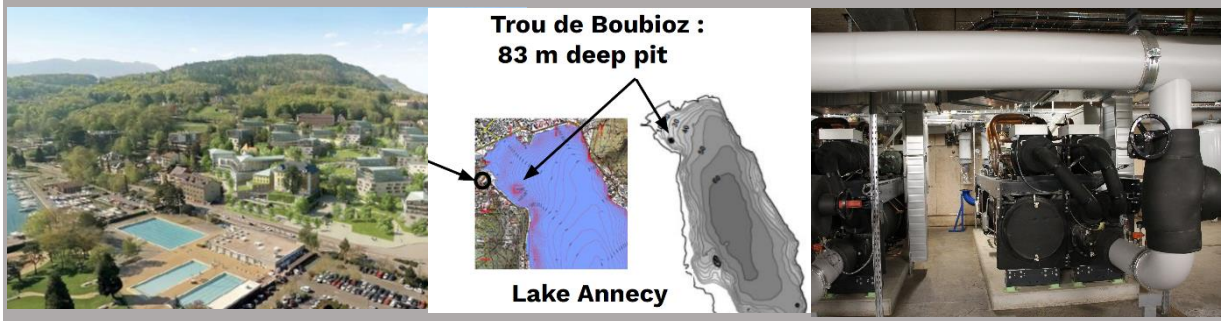
Joint statement of the Roundtable: https://www.newsd.admin.ch/newsd/message/attachments/69601.pdf

Interviews with Kurt Fluri (Swiss Foundation for Landscape Protection, 6.12.2023) and Julia Brändle (WWF Switzerland, 14.12.2023).

Latest developments in September 2024:
- In addition to the 16 prioritised projects resulting from the Roundtable on Hydropower and the subsequent parliamentary resolutions, the Canton of Valais has proposed a further nine hydropower plants.
- From the point of view of environmental organisations, this is not compatible with the joint declaration of the Roundtable. They argue that the aim of the agreements is to concentrate on the prioritized projects instead of including additional projects.
- The Roundtable declaration envisages that more thorough energy and environmental analyses will now be carried out for the priority projects. If an evaluation of this work shows that certain projects cannot be realised, contrary to previous assumptions, the Roundtable will be reconvened to examine the question of the need for additional hydropower projects

Case study: Using lake water in the frame of regional heat planning – An innovative approach from Annecy

In Annecy, a smart approach for innovative heating and cooling solutions was developed for the Trésums district located right on the lake front. A large development area for housing, hotels, and a senior residence led to a large additional source of heating (and partly cooling) demand. At the same time a "deep pit" with very cold lake water was available in the close vicinity. This opportunity was used by the regional energy provide Idex Group to develop an efficient and fossil-free heating and cooling solution.



Left: the site in Annecy, middle: deep pit "Trou de Boubioz, right: heat pump in underground power plant

The installation went into operation in 2023 as a flexible installation based on a water loop supplied by the lake. It covers 95% of the heating and domestic hot water needs of the Trésums district (with 600 housing units and the Pélican Hotel). The technical set-up is based on three heat pumps with a total capacity of 3 MW as well as a heat exchanger that provides "freecooling" (i.e. geo-cooling without the need of using operational energy). In the first year of operation, the local heat network was fully sufficient to cover the energy needs of the residents and additional gas boilers that were installed as a back-up were not needed. The network will also be used for the operation of the new municipal nautical centre with a swimming pool which is still under construction – an extension to further users is foreseen. Thanks to the flexible set-up of the power plants, the network can adjust its operation to actual energy demand and allows for a cost-efficient operation.

Energy key facts:
- Provision of fossil-free heating and cooling for 507 housing units, a senior residence and hotel, 13 GWh of heating demand
- Freecooling solution that is transferable to other Alpine lake sites

This first lake heating and cooling network in France can thus provide a fully decarbonised heating and cooling solution. Compared to a heating solution based on natural gas, it prevents the release of 2,600 tons of CO_2 per year.

Main insights/lessons learned for improving governance structures and mechanisms

- Cross-sectoral governance: From the beginning, the project was developed in a joint project between the Idex Group as the energy provider and Crédit Agricole Immobilier as the investor in the residential area. Crédit Agricole was interested in using a fossil-free energy solution for its new development project which is situated at a highly visible location and can thus serve as "lighthouse" project – also for Crédit Agricole. Moreover, the city of Annecy was closely involved in the project as the heating network can support the city's local Climate and Energy Plan – thus a win-win on several levels.
- Collaborative governance: As the project is situated right on the lakefront, several acceptance issues were raised. Regarding the technical solutions, it was important to find an option without an "industrial" character as this would have led to negative impacts on tourism and recreation. For example, a biomass plant would not be possible directly by the lakeside. Also, environmental groups and stakeholders from local fisheries raised several concerns, but compromise solutions were found for all relevant points (e.g. to avoid negative impacts on lake vegetation).

"The lake water heating network was a great solution considering the specific local situation: it offers an innovative approach to meet additional energy demand from new housing and the swimming pool with a local, geothermal source. The specific characteristics of the Annecy lake with the deep pit close to the city of-

- Transfer and model character: The project can be seen as a model project for many other sites and is currently visited by interested stakeholders from other French regions as well as other Alpine countries.

Sources:

For an overview: https://www.idex.fr/nos-realisations/ali-energie-annecy

More information in this news broadcast (in French): https://www.idex.fr/nos-actualites/la-boucle-deau-dannecy-lhonneur-sur-bfm-business

Interview with Olivier Eck, Idex Group, Chef de projets (02.02.2024) (Mail: contact@idex.fr)

Case study: The project "Application of second life batteries for Energy storage in renewable energy plants – Bess-2L" in the Valle d'Aosta region

The project "Application of second life batteries for energy storage in renewable energy plants – Bess-2L", funded by the Investment Programme for Growth and Employment 2014/20 ERDF of the

Valle d'Aosta region, aims to test the possibility of reusing second life batteries for energy storage in a stationary environment.

C.V.A. S.p.A. (as Lead Partner), Podium Engineering s.r.l. and the Polytechnic University of Turin presented a research project called BESS in response to the 'Bando Aggregazioni R&S'', whose purpose was to encourage the implementation of industrial research and experimental development projects by industrial companies, either individually or in collaboration with each other and/or with research centres.

The project has a total cost of €1,156,645.75 and a public contribution of €829,578.49. It runs from 2022 to 2024.

Project summary:

To promote the roll-out of Non-Programmable Renewable Sources (FRNP), it is necessary to associate such generation plants with storage systems that guarantee grid stability and allow generation and demand to be aligned, improving the overall efficiency of the plant.

The project plans to connect a 1 MWh electrochemical storage system to a run of the river hydroelectric power plant owned by CVA, which can simulate the behaviour of other FNPR plants (where a small pilot would be more complex).

The system will consist of 500 kWh of new batteries and 500 kWh of second-life, automotive-derived batteries with 20% reduced residual capacity.

The project will make it possible to study how to regulate energy flows in the presence of electrochemical storage, to understand how to use second-life batteries in FNRP systems, to identify charge and discharge profiles, and to monitor the mechanical state of the entire production plant with predictive maintenance techniques.

It will also make it possible to implement the communication and management of, as well as the control system for this type of application, and thus assess the technical-economic feasibility and replicability for other plants.

Insights into the governance aspect of the project:

The pilot project presented aims to test, under appropriate conditions, an innovative, complex technological process potentially applicable at a larger scale. Currently, the governance of the project includes a publicly owned company acting a leader in the green and renewable energy production industry, a university, and the regional government of the Valle d'Aosta Autonomous Region as the issuer of the financial support for the project development and small-scale implementation.

In the future, the process tested within the project could be extended across the regional territory and beyond, with specific governance arrangements that would be defined only at a later stage.

Sources: https://www.cvaspa.it/progetto-bess-2l

Contact: Project Manager Giampaolo Canestri (innovation@cvaspa.it)

Main insights: Success factors and barriers to cross-sectoral governance in the energy-water nexus

The case studies provide some insights about the challenges around governance systems and mechanisms linked to the nexus of energy and water. Given the comprehensive risks of negative environmental impacts of hydropower on water systems and nature, the use of water as a renewable electricity source needs to be carefully developed – while taking a balanced approach that also considers the needs of a European renewable energy system. The following aspects can be highlighted from the case studies and the discussions with the members of the ACB:

- New, large-scale projects are often situated in formerly untouched landscapes where it is most critical to find a compromise. The example of the Swiss roundtable highlights that even a participatory approach has limits for such projects and that they need to be assessed in a real "open-ended" process.
- In terms of developing local acceptance and support, it seems critical to develop solutions with a "win-win" character i.e. with multiple benefits for the local territory. This requires that all relevant stakeholders are involved, starting with the planning process up to a participation in financial revenues.
- Full transparency and the disclosure of all information is crucial for successful energy governance at the interface to water: a strong basis of trust needs to be developed as a first step for any participatory process. This requires developing a common knowledge base and agreeing on a common methodology for assessing positive and negative effects of a project. In this respect, the Alpine Convention could support the development of a joint methodology, e.g. supported by an EU funding programme. Keeping in mind the expectations at European level and the commitment of the Alpine Convention to the "Renewable Alps" vision, it seems important to further discuss the governance challenges between the energy and the water system and to find a common position on acceptable infrastructures.
- For all discussions on hydropower, it seems critical to always develop frameworks, targets, and specific project proposals for environmental compensation measures in the same logic than assessing hydropower infrastructures (i.e. measures that are implemented to compensate for negative environmental impacts of a new/expanded hydropower plant that cannot be mitigated and for residual impacts of the project after implementation of mitigation measures). Here, special consideration needs to be given to the equivalence of compensation measures, especially in territories facing economic and social challenges.

Further inspiration and food for thought:
If you are interested in learning more about successful energy governance at the interface between energy and water, these initiatives and projects can offer additional information and impulses:

- An interesting project on the river Inn is the Innsieme project which brings together different stakeholders to improve biodiversity and nature conservation along the Inn, taking into account the many hydropower plants. WWF Austria, Observer to the ACB and the Alpine Convention, is part of this project.
- The CIPRA position paper "Watercourses and Hydropower in the Alpine Region" is available here and includes five demands for sustainable hydropower in the Alps.
- Some best practice examples for hydropower are also included in the best practice collection for land use and nature conservation-compatible renewable energy projects in the Alps (2016) (https://www.alpconv.org/en/home/topics/energy/)

7 Energy nexus 5: Participation and financing of the energy transition

The CAP 2.0 includes "Energy democracy" as one of its implementation pathways – comprising energy communities as well as other formats for financial participation in (local) energy projects. Indeed, citizen participation models have established themselves as effective governance tools for the roll-out of renewable energy projects at the local level. Citizen participation models are manifold and diverse. At regional level, citizen participation projects are more difficult to locate, although the regions play a key role as an intermediate governance level in energy policy implementation. The regional level has far-reaching competences and implementation duties in energy policies. At the same time, it is close to the citizens and possesses the territorial expertise and knowledge necessary for the successful realisation of energy projects in line with the socio-economic and ecological ecosystem by taking into account the local "stakes".

With our case studies in this energy nexus, we shed some light on how energy cooperatives have been successfully launched and managed at local and regional level. Specific cross-sectoral and collaborative approaches are also highlighted. An additional case study illustrates the role of energy advisory services as an entry point in developing new energy solutions – which can also be taken up with the help of innovative financing solutions.

These insights can be used for developing follow-up activities to help the ACB in implementing the "Energy democracy" pathway in particular, as well as the other pathways focusing on lifestyles/business models and the Alpine administrations as forerunners.

Case study: Energy cooperatives in South Tyrol – a pioneer for financial participation

Energy cooperatives played a significant role in the early industrialisation of remote mountain regions in northern Italy, for example in South Tyrol. They offered a form of self-help adapted to local needs: in the 1920s, farmers, craftsmen, merchants, and entrepreneurs joined together to form cooperatives in order to supply neglected areas in rural areas with autonomously produced electricity. In 1921, the first cooperative electric power plant was connected to the grid in the mountain village of Stilfs.

In the valley of Villnöss (ital.: Funes), for example, three farmers and a craftsman founded the "St. Magdalena Electricity Company" in 1921 to generate and utilise electrical energy for lighting and power for its members, thereby uplifting the economy and promoting the material well-being of its members by installing saws, mills, workshops for wood and other industries. Today, the energy cooperative Villnöss provides its 700 members in the Villnöss valley with renewable electricity and, partly, district heating from local biomass.

Due to their established role in bringing progress to formerly isolated areas, these so-called "historical" cooperatives in Italy are exempt from levies and can offer electricity at lower rates than privately run companies. Cooperatives have the possibility to combine production and distribution under one roof and work according to the "cost-price" principle. The members become owners – the profits are passed on to the end consumers through favourable prices. During the peak in energy prices at the end of 2022, this was strongly felt by members of the Villnöss cooperative, as prices for members were roughly 1/3 of average market prices (source: Energy Cooperative Villnöss).

Energy key facts:

As of 2022, there are 54 energy cooperatives in South Tyrol with over 20.000 members

Raiffeisenverband Südtirol

The biomass district heating plant. Source: Energy cooperative Villnöss

Benefits of energy cooperatives include:

- *Renewable energy adoption and energy autonomy*: Energy cooperatives in South Tyrol have been instrumental in promoting the adoption of renewable energy sources such as biomass, solar and (small-scale) hydroelectric power from local projects. Except for the winter months, or periods of exceptional drought, the energy cooperative can cover all the members' energy needs with locally produced renewable energy. Any profits are reinvested in its energy infrastructure with the goal to reduce dependency on non-locally produced energy.
- *Local economic development*: Energy cooperatives have generated economic benefits for the region by creating job opportunities in the renewable energy sector in small communities. By locally awarding construction and maintenance works, as well as purchasing all wood biomass from farmers in the valley, the economic activity and local value chain in the community is stimulated. Of every euro that consumers pay for locally produced electricity and district heating, 70 cents remain locally (European Academy of Bolzano, EURAC).
- *Community engagement*: Second homes are excluded from the cooperative's services. It actively engages with the local community, fostering a sense of ownership and responsibility for energy production. This involvement helps build trust and commitment among community members, making them more receptive to renewable energy initiatives. The reinvestment of returns in community projects, such as the connection of the higher mountain areas to the electricity and sewage grids or the expansion of the broadband network, strengthens the role in the community.

Main insights/lessons learned for improving governance structures and mechanisms

- Collaborative governance: Cooperative governance mechanisms have promoted mutual exchange and joint creation among stakeholders. The partnerships established with the municipality, telecommunication companies, the energy association SEV, and the Raiffeisen association, and with similar energy cooperatives across the Alpine area, have led to a fruitful exchange of experiences.
- Multi-level governance: Albeit financially independent, the coordination with institutions at municipal and provincial level is fundamental for the realisation of specific projects. National and regional-level funding programmes are leveraged to launch initiatives. At the same time, a localised approach is adopted, aligning efforts with the specific needs and knowledge of the community.

"As a small energy cooperative strongly rooted in the community of the Villnöss valley, we ensure that our work is in favour of local cycles. We rely on support in favour of local value chains."

Hannes Messner, Energy Cooperative Villnöss

- Cross-sectoral collaboration: Due to the tightly woven integration with the local community, the energy cooperative encourages collaboration between different economic sectors, including manufacturing and tourism.

Activities with a link to the pathways in the CAP 2.0: Insights can be used to further develop activities in the pathway IP_E2 "Energy democracy".

Sources:
Information on the Energy Cooperative Villnöss obtained by interview with Hannes Messner, director of the Energy Cooperative (6.10.2023), (Mail: info@energie-villnoess.it)

SEV - Südtiroler Energieverband: https://www.sev.bz.it/
EURAC Research – Institute for renewable energy: https://www.eurac.edu/it/institutes-centers/istituto-per-le-energie-rinnovabili

Case study: Taking a broader approach –
Citizen participation at regional level with the "Sonnenkraftwerk NÖ"

The Federal State of Lower Austria launched the citizen participation project "Sonnenkraftwerk NÖ" to take up the pioneering role in the energy transition. The project is the largest citizen participation project in Europe. Its goal is to equip all suitable publicly owned buildings with solar energy with the help of the citizen participation project, thus overcoming the obstacles posed by restrained public funding. By the end of the project implementation phase, the PV panels will cover the electricity needs of about 5.000 households. The project is based on a 'sale-and-lease back' principle. The government sells the PV modules to its citizens. The collected money is used to install the power plants, which are then leased by the government from the citizens to produce energy. For the lease, the citizen receives an interest rate. Currently, 3.000 individuals have invested in the project.

Main insights/lessons learned for improving governance structures and mechanisms

- Multi-level governance and change agents: The regional energy and environment agency (eNU) developed the project idea based on already existing citizen participation projects at the local level in the region. The idea was that the regional administration should play an active part in the energy transition to achieve the energy goals that it had set itself. After a technical inventory of the public buildings to determine the potential for PV expansion, the project concept was created. For the implementation of the project, political support was crucial. The regional government also supported the project because of the communication effects with its citizens. Financial aspects were secondary. In fact, the participatory approach is more costly than the simple construction of PV systems through bank loans.
- Governance mechanisms: The case study illustrates the balance between the mechanism "price" and other, more intrinsic, motivations – also related to local networks and communities. Citizens invest in local projects because they want to invest sustainably in their immediate environment. Nevertheless, citizen participation projects need to be oriented towards the interest rates of current conservative investment products in order to remain attractive. They define the benchmark. Changes in the European interest rate policy do not go unnoticed by medium-term citizen participation projects. This should be taken into account in the design of citizen participation projects.

Managing obstacles along the way:

Consumer protection played a major role in the implementation of the project. Several technical barriers slowed down rapid implementation. These included, e.g., fire protection and sanitation requirements that PV systems must meet when installed on public buildings such as hospitals and nursing homes. An additional problem affecting the project implementation was the general high demand for PV panels. The lack of skilled workers for the installations drove up the costs of the project as the market is oversaturated. These different external effects have led to the consequence that despite the high demand from private households, the project progress is delayed. Still, the project is seen as a big step forward in integrating citizens in the energy transition.

Regional governments and administrations shall demonstrate commitment for the energy transition by implementing renewable energy projects hand-in-hand with citizens. We have learned that citizens' projects are influenced by external effects that are not in our hands and need to be taken into account in the process design.

Daniel Berger, eNu

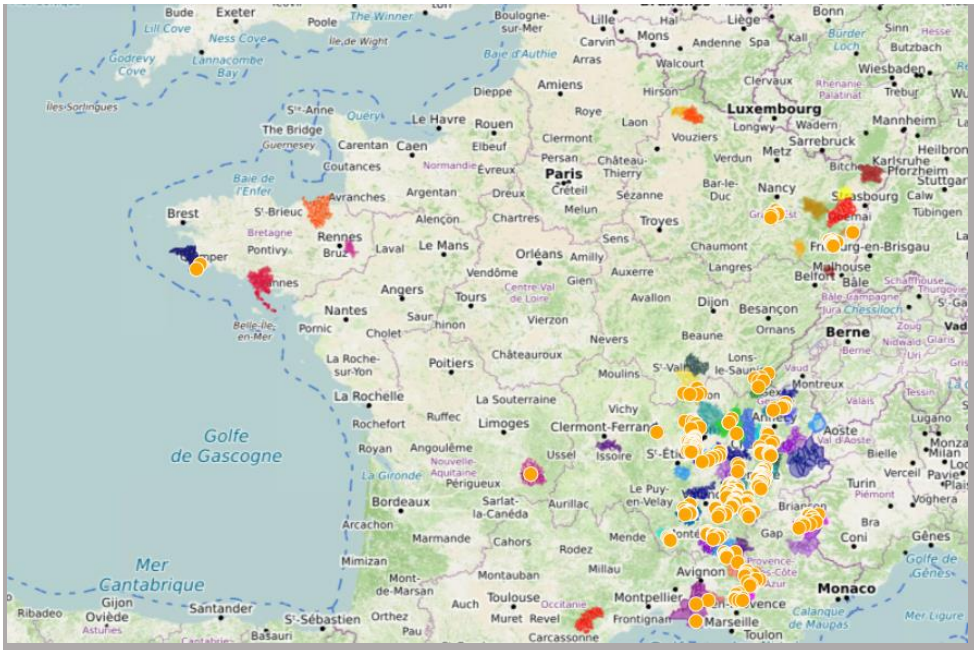
Activities with a link to the pathways in the CAP 2.0: Insights can be used to further develop activities for the pathway IP_E2 "Energy democracy".

Sources:

Interview with Daniel Berger, eNu, Coordinator PV projects, citizen participation (Mail: daniel.berger@enu.at)
Project website: https://www.sonnenkraftwerk-noe.at/

Case study: Centrales Villageoises (village power plants) Association: Replication through modelling

The "Centrales Villageoises" concept was developed in the frame of an EU-funded project coordinated from 2010 to 2014 by the regional energy and environment agency in Auvergne-Rhône-Alpes (AURA-EE) in collaboration with five regional nature parks. Within the project, eight local citizen-owned companies were formed to develop and finance PV plants. The technical and legal knowledge gained through the pilot projects was used to develop a standardised model that allowed the replication of the energy community set-up in other territories. The model of "Centrales Villageoises" quickly spread all over the AURA region and was replicated in seven other French regions. In 2023, the Centrales Villageoises Association was a network of 66 energy communities, counting 6.700 citizens, 275 municipalities and a few enterprises as their members. Together, the local energy communities installed 470 PV plants that produce about 10 MW. All Centrales Villageoises are based on the same model and baseline.



Consult the interactive map on: https://www.centralesvillageoises.fr/

The association is currently working on collective self-consumption projects in order to share the energy produced by its power plants with local consumers. It is looking into possibilities to advance the model for sector coupling by matching it with electric vehicle sharing concepts. The knowledge gathered in the PV projects will be used as a blueprint for other renewable energy project conceptualisations in the field of hydroelectric and wind power. Within an Interreg ALCOTRA FR-IT project, the transfer of the model to the Italian region of Piedmont is being tested.

Main insights/lessons learned for improving governance structures and mechanisms

- Cooperative governance: The Centrales Villageoises model is based on a cooperative governance model. Irrespective of the institutional or financial standing of the member, everyone has the same weight in decision-making processes. The model is directly linked to the local municipalities' energy plans and it is an instrument for local development to assure that the earnings from locally invested money remain in the area. In the planning phase of each plant, all local stakes such as landscape protection, economic development, and social aspects are taken into consideration thus creating acceptance, commitment, and trust in the local communities.
- Governance mechanisms: The coming-together within an association allows for the pooling of resources and the development of shared services. The association offers training and provides expertise for financial and business planning, as well as technical matters. Direct exchange between the members is facilitated to transfer knowledge between energy communities. This unites the energy communities into one association, provides it with political standing at the national level, and influences decision-making processes.

Activities with a link to the pathways in the CAP 2.0: Insights can be used to further develop activities for the pathway IP_E2 "Energy democracy".

Sources:

Interview with Etienne Jouin, Network Coordinator, Association des Centrales Villageoises, 22.09.2023 and internet website; https://www.centralesvillageoises.fr/

Case study: The Slovenian Energy Advisory Network ENSVET – A model for the broad roll-out of customised energy advice

The Energy Advisory Network for households, legal entities, and the public sector (ENSVET) is coordinated by the Slovenian Eco Fund and is part of a series of measures that were introduced as part of the National Energy Efficiency Action Plan 2014-2020. The main goal of ENSVET is to increase interest in private and public investment in renewable energy sources and the rational use of energy through a network of regional advisory offices. ENSVET provides citizens with free, expert and independent energy advice and is engaged in a wide range of awareness raising activities across the country.

Main insights/lessons learned for improving governance structures and mechanisms

- Cooperative governance: Information and services need to be customised to local needs and each specific case. Advice provided by ENSVET is tailored to each case based on the information received from the owner or tenant and is offered free of charge to all citizens. This serves as a starting point for initiating successful energy projects.
- Accessibility: To engage stakeholders to act, services need to be easily accessible – also in terms of physical distances. In Slovenia, ENSVET offices are deployed throughout the country to optimise the average distance between the customer and their closest ENSVET. There are currently 59 offices which employ 48 qualified energy advisers.
- Visibility as an entry point: ENSVET is also engaged in educational activities in the field of the rational use of energy and renewable energy sources, such as offering public lectures (local communities, schools, etc.), publishing articles, and organising awareness raising activities in national and local broadcasting media.

ENSVET delivers an average of 7.500 advisory sessions per year and aims to increase this figure to 9.000 per year by 2024. Measurable results that the ENSVET network has achieved include, among others, reduced CO_2 emissions, and end-use energy efficiency savings, as well as an increase in the number of clients that have received advice, the number of investments financed by Eco Fund subsidies and loans, and the number of older houses that have been comprehensively renovated based on ENSVET advice. ENSVET is financed from earmarked sources collected from the energy efficiency fee paid by final energy consumers.

Activities with a link to the pathways in the CAP 2.0: Insights can be used to further develop activities for the pathways IP_E1 "Regional Energy Coordinators", IP_E3: "Supporting low-carbon/low-energy Alpine lifestyles and business models", and IP_E4 "Supporting Alpine administrations as forerunners".

Sources:

Short project summary of the Interreg portal: https://projects2014-2020.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1540905584.pdf

Main insights: common success factors and features with Alpine transfer potential

- The case studies on energy communities and innovative financing models in the frame of the energy transition provide some insights about common success factors with potential for transferability to the Alpine region. Also, some first insights can be gained into how the Alpine Convention can support this transfer.

- Involvement in energy communities and other financial participation models helps provide a better understanding of the balance between "rational choice" financial investments and the intrinsic benefits for people to invest in sensible local projects. The case studies highlight that the financing models of local and regional citizen participation projects must be able to adapt to changes in the international and European markets. Benchmarks for returns need to reflect the standard low-risk financial products (e.g. fixed deposits, governments bonds etc.) in order to not lose attractiveness and investors. At the same time, many people still invest in local projects with lower interest rates.
  → In order to further develop the pathway "Energy democracy" it will be interesting to get a better understanding of this balance and to explore if there are specific Alpine considerations.
- There is a need for knowledge transfer and guidance. Already elaborated guidelines based on piloting exercises could help actors as an orientational start-up aid to become active in the energy transition and to establish energy communities. A strong network of local energy advisories can support first steps and help to identify suitable projects.
- The further establishment of network structures to support the exchange of experiences and facilitate the realisation of central support structures for network members would be important. In this respect, Interreg projects already play an important role in facilitating and piloting projects in the Alpine area. The roll-out of such activities that support the local energy transition could be embedded in activities of the Alpine Convention (but also EUSALP).
- Challenges for transferability are evident in notable differences in national regulations across the Alpine region. Any further analysis of best practices and decision-making aid should take into account these differences in the respective national normative and legal framework.

  → Further support and information could be provided through activities of the ACB or Alpine Convention, focusing on specific Alpine stakeholders.

Further inspiration and food for thought:

- Some new rules have been recently introduced in Italy in support of renewable energy communities across the whole country: on January 24, 2024, the Italian Ministry of the Environment and Energy Security published a decree which promotes the creation and development of renewable energy communities and widespread self-consumption in Italy (the decree provides two types of incentives which can be combined: a non-repayable contribution of up to 40% of the eligible costs, financed by the PNRR and aimed at communities whose plants are built in municipalities under five thousand inhabitants, which will support the development of two gigawatts overall; and an incentive tariff on renewable energy produced and shared throughout the national territory).
  The provision will therefore encourage the development of a total of five gigawatts of renewable energy production plants.
  More information can be found on the GSE website: https://www.gse.it/servizi-per-te/attiva-misure-pnrr/comunit%C3%A0-energetiche-5000abitanti

8 Synthesis: main lessons for the Alpine region and proposals for follow-up activities

Main insights from the spotlights in this paper

The illustrations in the five "energy nexus" provide some main insights into how to improve cross-sectoral energy governance in the Alps:

- Cross-sectoral and collaborative governance is a new challenge for all stakeholders: the current set-up of institutional frameworks and organisational structures often does not foresee activities across sectors. New formats for collaboration and co-creation are needed. Here, the case studies highlight some success factors, especially how key stakeholders can become "gravitational centres" to launch regional transformation processes.
- The "participation and financing" energy nexus has interfaces with all other energy nexus and needs to be seen as a crosscutting topic to accelerate the energy transition in the Alps. The inclusion of civil society organisations and the public to create a high level of commitment, acceptance, and support from the very beginning is a key success factor. Many processes start with a smart compromise/a solution that lies outside the spectrum of the initial ideas (e.g. include new technical solutions and compensation measures in hydropower projects to improve acceptance).
- Financial bottlenecks and the need for easier access to financial support/programmes have been addressed in nearly all case studies of this paper. In many cases, regulatory restrictions pose barriers to innovative financing solutions. In this respect, there is a strong need for action to better support the energy transition in the Alps. The case studies make it clear that economic considerations are still the crucial "entry point" for motivating new stakeholders; intrinsic motivation mostly comes as a secondary consideration.
- A success factor is to look at territorial win-wins that go beyond the short-term financial effects of energy and energy cost savings. For example, the transformation processes in tourism regions can also be used to develop more diverse tourism offers (climate adaptation); the sharing and provision of data (in the project SEP) can also create win-win solutions. Success factors for developing territorial win-wins could, however, be better communicated.

Follow-up proposals: Activities for the ACB and the other Thematic Working Bodies of the Alpine Convention

The case studies as well as the short syntheses in the five energy nexus give an indication as to the need for further action. For some activities, it seems to be of especially important to deal with them at the level of the Alpine Convention as they are linked to other areas with a high relevance for the Convention. The following generic activities are relevant for all five energy nexus:

- Cross-sectoral governance is new for all stakeholders and a continuous exchange on good practices, success elements, and lessons learned provides added value at all policy levels (from local to transnational) and for stakeholders from the public and private spheres as well as civil society.
- The local and regional levels play an important role for all cross-sectoral activities, especially when it comes to designing co-creative and participatory approaches. Thus, the municipal level needs to be better integrated into all activities of the Alpine Convention and the needs of local stakeholders need to be better reflected.
- The empowerment of key stakeholders is a crucial step for initiating transformation processes. The Alpine Convention could work more closely with relevant stakeholder groups in terms of empowerment and information.

The table below provides some specific proposals and illustrates how the activities can be implemented at the level of the Alpine Convention and together with other external stakeholders.

Insights from the energy governance analysis on potential follow-up activities for the ACB and Alpine Convention			
Energy nexus	**Proposal for further specific activities**	**Who could implement this activity at the level of the Alpine Convention?**	**Which stakeholders need to be involved?**
Energy and tourism	**Empowerment of tourism stakeholders: exchanging good practices and peer learning** Experiences from case studies in the energy and tourism nexus highlight the importance of key stakeholders as facilitators and moderators for collaborative governance processes. As tourism is a key economic activity for many Alpine regions, the Alpine Convention could actively support transformation processes in tourism regions in terms of empowerment and information. Here, the ACB and/or the other Thematic Working Bodies could contribute in terms of empowerment and information: - Information and exchange events for specific stakeholder groups (e.g. cable car operators as key stakeholders for the energy transition in tourism regions) - Setting up peer-learning groups with key stakeholders from tourism regions	Implementation Communities of the ACB: – Tourism – Energy	- Cable car operators - Tourism destination management - Representatives from municipalities with high tourism relevance - Stakeholders from regional associations - Regional energy coordinators/planners - Stakeholders that are already involved in AC related initiatives (Mountaineering Villages, Alpine Pearls etc.); they can be seen as forerunners
Energy and mountain agriculture	**Fostering knowledge about pilot activities in the field of agrivoltaics in the Alpine area** Developments in the agrivoltaics sector could be important for the Alpine Convention. The expansion of agrivoltaics will have direct effects on spatial planning, biodiversity, and landscape protection issues in the Alps. Studies show that agrivoltaics has effects on soil (positive and negative) and therefore needs to be further studied as a possible instrument of climate change adaptation in agriculture. Until now, there exists no common framework, guidelines or strategy for agrivoltaics at regional, national, and European level. → With its expertise, the Alpine Convention could significantly contribute to a definition of agrivoltaics (e.g. regarding the inclusion of pas-	Thematic Working Bodies: – Mountain Agriculture & Mountain Forestry Working Group With links to: – Spatial Planning and Sustainable Development Working Group – Soil Protection Working Group Implementation Communities of the ACB	- EUSALP AG6 - Farmers (best practices or learnings from failures) - Representatives from municipalities - Stakeholders from regional associations - Agricultural chambers - Scientific network: Peatland Science Center (Weihenstephan Uni)

Insights from the energy governance analysis on potential follow-up activities for the ACB and Alpine Convention			
Energy nexus	**Proposal for further specific activities**	**Who could implement this activity at the level of the Alpine Convention?**	**Which stakeholders need to be involved?**
	tures as agricultural land or not) and the development of a shared vision, to exchange on results gained from piloting projects in the Alpine area and to gather technical know-how that is necessary to assess agrivoltaics and its impacts on the different policies and regulatory frameworks relevant to the Alpine Convention. A common position could also explore transfer potentials, e.g. towards peatland PV as further Alpine-specific topic. → A first step forward could be a dedicated workshop jointly organised by the ACB and the Working Group on Mountain Agriculture & Mountain Forestry.	– Mountain Agriculture – Spatial planning – Energy – Soil – Water	
Energy and spatial planning	**From spatial planning to integrated planning: intensify the strong cooperation with the Spatial Planning and Sustainable Development Working Group and also target the nexus "Energy and spatial planning"?** *The case studies in the energy nexus highlight several topics with further need for action that could be developed in the frame of an intensified cooperation, leading to a better consideration of cross-cutting and integrated governance aspects:* • *Towards a common spatial vision on RES development: Development of a framework for spatial energy planning, including information on all relevant framework conditions related to nature and landscape protection. This could include information for potential "development scenarios", including "Go-To" areas and projects but also "No Go" aspects. For projects Lin between this bandwidth, a common spatial vision could provide insights into a potential toolbox of compensatory measures. Based on this common vision, specific guidelines (e.g. regarding the implementation of "Go-To" and "No Go" areas) could be developed as a next step.*	- Alpine Climate Board - Spatial Planning and Sustainable Development Working Group	- EUSALP AG9 - Regional spatial planners - All stakeholders that were already involved in the developing the idea of the network of regional energy coordinators - CIPRA AT

Insights from the energy governance analysis on potential follow-up activities for the ACB and Alpine Convention			
Energy nexus	**Proposal for further specific activities**	**Who could implement this activity at the level of the Alpine Convention?**	**Which stakeholders need to be involved?**
	• *Common data basis and information flow: An integrated spatial and energy planning requires a new and more integrated data base. Here, the interfaces between different data sets and mapping tools (e.g. Cervino, Spatial Energy Planning, EU Energy and Industry Geography Lab) could be explored and additional information needs could be identified.* • *NIMBY: As many renewable energy projects face barriers related to the "not in my backyard" phenomenon, trainings and information on this topic could be further developed in a cooperation between the ACB and the WG SPSD.*		
Energy and water	***A common Alpine voice on hydropower development and a further exchange on good practices for participatory planning of hydropower projects*** *The case studies highlighted in the energy nexus "Energy and water" show the conflict-prone situation with local environmental interests on the one hand and the need to decarbonise the European energy system on the other. But it also shows how intelligent participatory approaches can lead to compromises and even win-win solutions. In this paper we could only provide some first glances at the relevant success factors; a systematic in-depth analysis could provide further insights into e.g. the following questions:* • *What models of participatory approaches are most successful to come to promising results?* • *Which stakeholders need to be included in these approaches and which elements are part of successful compromises?* • *What is necessary to overcome existing situations of mistrust and conflict in such governance structures?* • *Are all environmental concerns duly reflected in the participatory processes? What environmental aspects could become part of a*	Thematic Working Bodies: - Alpine Climate Board - Alpine Biodiversity Board	- All Observer organisations of the AC - Experts that have supported participatory approaches so far

Insights from the energy governance analysis on potential follow-up activities for the ACB and Alpine Convention			
Energy nexus	**Proposal for further specific activities**	**Who could implement this activity at the level of the Alpine Convention?**	**Which stakeholders need to be involved?**
	joint methodology to assess environmental impacts and compensation measures? *Also, the chapter "Energy and water" highlights the role of Alpine hydropower in the European energy system and the role of participation in the current European framework which aims at accelerating large-scale projects.*		
Participation & innovative financing	**Focus activity on the role of energy communities in the Alps – implementing the pathway "Energy democracy"** *The case studies in the "energy communities" energy nexus highlight some success factors for developing energy communities and other innovative financing solutions. A focus activity on this topic could include the following working steps:* – *In-depth analysis and exchange on Alpine-specific success factors for energy communities: what is relevant to motivate citizens to put their money into local energy projects? Are there any differences between Alpine regions and other regions when it comes to investment decisions?* – *Best-practice exchange on 1) success factors, 2) the role of different stakeholders (e.g. how can the regional level support activities at local level) and 3) how to make citizen participation projects more resilient to external shocks (to improve credibility of local investment projects).* – *Exchange on different regulatory frameworks for energy communities in the different Alpine countries and the use of other innovative financing solutions* ➔ *Develop a common guideline on energy communities for stakeholders in the Alps*	Implementation communities of the ACB: - Energy	- EUSALP AG9 - All stakeholders that are involved in the EUSALP cross-cutting initiative "Energy"

Political need for action: Where we need support beyond the responsibilities of the Thematic Working Bodies

In general, the insights from this analysis underline the feasibility of the Avoid-Shift-Improve approach as embedded in both the Energy Protocol and the Alpine Climate Action Plan 2.0 and highlight how cross-sectoral approaches are crucial for promoting projects that focus on energy savings and energy efficiency. In many cases, the explicit consideration of interfaces between the sectors improves acceptance and helps to develop innovative solutions for the energy transition. The case studies and "governance challenges" showcase many scalable examples and experiences that can be used for developing further activities at the level of the Alpine Convention – including approaches to change lifestyles and business models as well as systemic transformations. The analysis also shows the role of cross-sectoral approaches for decarbonising the energy system and for leaving fossil fuels behind in the Alpine area as soon as possible.

Looking at the main insights and follow-up proposals, the energy paper also reconfirms the need for action as defined in the CAP 2.0 and provides some insights into the need for political actions:

1. Energy coordinators: The important role of a strong network of regional energy coordinators (implementation pathway IP_E1) becomes especially clear as many activities require some sort of caretaker/moderator/project manager. In particular, the following specific roles for regional energy coordinators have become clearer in the frame of this paper:

- Regional energy coordinators can ensure that the energy transition is more consistently embedded in spatial planning processes. For example, they can build on their local know-how and expertise in developing zoning plans and in implementing a special vision on RES development (including "Renewable Acceleration Areas" as well as "No Go" areas).
- Moreover, energy coordinators can serve as an interface to improve coordination on RES development between countries to find an overall optimal/win-win solution for the Alpine region (e.g. balancing between countries with different potential regarding hydro, PV, and wind power).

→ As this network of regional energy coordinators is still struggling with developing a business model, a solution could be jointly developed at the level of the Alpine Convention.

2. Find a common voice at European level: Many activities in the different energy nexus have a clear link to multi-level governance and especially the European framework. In this respect, it seems sensible to put more efforts into making the Alpine needs and Alpine viewpoints more visible at EU level, ensuring that relevant legislative frameworks serve the objectives of the Alpine Convention in general and the Alpine Climate Action Plan 2.0 in particular.

- Alpine claims regarding EU framework: Many activities related to cross-sectoral energy governance require a good balance between simplification and a consideration of the specific needs in Alpine regions. In this respect, it would be helpful to develop common solutions at the level of the Alpine Convention – linked to the Energy Protocol, but with a clear view to ongoing discussions at European level.
- Joint position on further developing hydropower: The further development of hydropower is closely linked to the European discussion, especially as some large-scale projects are defined as Projects of Common Interest at EU level.

→ It would be sensible to further develop an Alpine-wide position on hydropower development and to make the Alpine needs more visible at European level. This could be embedded in a broader position with Alpine claims on the European energy system.

3. Regulatory and financial incentive frameworks: Some success factors for improving cross-sectoral energy governance are linked to regulatory or financial frameworks which need to be addressed at national or even EU scale too.

- Strengthen financial incentives: The case studies again highlight the role of financial incentives and economic considerations. These include both a strong CO_2-price signal that sets incentives for energy savings and energy efficiency but also targeted support schemes and programmes, e.g. to launch a transformation process at regional level.

→ In this respect, the Alpine countries should further exchange best practices and solutions on how to improve both regulatory and market-based instruments. With a common top-runner approach, the Alpine countries can go beyond the existing European framework, e.g. by developing financial incentives that strengthen the CO_2 price ambition as currently extended at EU level with the new EU Emissions Trading System for buildings and transport.

→ The case studies show that many successful initiatives could only be developed with an initial funding from national as well as transnational level. Here, the Alpine Convention could also play a stronger role, either through facilitating the access to seed money or by developing a closer link to the Alpine Space Programme and its governance activities.

4. A crucial role for participatory approaches: The governance analysis in this paper highlights that successful energy projects need to be developed in close collaboration between public and private stakeholders and civil society. Here, the Alpine countries need to critically reflect recent developments at EU level which partially weaken the participatory approach.

- Capacity building and training: In this respect, the energy paper underlines the need for further supporting multipliers in developing relevant skills, as offered by the ACB through its training sessions on stakeholder engagement. The implementation pathways included in the Alpine Climate Action Plan 2.0 require strong support from all levels of stakeholders, and we need broad social alliances to improve visibility and accelerate action.
- Further exchange between multipliers: The case studies also highlight the critical role of trade-offs and conflicts that come along with the energy transition, especially when the development of renewable energy systems affects sensitive Alpine nature and landscapes. Participatory exchange formats, guided by a skilled mediator and/or negotiator seem to be the key to overcoming conflicts and finding acceptable solutions.

→ In this respect, the communication and capacity-building formats at level of the Alpine Convention should be further developed, with the explicit objective of strengthening the implementation community of the Alpine Climate Board and ensuring that new multipliers "beyond the existing bubble" are reached.

Literature

Ansell, C.; Gash, A. (2007): Collaborative Governance in Theory and Practice. In: Journal of Public Administration Research and Theory 18 (4), p. 543–571.

APCC – Austrian Panel on Climate Change (2022): APCC Special Report Strukturen für ein klimafreundliches Leben. Springer Spektrum: Berlin/Heidelberg.

ARL (2021): Der Beitrag nachhaltiger Raumentwicklung zur großen Transformation – Impulse für neue Strategien. Hg. v. ARL – Akademie für Raumentwicklung in der Leibniz-Gemeinschaft. Hannover. (Positionspapier aus der ARL 121.).

Bärnthaler, R. (forthcoming). Towards eco-social politics: A case study on transformative strategies to overcome form-of-life crises. Environmental Politics.

Buttkereit, S. (2009): Intersectoral Alliances. An institutional economics perspective. Berlin: WVB.

Commission on Global Governance (1995): Our global neighbourhood: the report of the Commission on Global Governance. Oxford; New York: Oxford University Press, 1995.

CIPRA International (2021): Watercourses and Hydropower in the Alpine Region, CIPRA position on the exploitation of Alpine rivers for hydropower production.

Emerson, K.; Nabatchi, T. (2015): Collaborative Governance Regimes, Georgetown University Press, Washington, DC.

Eurac, Eurac Research (2017): EUSALP Energy Survey 2017.

IPCC (2022a): Sixth Assessment Report of the Intergovernmental Panel on Climate Change—WGIII (Miti-gation of Climate Change)—Full Report.

Lexer, W.; Storch, A.; Guggenberger, D.; Wilk, B.; Diaz-Bone, L.; Fonseca, B.; Mogyorosy, E.; Kropp, J.; Reitermeyer, F. & N. Jacobi (2022): Climate-oriented urban development. Greenhouse gas reduction potential in synergetic fields of action. WP7: Governance and financing of urban adaptation. Final Report to the German Environment Agency.

Möltgen-Sicking, Katrin; Winter, Thorben (2019): Governance: Begriff, Varianten, Steuerungsformen, Akteure und Rollen. In: Katrin Möltgen-Sicking und Thorben Winter (Hg.): Governance. Eine Einführung in Grundlagen und Politikfelder. Wiesbaden: VS Verlag für Sozialwissenschaften, S. 1–21.

Novy, A. & Barlow, M. (2022): Transformative Climate Actions. In: Social-ecological research in econom-ics (SRE) discussion paper 05/2022. Institute for Multi-Level Governance & Development, Department of Socio-Economics, Vienna University of Economics and Business.

Okereke, C.; Bulkeley, H.; Schroeder, H., 2009: Conceptualizing climate governance beyond the international regime. Glob. Environ. Polit. 9: 58–78.

ÖROK – Österreichische Raumordnungskonferenz (2021): Österreichisches Raumentwicklungskonzept ÖREK 2030. Raum für Wandel. Beschluss der ÖROK 20. Oktober 2021.

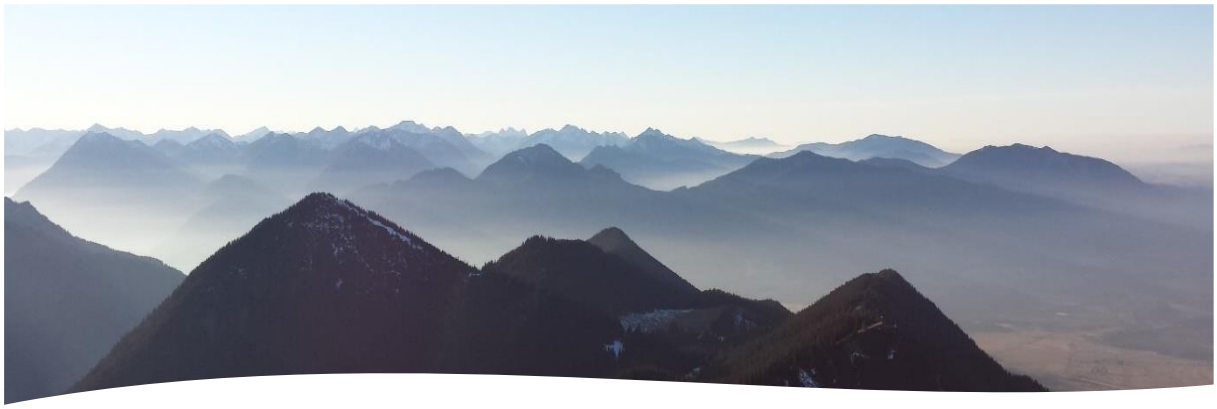
Pütz, M.; Braunschweiger, D.; Kuhn, R.; Hohmann, R.; Probst, T (2019): Climate adaptation governance in the Alpine Space. Transnational synthesis report (WP1). Deliverable of the Interreg Alpine Space project GoApply.

Rehbogen, A. & Strasser, H. (2021). Energie und Klimaschutz in hoheitlichen Planungsprozessen berücksichtigen - Bedarf, Anwendungsfälle und Lösungsansätze aus der Praxis. In R. Giffinger, M. Berger, K. Weninger, & S. Zech (Eds.), Energieraumplanung - ein zentraler Faktor zum Gelingen der Energiewende (pp. 5–17). https://doi.org/10.34726/807

Sedlacek, S; Tötzer, T.; Lund-Durlacher, D. (2020): Collaborative governance in energy regions - Experiences from an Austrian region. In: Journal of Cleaner Production 256 (2020).

Nature-based Solutions and their Governance Structures for Climate Action in the Alpine Region

Proposals for the establishment of nature-oriented, collaborative, cross-sectoral, and multi-level governance mechanisms fostering the use of ecosystem services to tackle the climate crisis



INPUT PAPER

ALPENKONVENTION
CONVENTION ALPINE
ALPSKA KONVENCIJA
CONVENZIONE DELLE ALPI

IMPRINT

This paper is a contribution of the German Federal Environment Agency (UBA) to the mandate of the Alpine Climate Board, chaired by Austria. The paper was elaborated by ifuplan and CIPRA International, with inputs from the Board members.

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Nature-Based Solutions and their Governance Structures in the Alpine Region – Input Paper, 2024: Busse[1], L.; Marzelli[1], S.; Holzer[2], M.; Mahlknecht[2], S.; Kogovšek[2], M.; Pfefferkorn[2], W.; Alpine Convention. [1] ifuplan [2] CIPRA International

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EXECUTIVE SUMMARY

The **German Federal Environment Agency** initiated the project "Nature-based solutions in the Alpine region: Using ecosystem functions to promote climate mitigation and adaptation measures. Creating new nature-centred governance mechanisms across sectors and policy levels" to raise awareness about the fundamental relevance of nature-based solutions (NbS) for the Alpine area and the opportunities they offer to promote biodiversity and human well-being while mitigating climate change and its impacts. Within this project, ***ifuplan* and *CIPRA International*** analysed already implemented NbS projects in the Alpine region and the governance mechanisms behind them, evaluating key success factors and challenges.

This paper summarises the results of the **project analysis**, the inputs from an **international project workshop** held in September 2024, the derived **conclusions** and **recommendations** to political stakeholders and further actors of the Alpine Convention. The results will be presented to the **XVIII Alpine Conference in January 2025**. They may serve as a basis for the future work of the **Alpine Climate Board**, in collaboration with other **Thematic Working Bodies of the Alpine Convention**. Recommendations and insights may be considered during the **Italian and German Presidencies** of the Alpine Convention 2025-2026 and 2027-2028, respectively.

The authors of this paper analysed **8 NbS pilot projects** with various implementation sites in Austria, Germany, France, Italy, Liechtenstein, Slovenia, and Switzerland. They cover the following sectors of the Alpine Climate Target System: "Ecosystems and Biodiversity", "Mountain Agriculture", "Mountain Forestry", "Natural Hazards", "Soil", "Tourism", and "Water". All projects provide approaches to adapt to the impacts of climate change and some help to actively mitigate climate change by enhancing the sequestration of greenhouse gases. The projects vary greatly in terms of size, addressed sectors, and number of project partners and stakeholders involved. (Chapter 2).

Based on the **analysis of aspects** relating to **biodiversity, climate change mitigation and adaptation, socioeconomic impact, and governance** (Chapter 3), the authors derived the following **requirements** for a successful establishment of NbS in the Alpine region (Chapter 4):

- Regarding **space**, the successful establishment of NbS requires mechanisms for two approaches: a **bottom-up-approach**, starting from small projects and spreading or upscaling them, and a **top-down approach**, implementing large-scale solutions at individual project sites.
- The successful establishment of effective and sustainable (in terms of time and function) NbS requires **adapted temporal management approaches**: While some projects, especially proven and directly effective small-scale NbS, need targeted promotion and funding to spread rapidly, NbS based on complex natural processes require (new) concepts for long-term thinking, long-term management and adaptive governance.
- A **smart combination of public funding and the utilisation of private resources**, supported by adapted institutional frameworks is highly relevant for the successful establishment of NbS. Public funding needs to be promoted and **easily accessible for project applicants across sectors**.

- The widespread establishment of NbS requires a **binding legal framework, standardised evaluation criteria, and institutionalised support structure**.
- Ensuring the establishment of NbS requires efforts to **raise public awareness and to build up capacities** by offering easily accessible education and training on theoretical NbS approaches and how to transfer them into action as well as exchange formats among stakeholders.
- The successful establishment of NbS requires '**good' and case-adapted governance mechanisms**. This will facilitate cross-sectoral and interdisciplinary collaboration with a special focus on transparency and continuous communication, and increase the acceptance of NbS among landowners, (private) investors, planners, public administration and policy makers.

As a result of the comprehensive analysis of NbS projects, recommendations to foster NbS projects in the Alpine region are compiled in Chapter 5.1, relating to the following aspects:

- **Governance and Communication Mechanisms Fostering NbS**: Anchor cross-sectoral approaches in the policy mix in the Alpine region, offer training sessions for all NbS stakeholders to build-up capacities, and promote positive narratives by disseminating NbS success stories.
- **Integration of Nature-based Solutions into Decision-Making Processes**: Incorporate NbS at different policy levels, foster the involvement of decision makers and stakeholders, and integrate NbS into existing programmes like the Multi-Annual Work Programme of the Alpine Conference.
- **Practical Implementation of NbS**: Pursue both bottom-up and top-down approaches. Identify suitable areas for NbS in the Alpine region, use NbS to tackle challenges at the local level, and integrate NbS into Alpine-wide, national, regional, and local planning instruments and strategies.
- **Tools**: Elaborate a comprehensive and easy-to-use glossary of NbS, a collection of good practice examples, and a decision-making aid on the transferability of NbS.
- **Standardisation and Evaluation**: Develop a comprehensive catalogue to characterise NbS types and their benefits, a standardised economic valuation approach. Refer to established standards and provide technical guidelines to facilitate implementation.
- **Economic Aspects**: Create accessible and adapted funding programmes and foster a comprehensive approach for an economic evaluation of NbS, taking into account their complexity and making NbS comparable to technical solutions.

Further suggestions of the authors of this paper refer to (Chapter 5.2):

- **Social Engagement**: Encourage participation through innovative concepts like competitions, experiential learning projects, and volunteer involvement.
- **Spatial Planning**: Integrate NbS into planning instruments in all relevant sectors and at all levels.
- **Legal Instruments**: Favour NbS in public procurement, mandate small-scale NbS in building projects, and incorporate NbS in further sectors of law.

- **Supporting Bodies and Structures**: Make sure that existing or newly created specialised institutions at various levels can support interdisciplinary approaches, assist in planning and implementation, facilitate networking, and promote good governance practices.
- **Alpine-wide Interactive NbS-Platform**: Develop an open-access platform to aggregate information on NbS, including definitions, legal guidance, funding opportunities, case studies, monitoring results, educational materials, tools, and Web-GIS services for site proposals.

The **Alpine region has a high potential for the implementation of NbS in different sectors**. Specific political mandates to implement the recommendations could be set out in a **"Nature-Based Solutions Strategy for the Alps"**.

1. Preface and Introduction

Nature provides a multitude of services for humans, which are *"essential for human existence and good quality of life. Most of nature's contributions to people are not fully replaceable, and some are irreplaceable."* (ipbes 2019) Functioning ecosystems and biodiversity are the basis not only for human well-being but also for economic prosperity, particularly in the Alps with their high variety of climate and vegetation zones, a high probability of natural hazards but also an exceptional recreation value. The concept of Nature-Based Solutions (NbS) merges the scientific analysis of ecosystem services with the benefits they offer for human well-being as well as for biodiversity.

For this input paper, we follow the definition of NbS given by IUCN (2016):

> *"Actions to protect, sustainably manage, and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits."*
>
> (Emphases by the authors)

This definition was confirmed and concretised by the United Nations Environment Assembly (UNEP 2022)[1], whose resolution contains the first multilateral agreed definition of NbS.

Figure 1 Basic concept of NbS (IUCN 2016).

According to the concept of NbS elaborated in (IUCN 2020), which is visualised in Figure 1, ecosystem-based approaches address seven major societal challenges: climate change mitigation and adaptation, disaster risk reduction, economic and social development, human health, food security, water security, as well as environmental degradation and biodiversity loss. Due to their nature, NbS provide approaches to overcome these challenges while preserving ecosystems, which are threatened by various factors, and strengthen their integrity and resilience.

[1] According to this resolution, "… nature-based solutions are actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits, …".

The Alpine region is particularly sensitive to the effects of the climate crisis. Changes in precipitation, temperature, and runoff not only influence ecological functions but also economic and settlement opportunities in the Alps and neighbouring areas. The exceptional ecosystem services provided by the Alps offer opportunities for integrated and cross-sectoral NbS approaches to mitigate the effects of and adapt to climate change.

An effective use of NbS requires to acknowledge the importance of ecosystem services and integrates them into decision-making processes, developing appropriate governance mechanisms at all levels. As NbS often have cross-sectoral and cross-border effects, they are particularly relevant for the Alpine Convention as a transnational agreement and are suitable for their establishment in the entire Alpine region. The Alpine Climate Board has therefore agreed to make NbS one its three cross-sectoral focus areas.

In view of these aspects, the German Federal Environment Agency initiated the project “Nature-based solutions in the Alpine region: Using ecosystem functions to promote climate mitigation and adaptation measures. Creating new nature-centred governance mechanisms across sectors and policy levels”. Within this project, *ifuplan* and *CIPRA International* analysed already implemented NbS projects in the Alpine region and the governance mechanisms behind them, looking for key success factors and challenges.

This paper pursues the objective to raise awareness about the fundamental relevance of NbS for the Alpine area and to offer recommendations to political stakeholders and further actors of the Alpine Convention at the XVIII Alpine Conference in January 2025. It may also serve as a basis for the future work of the Alpine Climate Board, in collaboration with other Thematic Working Bodies of the Alpine Convention. Recommendations and insights may be considered during the Italian and German Presidencies of the Alpine Convention 2025-2026 and 2027-2028, respectively.

2. Methodological Approach and Selected Pilot Projects

2.1. Selection Criteria and Procedure

According to the definition of NbS given in the introduction (see Chapter 1), they are characterised by three main criteria: they address one or several societal challenges, are beneficiary for biodiversity, and for human well-being. This combination of effects is essential to demark an NbS from a pure nature conservation measure on the one hand (e.g. the restoration of a single habitat in a creek or a specific species protection programme) and from a technology-based solution on the other hand (e.g. an avalanche defence wall or a flood protection wall).

Based on these considerations, the authors of this paper defined the criteria for the selection of NbS projects to be analysed in detail as follows:

1. Every NbS project has to:
    a. show positive effects on biodiversity as well as human well-being and
    b. contribute to climate change adaptation and / or mitigation as the overall societal challenge to be tackled.
2. Furthermore, it must already be (at least partially) implemented – aiming to exclude pure theoretical approaches – and it has to demonstrate relevant governance aspects.
3. Since the overall project focuses on the Alpine region, the authors specified the NbS criterion of addressing social challenges by linking it to the Alpine Climate Target System (ACTS) of the Alpine Climate Board (PSAC 2019): Every selected NbS project has to address at least one of the sectors “Water”, “Natural hazards”, “Mountain agriculture”, “Mountain forestry”, and “Soil” tackled in the target system. Due to the nature of NbS, the “Ecosystems & Biodiversity” sector is addressed by all NbS projects. Additionally, they often foster the “Tourism” sector as a side effect, which is indicated in the present pilot project analysis (see 2.3) but was not a focus topic.
4. Finally, each Alpine country should be represented.[2]

The definition of the criteria was followed by a two-stage selection process:

1. The authors carried out extensive research for NbS projects on various internet platforms, for instance on Interreg Alpine Space, PHUSICOS, OPPLA, UNA, PORTAL, and a general internet research via different search engines.
2. According to the defined criteria, the project team ranked the pre-selection and finally chose the 8 most promising pilot projects, covering different project scales.

The authors analysed the selected projects in detail. Regarding the governance aspects, they carried out interviews with representatives (e.g. project partners, representatives of regional governments in charge of NbS) of every selected project.

[2] The final pilot project selection achieves this goal partially, as no suitable NbS project in Monaco could be identified within the project’s time frame and Liechtenstein is only considered via the “Bergwaldprojekt” (see 2.3).

2.2. Governance Analysis

Governance aspects play a central role for the implementation of NbS. As size and complexity of NbS projects vary greatly, the corresponding governance mechanisms also show a large variety of forms and scopes.

In this paper, the term “governance” refers to the following **governance dimensions**:

- **Collaborative Governance**: This aspect refers to the **interaction of actors from different institutional contexts**, such as politics, administration, business, research and education, **and civil society**. For "good" governance, it is crucial to determine which framework conditions and formats are suitable to enable the most constructive involvement and cooperation possible between the individual actors, taking into account their respective logics of action and institutional agendas.
- **Governance in a Multi-Level System**: Depending on the content and tasks, different levels are involved in governance processes: the **local level** (municipality), the **regional level** (county, district, etc.), the federal state level (region, province, department, federal state, etc.), the **national level** (state) and the **transnational level** (e.g. Alpine region, EU). **Cross-border governance** is a special form of bilateral or trilateral governance between neighbouring states. The more levels and states are involved, the more complex and demanding the governance setting becomes. Here, too, the question arises as to which innovative formats and cooperation models are suitable to enable the most effective cooperation possible between the various actors regarding regulation of responsibilities, competencies, decision-making models, etc.
- **Cross-Sectoral Governance:** Many collaboration processes, particularly in the field of NbS, **involve actors from different sectors**, e.g. nature conservation, agriculture, forestry, tourism, healthcare, water management, spatial planning, construction, urban planning, etc. Here, the aim is to develop new forms of cooperation and innovative alliances that enable the effective implementation of measures and projects.

To cover multiple facets of governance, the authors based the governance analysis on the topics and questions listed below. The interviews conducted with several stakeholders provided the corresponding information for every project (see Chapter 3.4).

1. Partners and Stakeholders Involved

- Which partners and institutions are directly and indirectly involved?

2. Form and Intensity of Cooperation

- In which form do the actors involved work together? How are cooperation, internal and external communication regulated?
- Is there a project organisation with committees for specific tasks? Has a steering group been set up? Has a process design or flowchart been developed for the project?
- Has external process support and moderation been commissioned?

3. Differences of Interest, Conflicts, and How to Deal with Them

- What were the greatest differences of interest and conflicts among the actors involved? To what extent did these conflicts escalate?
- How were the conflicting interests and conflicts managed or negotiated?

4. Successes and Challenges

- What were the main successes of the project from a governance perspective?
- What were the key success factors?
- What were the main obstacles regarding governance and how were they overcome?

5. Transferability

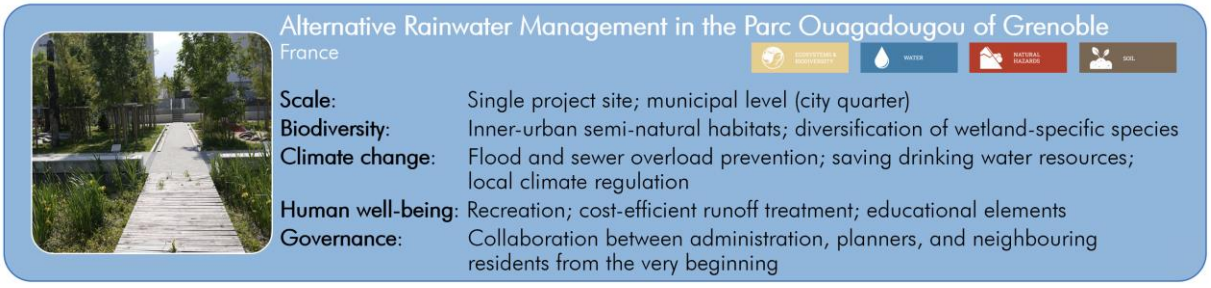
- What findings from the project can be transferred to other projects or be generalised?

2.3. Selected Pilot Projects

Several of the 8 selected pilot projects and their implementation sites are located in each Germany, Italy, Austria, France, and Switzerland. Liechtenstein and Slovenia are represented by one project each.

Three-quarter of the pilot projects are related to different aspects of water. Also, the sectors “Soil”, “Natural Hazards”, “Mountain Agriculture“, and “Tourism” are addressed multiple times (in 5, 4, 3, and 4 projects, respectively). One project has a particular focus on “Mountain Forestry”. To a smaller or larger extent, all projects provide approaches to adapt to the impacts of climate change. Half of the projects additionally help to actively mitigate climate change by enhancing the sequestration of greenhouse gases.

The following info boxes present the key facts of the selected pilot projects regarding their scale, their beneficial impacts for biodiversity and human well-being, their contribution to climate change adaptation or mitigation, as well as their characteristic governance aspects.



LIFE Lech – Dynamic River System Lech

Austria and Germany

Scale: 13 implementation sites; watershed level
Biodiversity: Habitat restoration; species support measures
Climate change: Flood protection (additional retention volume of ca. 200,000 m³)
Human well-being: Fostering regional economy and job market; tourist attraction; education
Governance: Cooperative and clear steering and implementation structures; external facilitation; few parties involved; *challenge*: demand for large surface areas

Zürcher Bachkonzept

Switzerland

Scale: Various implementation sites; municipal level (City of Zurich)
Biodiversity: Habitat creation; repopulation by native animal and plant species; freshwater network
Climate change: Preventing urban flooding; increasing evaporation and groundwater recharge
Human well-being: Urban quality of life; increasing efficiency of wastewater treatment
Governance: Interdisciplinary approach; transparency; good technical implementation; *challenges*: technical and legal aspects, lack of knowledge, landowners

Bergwaldprojekt

Austria, Catalonia, Germany, Liechtenstein, Switzerland

Scale: Multiple project sites; transnational level
Biodiversity: Rebuilding climate-resilient near-natural forests; restoration of peatlands
Climate change: Reducing greenhouse gas emissions; protective forests; water retention
Human well-being: Sense of community; (active) recreation; education; forestry
Governance: High level of institutionalisation and coordination; code of conduct; clear lead; transparency; extensive involvement of volunteers

I-SWAMP – Integrated Small Wetlands of the Alps Monitoring and Protection

Austria, Italy, Slovenia

Scale: 17 implementation sites; transnational level
Biodiversity: Wetland habitat restoration; species support measures; biotope network
Climate change: Reducing greenhouse gas emissions; water retention
Human well-being: Education; natural heritage
Governance: Low level of steering mechanism; interdisciplinary planning; early communication; transparency; involvement of volunteers; *challenge*: landowners

LIFE PASTORALP – Pastures Vulnerability and Adaption to Climate Change in the Alps

France and Italy

Scale: 2 pilot regions; transnational level
Biodiversity: Protecting pasture-specific habitats
Climate change: Options for climate-resilient pasture management
Human well-being: Cultural heritage protection; facilitating management decisions; agriculture
Governance: Interdisciplinary and participatory approach; open-access platform for easy replication and transferability

Rotational Pasture Management to increase the Sustainability of Mountain Livestock Farms in the Alpine Region

Italy

Scale: Single project site; farm level
Biodiversity: Positive effects on soil microbes and fauna, improved soil conditions
Climate change: Reducing greenhouse gas emissions
Human well-being: Cost savings (no need for supplementary feeding); longevity of pastures
Governance: Easy transferability to other farms

3. Results of the Cross-Project Analysis

3.1. Biodiversity Aspects of the Selected Pilot Projects

NbS projects often achieve benefits for biodiversity by **restoring specific habitat conditions**, e.g. through the restoration of peatlands, wetland, watercourses, etc. These measures usually promote the **local biodiversity** in single habitats and/or **protect endangered and rare species**. In addition, they contribute to the establishment of comprehensive **biotope networks**. By fostering and safeguarding ecological connectivity, these NbS can provide a valuable long-term benefit for biodiversity. Further important prerequisites to ensure a sustainable protection of habitats and hence a positive long-term effect on biodiversity are **knowledge and capacity building** combined with the **involvement of local stakeholders**. Many NbS projects integrate these aspects.

The pilot project analysis shows that land use and management practices concerning arable land, grassland, pastures, and forests have a significant influence on the diversity of flora, fauna, and fungi, as well as on soil functions. The projects achieve the protection of biodiversity through **adapted land use and management practices**, such as rotational instead of continuous grazing, fencing of particularly sensitive habitats, wet cultivation methods on peatlands, etc. Coincidently, the conservation or promotion of biodiversity through NbS often has positive side effects with respect to improved ecosystem services, such as the creation or revaluation of recreational areas or better yields and more robust systems in agriculture and forestry.

3.2. Climate Change Mitigation and Adaptation Aspects of the Selected Pilot Projects

NbS, notably those related to peatlands, wetlands, forests, or ecologically intact soil functions, usually contribute to climate change mitigation by **actively sequestering atmospheric carbon** or **reducing emissions of carbon dioxide and other greenhouse gases** like methane and nitrous oxides from soils. The fixation of greenhouse gases is closely related to land use and management practices, which can influence biodiversity. NbS usually **promote ecologically sensitive land use methods**, in particular regarding the intensity of agriculture or forestry, or **adapted management strategies**, for example a decentralised instead of a centralised rainwater management. Many NbS relate to the **regulation of the water balance**, i.e. to the attenuation of surface or flood runoff, the retention of water in the soil or in the landscape, or to groundwater replenishment. Additionally, NbS have **local climatic effects**, by providing an enhanced evapo(transpi)ration or cooling effects, for instance. These are very important aspects insofar as the supply and drainage of water is becoming increasingly challenging as climate change progresses. One characteristic of climate change is the increasing probability for the occurrence of extreme weather events, like heavy rainfall, and associated natural hazards, like floods, mudslides, etc. NbS help **attenuating the impacts of such extreme events**: intact protective forests, for instance, prevent the formation of large mudslides or slow them down; natural riverbeds with floodplain forests or other adjacent unsealed floodplains provide space for water retention during floods or heavy rainfall events and help preventing the flooding of settlements. This may be the most resounding argument

from an economic perspective as the lateralisation of damages due to natural hazards is very costly – if not impossible, for example in cases of casualties.

3.3. Socio-Economic Aspects of the Selected Pilot Projects

NbS offer **social added value**, in particular by providing or often improving **recreational qualities of areas** or the **ability to experience ecosystems services**, by integrating **environmental education programmes** and interesting starting points for **scientific research**. In addition, NbS frequently promote a **sense of community** by creating places and platforms for exchange or involving the local population into the implementation process. Such opportunities for action can also be a valuable means of **combating the feeling of powerlessness** in view of the rapid progression of climate change.

Apart from that, the implementation of NbS often leads to **cost savings** or **efficiency gains**, regarding, for instance, the long-term maintenance for urban green spaces, an improved wastewater treatment, or lower insurance costs due to a higher resilience of ecosystems, and they can have positive effects for the **(regional) labour market** and the **regional economy**.

Many NbS projects contribute to the **preservation of cultural and natural heritage** and finally they usually contribute to the **protection or renewal of essential natural resources**, like groundwater as a source of drinking water or the yield capacity of soils to secure the food base.

3.4. Governance Aspects of the Selected Pilot Projects

The governance analysis of the selected pilot projects is based on the 5 topics and corresponding questions outlined in Chapter 2.2.

Partners and Stakeholders Involved

The number and types of directly or indirectly involved partners and stakeholders varied according to the size of the project. However, with a few exceptions, all **projects involved a wide range of stakeholders,** e.g. specialist departments from the administration, planning offices, consultants, research institutions, private sector, NGOs, intermediary organisations, citizens.

Form and Intensity of Cooperation

The form and extent of governance mechanisms (e.g. executive bodies, steering bodies, rules for decision making and internal as well as external communication) varied according to the size and complexity of the project (see Chapter 2.3). In **smaller projects, loose cooperation** between the partners involved was sufficient (e.g. “I-SWAMP”). **Large projects had clearly defined organisational structures and process designs** (e.g. “LIFE Lech”) **up to complete institutionalisation** (e.g. “Allgäuer Moorallianz” and “Bergwaldprojekt”). For larger projects, **steering mechanisms** were established, and internal or external **process facilitators and moderators** were commissioned.

Differences of Interest, Conflicts and How to Deal with Them

In the projects examined, classic **conflicts of interest** were observed, e.g. between the various sectors (**agriculture, water management, nature conservation**) and particularly between **project operators and landowners**. The different interests were considered in the projects. In most cases, the **negotiation of interests** took place in the course of the project implementation, on the one hand in the context of **communication and sensitisation measures** as well as **inspections** and on the other hand by **direct involvement**, which means by **integrating the interests of landowners and managers** directly into the project (e.g. the exchange of soil litter in the "Allgäuer Moorallianz" project, see Chapter 2.3).

Successes and Challenges

The most important success factors for good cooperation and coordination among the actors involved were the formulation of **clear project objectives**, a good **distribution of tasks and responsibilities** among the partners involved, clear **leadership** by the respective lead partners, the establishment of **steering mechanisms**, internal and external **transparency**, continuous **external communication** and **direct contact and exchange with those directly affected** by the project, especially the landowners. It was particularly important to **start the exchange at an early stage** to get the people affected on board and to take their interests into account from the outset. The main challenge was the refusal of single landowners in some of the project to collaborate.

Transferability

Generally, the concept of all the analysed pilot projects can be **transferred to other (Alpine) regions** with **similar topographical and structural conditions**. However, the **specific implementation** of NbS projects will **vary in each case** and needs **site-adapted concretisation**, taking into account, for instance, the local geology, fauna and flora, land use, administrative structure, national or regional legal requirements, cultural attitudes and practices, etc.

With respect to **governance aspects**, the following findings can be generalised and are **valid for all NbS projects**, independent of their location: **Successful NbS projects**, particularly those involving several project sites or project partners and affecting different stakeholders, are characterised by an **early involvement of all relevant actors**, notably affected landowners, a **professional framework for cooperation** between the various actors, a special focus on **transparency** and **continuous communication**, and a **high-quality implementation** of the measures: These aspects ensure the success of **interdisciplinary and cross-sectoral approaches**.

4. Conclusions and Derived Hypotheses

4.1. Cross-Sectoral Effects of Nature-based Solutions

NbS use the multiple functions and services of ecosystems, offering a comprehensive approach to link ecological and societal requirements. NbS can thus be an effective strategy as well as an important tool to tackle the large-scale socio-economic transformation we as society have to face to combat the climate and biodiversity crises.

The cross-sectoral dimension of NbS encompasses at least the following aspects:

Education

NbS re-connect people to nature and raise awareness for the benefits and services provided by nature. They can serve as a tangible approach for nature perception and environmental education at different levels, from schoolchildren to decision makers, guiding for example from single, visible species to scientific concepts about ecological connectivity.

Collaboration and Social Engagement

Usually, the successful implementation of NbS requires an intensive and interdisciplinary collaboration between different stakeholders. Good NbS governance can foster mutual understanding and strengthen the future collaboration between the involved parties. Additionally, it may promote the societal engagement of people affected by the NbS project.

Economic Effects

NbS are multi-functional and often more cost-effective in the medium to long term compared to technical solutions. For instance, the restoration of natural infiltration areas or water courses, reducing the hydraulic load of the sewage system, can reduce wastewater treatment costs significantly, as the example of the “Zürcher Bachkonzept” demonstrates; a protective forest may have substantially lower maintenance costs than a technical avalanche protection system, especially if the forest generates income through forestry utilisation. Furthermore, it is significantly cheaper to preserve existing ecological systems and use their functions than to restore them or develop new ones in order to compensate for ecological losses.

4.2. Requirements for the Establishment of Nature-based Solutions in the Alpine Region

Considering the results of the project analysis and the above-mentioned characteristics of NbS, the following requirements for the establishment of NbS in the Alpine region have been identified:

4.2.1. Spatial Requirements

Depending on the societal challenge addressed, the specific goal to be reached, and the type of NbS to be implemented, they have very different spatial requirements. It should be noted that the terms “large-scale” and “small-scale” can be interpreted very differently without specification.

In some cases, small areas are sufficient for the realisation of NbS, e.g. with respect to the planting of trees along a pedestrian street to provide shading and evapotranspiration, to roof or facade greening, to the use of artificial wetlands to treat surface runoff, or to the restoration and protection of single habitats, like spawning ponds for endangered amphibians. Beyond their local impact, small-scale NbS offer the opportunity to experiment with new solutions, realise pilot projects, and use them as best practice examples to raise public awareness, interest, and motivation for the implementation of NbS in the public as well as the private sector.

However, certain challenges, like the adaptation to droughts or a comprehensive flood protection require large-scale NbS. The restoration of a river flood plain, for instance, is usually associated with significant space requirements, depending on the size of the river and the local circumstances, regarding e.g. infiltration capacities, land use, geology, etc. This can harbour a high conflict potential, as space is generally limited in Alpine valley floors and many areas are privately owned or are already heavily built up with infrastructure and settlements.

The establishment and wide-spread implementation of NbS in the Alpine region therefore require both large-scale approaches and the promotion of small-scale projects. Hence, different planning levels should cooperate in the most effective and efficient way possible (see Chapter 5). The need to promote both approaches is particularly acute in the Alps: On the one hand, the Alpine specific natural hazards require large-scale solutions (e.g. the creation of retention areas for flood events or extensive protective forest areas); on the other hand, space is limited, especially for settlement areas, due to the topography, and therefore the realisation of many decentralised small-scale NbS is equally important.

Another spatial aspect is notably relevant with respect to flood protection: The most efficient flood protection measures in forms of NbS are located in the headwaters and upper reaches of rivers. NbS implemented there, like (semi-)natural retention areas, protect downstream residents and settlements and have therefore effects on areas far away from the implementation site – in cases of transboundary river basins sometimes even in a different state. This emphasises that NbS and their effects must be considered in very broad dimensions (spatial, temporal, financial, social, see also Section 4.2.2).

Based on these considerations, the following hypothesis can be derived:

***Hypothesis I**: Regarding space, the successful establishment of NbS requires mechanisms for two approaches: a bottom-up-approach, starting from small projects and spreading or upscaling them, and a top-down approach, implementing large-scale solutions at individual project sites.*

4.2.2. Time Requirements

Also in terms of temporal aspects, different types of NbS require different approaches: Some NbS, especially small-scale projects, can be realised and show effects within a short range of time (i.e. within several months or few years), like the establishment of a decentralised rainwater management system in the “Parc Ouagadougou” in Grenoble (see Chapter 2.3).

Other NbS, however, that are based on complex ecosystem processes, such as the conversion to climate adapted forests on a large scale, soil formation, or the colonisation of habitats by certain species often require long periods of time. These processes follow different time schedules than human activities and associated NbS therefore require a long-term approach for successful implementation. Even if the initial measures of an NbS project can be carried out within a short timeframe, the desired effects and ecosystem services may only occur with a significant time lag due to the dynamics of natural systems. Conversely, this aspect also demonstrates the value of and the time saved by protective measures for existing ecosystems.

To ensure the appropriate management and acceptance of such long-term projects, as well as the monitoring and evaluation of their effects, the additional establishment of long-term, multi-dimensional and cross-sectoral governance mechanisms is necessary (successful examples are the projects “Allgäuer Moorallianz” and “Bergwaldprojekt”, Chapter 2.3). Such an approach could overcome the deficits of the currently prevailing logic of short-term visions. Furthermore, it offers long-term perspectives and planning security to landowners and stakeholders that are involved in these projects.

A transformation to long-term perspectives may be challenging for existing funding programmes because most of them, such as the Interreg Alpine Space Programme, are not designed for a long-term funding of implementation projects. They would thus require interfaces to long-term funding programmes at national and EU level to ensure follow-up funding after an initial project phase. A long-term funding could also be realised by compensation mechanisms or adapted market mechanisms (see Section 4.2.3).

***Hypothesis II**: The successful establishment of effective and sustainable (in terms of time and function) NbS requires adapted temporal management approaches: While some projects, especially proven and directly effective small-scale NbS, need targeted promotion and funding to spread rapidly, NbS based on complex natural processes require (new) concepts for long-term thinking, long-term management and adaptive governance.*

4.2.3. Financial Requirements

NbS are usually based on or closely related to public goods, which are often not subject to general market mechanisms. In particular, there is a political agreement that public goods relevant to services of general interest, i.e. that are essential for the well-being of the population, like the provision of drinking water in good quality, should not be capitalised by the private sector. Therefore, it can be difficult to make the implementation of NbS economically attractive for enterprises or single persons.

For NbS projects that are not economically viable or are too large for single private investors, public funding can therefore be a decisive prerequisite for the realisation of NbS projects, particularly during their initial phase.

Some types of NbS, on the other hand, offer cost savings and efficiency gains (for instance, higher yields and an additional source of income like in the pilot project "Rotational Pasture Management", Chapter 2.3) and may be economically more profitable than technical solutions. They may also have positive effects on the regional economy and labour market. These NbS, especially small-scale projects, may need promotion but don't need public funding.

Another resource that can be utilised for the implementation of NbS are volunteers who invest time and financial resources out of personal interest rather than economic considerations. The involvement of volunteers has proven successful in several NbS projects (e.g. the "Bergwaldprojekt", Chapter 2.2).

If the economic framework conditions are appropriate, the establishment of NbS may profit from a strong public support in terms of funding and an institutional setting (see also Section 4.2.4) as well as from private investments. Notably with respect to companies or associations, the private sector may offer a fast and highly dynamic establishment of new approaches, e.g. the set-up of sponsorship or voluntary programmes, fundraising campaigns, applied research, etc.

When assessing the economic viability of NbS and deciding on the allocation of public funds for their implementation, it must be taken into account that (according to their definition) NbS are associated with an increase in social benefits, an often neglected return on investment. To assess this return on investment in economic terms, the user-pays principle (i.e. "What would an average user pay to benefit from a specific ecosystem service?") can be applied. Also, the polluter-pays-principle – a central principle of the Alpine Convention (Art. 2 Nr. 1) and the European Environmental Law – may be instrumentalised for the funding of NbS, e.g. by linking the obligation for compensation measures to the implementation of NbS. This approach needs corresponding institutional structures (see Section 4.1.4).

***Hypothesis III**: A smart combination of public funding and the utilisation of private resources, supported by adapted institutional frameworks is highly relevant for the successful establishment of NbS. Public funding needs to be promoted and easily accessible for project applicants across sectors.*

4.2.4. Institutional Requirements

Besides financial incentives, NbS need to be fostered by legal requirements, guidelines, and institutions and need to be integrated into political objectives and strategies.

To establish a common understanding of the characteristics and benefits of NbS, standards are needed that define NbS as well as the ecosystem services related to them. The introduction of testing and monitoring standards for NbS as well as of criteria for their evaluation in economic terms is important to enable cost-benefit assessments in comparison to purely technical measures – particularly considering long-term effects of NbS and external cost aspects, like avoided costs for damage management or social benefits. Such an evaluation should follow a comprehensive approach, while being user-friendly and comprehensible.

Based on such a framework, legal requirements for NbS can be formulated in various ways. For example, public procurement law, construction law, planning law or environmental law regulations can be used to require that the possible use of NbS must generally be investigated for the implementation of projects and that their implementation must be favoured, unless there are overriding reasons of general interest to the contrary.

Such a set of standards should be defined at a transnational level, for example by the UN, at EU level or within the framework of the Alpine Convention. The definition of NbS by UNEP (2022) and the Common International Classification of Ecosystem Services (CICES, Haines-Young & Potschin 2018) can serve as a starting point here.

Also, subsidies and funding programmes to foster NbS as well as further economic considerations can be designed and made, respectively, based on common standards. Technical guidelines and recommendations as well as institutions that provide assistance for the planning and implementation process of NbS, such as specialised authorities, can also significantly support their establishment.

In summary, the stronger establishment and anchoring of NbS in the Alpine region (compared to technical solutions) requires a "policy mix" of legal provisions, technical guidelines, financing mechanisms and standardised planning instruments, linking various affected sectors, e.g. agriculture and forestry, hydraulic engineering, natural hazard management, tourism, spatial and landscape planning, nature conservation, etc. Ensuring these aspects further requires customised governance structures (see Chapter 4.2.6).

***Hypothesis IV**: The widespread establishment of NbS requires a binding legal framework, standardised evaluation criteria, and institutionalised support structures.*

4.2.5. Communication and Education Requirements

Difficulties in establishing and institutionalising NbS arise, inter alia, because many relevant actors (e.g. landowners, administrators, planners, NGOs, media, etc.) know little about the specifics of NbS or are discouraged by the lack of standards or the uncertainty about the (long-term) impact of NbS projects and may therefore be reluctant to adopt them. Besides, the general public may easily underestimate or misjudge the risks associated with the climate crisis and the opportunities provided by NbS to counteract these risks.

NbS often involve specific land use or land management requirements and possible restrictions for landowners. This is a particularly important issue in the Alpine region, where space in the valley floor is limited and different utilisation interests strongly compete.

An important measure to overcome these obstacles is the transfer of knowledge and the development of skills. Important institutions in this regard are technical colleges and universities, professional associations, the public administration, exchange formats for practitioners, NGOs, and schools. They should offer theoretical inputs as well as practical trainings and an exchange of knowledge and experience for students, employees of authorities, planning offices, associations, pupils, and interested citizens in general.

When planning and implementing specific NbS projects, special attention must be paid to communicating with landowners and further stakeholders to address their concerns and needs, to build trust, and ensure transparency.

To increase public awareness of the opportunities offered by NbS and to arouse interest in such solutions, positive narratives that appeal to the population in a motivating, tangible, and emotional way are very helpful.

Hypothesis V: Ensuring the establishment of NbS requires efforts to raise public awareness and to build up capacities by offering easily accessible education and training on theoretical NbS approaches and how to transfer them into action as well as exchange formats among stakeholders.

4.2.6. Governance Requirements

The comprehensive consideration of all the above-mentioned aspects and the realisation of successful cross-sectoral and interdisciplinary concepts requires adapted and, if necessary, new governance mechanisms.

Their form and scope may vary greatly depending on the size and complexity of the respective NbS project. For smaller projects with few participants and a short duration, simple agreements between the partners involved are sufficient, whereas large NbS projects with many participants and/or a long duration going far beyond the usual “single-project-logic” require clearly defined organisational structures and processes – up to and including permanent institutionalisation beyond the immediate project duration and long-term financing mechanisms. If the scope of a project extends across borders, this becomes an additional challenge.

In NbS projects, conflicts of interest between the partners involved are the norm, e.g. between different sectors (agriculture - water management - nature conservation) or between project operators and landowners. Dealing with these different interests in a constructive and professional manner is a key factor for the success of NbS. A wide range of cooperation and conflict management methods and tools are available for the negotiation of conflicting interests. Particular attention must be paid to careful and professional internal and external communication, especially with landowners, without whose land NbS often cannot be implemented. This is particularly challenging in the Alpine region with its limited land availability leading to increased land use conflicts especially in the Alpine valley floors.

Important success factors for good cooperation and coordination between the actors involved in NbS are an inter- and transdisciplinary approach, i.e. the involvement of all relevant actors, a high quality of the content of the measures and a professional framework for cooperation between the various actors. This includes the formulation of clear project goals, a good distribution of tasks among the partners involved, clear leadership by the respective responsible institutions, the establishment of steering and decision-making mechanisms, internal and ex-ternal transparency and communication based on a clear concept (what is communicated to whom, when, how, by whom). Those responsible for communication should also provide interested citizens with regular information about a project to increase acceptance and awareness of the opportunities offered by NbS. Another key factor for successful NbS is the direct contact and exchange with those directly affected by the project, especially the landowners. It is particularly important to start the exchange at an early project stage to get the people affected on board and take their interests into account right from the outset. Besides, a high-quality of the implemented measures is important to build up trust, counteract possible concerns or prejudices, and create good-practice examples.

These considerations demonstrate that it is very important and valuable to provide sufficient financial and human resources for professional support and management to successfully realise NbS projects.

These points correspond well with the *12 Principles of Good Governance* (CoE 2022), which the Council of Europe confirmed in a decision on the "Strategy on Innovation and Good Governance at local level" (COE 2008):

(1) Participation, Representation, Fair Conduct of Elections;

(2) Responsiveness;

(3) Efficiency and Effectiveness;

(4) Openness and Transparency;

(5) Rule of Law;

(6) Ethical Conduct;

(7) Competence and Capacity;

(8) Innovation and Openness to Change;

(9) Sustainability and Long-Term Orientation,

(10) Sound Financial Management;

(11) Human Rights, Cultural Diversity and Social Cohesion;

(12) Accountability.

***Hypothesis VI**: The successful establishment of NbS requires 'good' and case-adapted governance mechanisms. This will facilitate cross-sectoral and interdisciplinary collaboration with a special focus on transparency and continuous communication, and increase the acceptance of NbS among landowners, (private) investors, planners, public administration and policy makers.*

4.3. Potential Synergies with Existing Strategies and Institutional Frameworks

The existing transnational cooperation frameworks play an important role for a stronger establishment of NbS in the Alpine region:

- As an international treaty between the Alpine countries (and the EU), the **Alpine Convention** has defined the obligation to protect the Alpine region. The "Multi-Annual Work Programme of the Alpine Conference 2023-2030" (PSAC 2022), the 8 thematic protocols and 6 declarations, which are also aligned with the 17 SDGs, provide a good basis for a stronger establishment of NbS in the Alpine region. The Alpine Climate Board is already heavily involved in NbS, and NbS could also be increasingly addressed in other Thematic Working Bodies, such as *Natural Hazards – PLANALP*, *Soil Protection*, *Mountain Agriculture and Mountain Forestry*, *Spatial Planning and Sustainable Development* as well as the *Alpine Biodiversity Board*.
- **EUSALP**, the EU macro-regional strategy for the Alpine Region, offers a good framework for a stronger establishment of NbS within its 9 thematic Action Groups. The following Action Groups are particularly relevant:

  Action Group 6: Resources – Preserving and valorising natural resources, including water and cultural resources;

  Action Group 7: Green Infrastructure – Developing ecological connectivity in the whole EUSALP territory and

  Action Group 8: Risk Governance – Improving risk management and better managing climate change including major natural risks prevention.

  The forthcoming revision of the EUSALP Action Plan provides a good opportunity for further anchoring NbS in the Alpine region.
- The third important transnational actor in the Alpine Space is **the Interreg Alpine Space Programme** with different thematic priorities and projects. All four priorities of the present programme[3] offer linkage opportunities for NbS. It would be desirable that the topic of NbS and the learnings about the need for long-term structures and funding are explicitly considered in this programme.

[3] Programme priorities are: Priority 1: Climate resilient and green Alpine region, Priority 2: Carbon neutral and resource sensitive Alpine region, Priority 3: Innovation and digitalisation supporting a green Alpine region, Priority 4: Cooperatively managed and developed Alpine region.

5. Recommendations and Further Suggestions

The results of the pilot projects analysis, their evaluation, the inputs from the international workshop held in September 2024, and the derived conclusions are incorporated in a set of recommendations outlined in Section 5.1 to support the implementation of NbS in the Alpine region. The recommendations refer to the following aspects:

- Governance and communication
- Decision-making processes
- Practical implementation
- Tools
- Standardisation and Evaluation
- Economic aspects

In addition, the authors of this paper compiled further suggestions to be discussed and elaborated in more detail that are presented in Section 5.2 and refer to the following aspects:

- Utilisation of Social Engagement
- Spatial Planning
- Legal Instruments
- Supporting Bodies and Structures
- Education
- Communication
- Alpine-wide Interactive NbS-Platform

5.1. Recommendations

5.1.1. Governance and Communication Mechanisms Fostering Nature-based Solutions

A stronger establishment of NbS in the Alpine region can be supported by the following governance and communication mechanisms:

- **Stronger anchoring of cross-sectoral approaches in the design of the policy mix in the Alpine region:** Instead of traditional sectoral perspectives and processes, more integrated mechanisms for legislation, funding, strategies and planning instruments should be established. These include, for example, regional, national and transnational cooperation and coordination bodies as well as integrated strategies and programmes with a spatial reference. This promotes cross-sectoral thinking and stronger horizontal and vertical cooperation between the various actors in the political-administrative system.

- **Skills development and training in multilevel governance:** For staff in administration, research, planning offices, NGOs as well as for landowners and other stakeholders training offers on NbS should be provided via webinars, workshops, or excursions, for instance. Thereby, the actors will gain more (self-)confidence in dealing with complex systems and processes in the Alpine region.
- **Development and dissemination of positive narratives on the topic of NbS:** Promote positive narratives by collecting successful examples of implemented NbS in the Alpine region, making them publicly available, and addressing the population in a motivating, tangible, and emotional way. This will reduce mistrust and scepticism towards NbS, which are often characterised by a lack of knowledge, uncertainty and fears, and contribute to a better understanding and greater acceptance of NbS, instead.
- **Sensitive Communication**: Communicate plans and measures in a transparent way right from the outset, take stakeholder concerns seriously and address them.

5.1.2. Integrating Nature-based Solutions into Decision-Making Processes

There are several options to integrate NbS into decision-making processes in the Alpine region, including:

- their structural integration at different policy levels (see below),
- the involvement of decision makers and stakeholders, and
- their incorporation in the Multi-Annual Work Programme of the Alpine Conference, the Interreg Alpine Space Programme, the Interreg Central Europe Programme, and other cross-border strategies and funding programmes, respectively.

The integration of NbS into decision-making processes should take place at several levels:

- at the **local level**, as part of local development policies, such as zoning and land-use planning;
- at **regional and national levels** within the framework of legislation, guidelines, subsidies, (sectoral and integrated) strategic concepts and planning instruments;
- at the **trans-national level** within the framework of the Alpine Convention, the EUSALP, and the Interreg Alpine Space Programme;
- at **EU level,** where the Alpine Member States of the EU could work together in relevant dossiers to ensure that the European framework conditions adequately consider specific needs of the Alpine area.

The integration of NbS into decision-making processes in the Alpine region requires an appropriate policy mix consisting of legal provisions, technical guidelines, financing instruments and (standardised) planning instruments in the various sectors: agriculture and forestry, hydraulic engineering, natural hazard management, tourism, spatial and landscape planning, nature conservation, etc.

5.1.3. Practical Implementation of Nature-based Solutions

Several measures and aspects could foster the practical implementation of NbS in the Alpine area on a wider scale at different levels:

Strategic Level

Delineating relevant and sufficient areas for NbS at a strategic Alpine-wide level and integrating these areas into existing regional and national spatial planning instruments could support their implementation (top-down approach). In addition, areas that are suitable for implementing NbS and specific NbS themselves can be included in existing or envisaged biodiversity strategies. Such an approach may, inter alia, efficiently support the practical implementation of the recently passed EU Nature Restoration Law (Regulation (EU) 2024/1991) and the EU Biodiversity Strategy for 2030.

In general, a better knowledge and understanding is needed regarding how different existing policy instruments (e.g. strategies, programmes, planning instruments) address or hinder NbS.

Local Level

Besides the strategic level, the local level is crucial for a bottom-up process. NbS should address identified challenges at the local level, which are also perceived as such by the local stakeholders. Such an approach should be preferred instead of declaring pre-planned projects as an NbS. At the local level, in particular, quick-wins may be possible by demonstrating the benefits of NbS with small-scale, directly effective, and low-cost NbS projects.

To support especially small communities that often lack sufficient financial and personal resources, specialist departments should be built up at the regional government level to assist with planning and implementation processes of NbS.

Multi-level Planning

Implementation via a top-down (strategic level) and bottom-up (local level) approach means that NbS should be planned at the local, regional, national and alpine-wide level and the different levels should be integrated. Large-scale strategies at national or Alpine-wide level may be implemented through projects for large geographic areas. These are to be supplemented by small, site-specific projects, which are proposed and implemented at regional to local level. The implementation at this level can be supported by staff from experienced public or private institutions.

5.1.4. Tools

Tools may foster the practical implementation of NbS regardless of the spatial level. Some helpful tools can be:

- a **comprehensive and easy-to-use glossary of NbS** (explaining different related concepts such as ecosystem services, green and blue infrastructure);
- a **collection and dissemination of good practice examples** of NbS in the Alps;
- a **decision-making aid on how to transfer NbS** to different contexts.
- an **assessment of the consideration of NbS** in single projects.

5.1.5. Standardisation and Evaluation

In the long run, a standardisation of NbS and an evaluation of their effects will be needed, to demonstrate and proof these effects. A standardisation means that NbS will consider comparable components in the projects such as benefits for biodiversity, human well-being, certainty for the maintenance of the measures. The evaluation will give evidence about the effects NbS have achieved.

For many purposes, there are already standardised approaches, which might be considered for or adapted to NbS. Examples include (technical) guidelines for river restoration measures, land readjustment or land management (see, for instance, the Set of Rules by the German Association for Water, Wastewater and Waste (https://en.dwa.de/en)).

Suitable existing tools for a standardised approach could be made available via an open access platform.

Based on existing tools, procedures and processes, a standardised assessment of NbS in the Alpine area could be developed to compare the effects of NbS with technical solutions in terms of the ecological, social and economic effects. Such a standardised assessment would also enable a quality evaluation – even without a legally binding application.

5.1.6. Economic Aspects

Certainly, economic aspects of NbS play a major role for their acceptance. There are two main aspects to be considered:

Public Support

As outlined in chapter 4.2.2, NbS-projects often have a longer duration than conventional projects. Public project funding should consider this by extended funding periods.

NbS project tenders could be given higher priority in funding decisions and / or NbS elements could be declared as a mandatory element for project application.

Economic Valuation of NbS

An economic evaluation of NbS projects could be developed and made obligatory to monitor their economic effects. For such an evaluation, a comprehensive approach is needed, taking into account all effects of NbS, namely the costs of set-up and maintenance for short- and long-term period as well as indirect impacts, to enable the comparison with conventional or technical solutions.

Economic advantages of NbS projects could be demonstrated with a data collection on costs for and benefits of NbS, which might facilitate economic comparisons and increase the acceptance of NbS projects. In such a comparison, also the cost of inaction should be considered to set-up a comparable framework for NbS.

5.2. Further Suggestions

5.2.1. Utilisation of Social Engagement

Many examples show that especially due to their benefits for human well-being, people can easily be motivated to support the implementation of NbS projects. This effect can be utilised, for instance by the following approaches:

- **Innovative Concepts**: Implement competitive initiatives among communities, civil society organisations or student groups to encourage participation, e.g. initiatives like an unsealing competition in the Netherlands (https://www.nk-tegelwippen.nl/).
- **Experiential Learning**: Make NbS benefits tangible by integrating them into community spaces, e.g. by integrating restored creeks into playgrounds, like in the "Zürcher Bachkonzept" project (see Chapter 2.2).
- **Volunteer Involvement**: Engage volunteers in projects like, for instance, in the "Bergwaldprojekt" (see Chapter 2.2).

5.2.2. Spatial planning

Spatial planning is an important lever to implement strategic considerations and may help to foster NbS in the Alpine region through the following approaches:

- **Identification of Suitable Areas**: Identify and delineate areas that are particularly suitable for NbS implementation in the Alpine region. If they are privately owned, public acquisition should be considered when they become available.
- **Planning Instruments**: Integrate suitable areas and NbS as such into planning instruments in all relevant sectors and at local, regional, national, and Alpine-wide levels.

5.2.3. Legal Instruments

Apart from the integration of NbS into spatial planning instruments and regulations, further areas of law could be used to implement provisions that support NbS:

- **Public Procurement and Contract Law**: Favour NbS in public procurement processes. Justification should be required if technical solutions are preferred over NbS. Assess cost-effectiveness over the entire lifecycle and consider potentially externalised costs when comparing NbS with alternative solutions (True-Cost-Accounting).
- **Building and Environmental Regulations**: Mandate the implementation of small-scale and easy-to-implement NbS for building projects, such as multifunctional infiltration basins, to promote a bottom-up approach and their rapid dissemination. Prioritise the implementation of NbS unless there is a justified reason for their rejection as a prerequisite for approval procedures.

5.2.4. Supporting Bodies and Structure

As many actors that are responsible for the actual implementation of NbS projects (communities, planning offices, private investors, NGOs, etc.) often lack sufficient personal and financial resources or an overview of existing suitable NbS measures, the realisation of NbS in the Alpine region may be supported by public or private institutions. The following aspects should be considered:

- **Specialised Institutions**: Make sure that already existing or new institutions at regional, national, and transnational levels are able to support cross-sectoral and interdisciplinary approaches. Such specialised institutions should assist in planning and implementation processes, particularly for small communities or organisations with limited personal and financial resources. Landscape Maintenance Associations in Germany may serve as an example, here.
- **Networking Opportunities**: Facilitate networking among practitioners, scientists, and administrators to enhance collaboration.
- **Governance Support**: Provide support, like consultancy, moderation, external mediators, or assistance to realise potentially complex communication formats (e.g. round tables).

5.2.5. Education

Since NbS projects involve complex interrelationships in several aspects (interaction of ecological and technical processes, involvement of various stakeholders, indirect social or economic impacts, etc.) knowledge transfer and skills development are very important to support the establishment of NbS. Education on NbS will foster acceptance, confidence, mutual understanding among different stakeholders, and help affected actors to gain more self-confidence in dealing with complex systems and processes in the Alpine region.

- **Training Opportunities**: Offer theoretical input and training sessions for government employees, planners, NGOs, researchers, and interested citizens through webinars, workshops, excursions, etc.
- **Knowledge Exchange**: Foster the exchange of knowledge and experiences among practitioners, administrative employees, scientists, etc.
- **Highlight Governance Importance**: Emphasise the importance of good governance in all communications. Advocate for sensitive communication that involves all stakeholders affected by NbS projects right from the outset (before the actual planning phase starts) and takes their interests into account.
- **Curriculum Integration**: Integrate NbS topics into educational curricula with supporting materials, like provided by the “I-SWAMP” project (see Chapter 2.2).

5.2.6. Communication

A stronger establishment of NbS in the Alpine region can be supported by the following communication mechanisms:

- **Positive Narratives and Success Stories**: Promote positive narratives by collecting successful examples of implemented NbS in the Alpine region, making them publicly available, and addressing the population in a motivating, tangible, and emotional way.
- **Sensitive Communication**: Communicate plans and measures in a transparent way right from the outset, take stakeholder concerns seriously and address them.

This will contribute to a better understanding and greater acceptance of NbS and prevent possible fears of misuse of the concept.

5.2.1. Alpine-wide Interactive NbS-Platform

One of the greatest challenges in today's world is an overflow of information and, closely related to this, the selection of information sources.

The centralised provision of as much relevant information on NbS in the Alpine region as possible may therefore be a decisive lever to address and connect relevant stakeholders as well as to prevent several independent parallel developments and efforts with the same objective that are not necessary to be carried out in a redundant way.

The authors of this paper hence suggest the development of an open-access interactive platform across the Alpine region that aggregates all relevant information on NbS and facilitates all the aspects mentioned in the previous sections. This platform should include, for example, definitions and standards, legal guidance, governance guidelines, case studies and educational material. The platform might include a Web-GIS service showing implemented NbS locations and providing a feature that allows citizens to propose potential sites for NbS implementation.

The Alpine region has a high potential for the implementation of NbS in different sectors. Specific political mandates to further develop and implement the above recommendations and ideas could be set out in an "**Nature-Based Solutions Strategy for the Alps**".

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6. Bibliography

6.1. References

CoE (Centre of Expertise for Good Governance, Council of Europe) (2022): 12 Principles of Good Democratic Governance. Available online at https://rm.coe.int/12-principles-of-governance-poster-a2/1680787986; https://www.coe.int/en/web/centre-of-expertise-for-multilevel-governance/12-principles#{%2225565951%22:[0]}.

COE (Council of Europe) (2008): 15th session of the Conference of European Ministers responsible for local and regional government. (Valencia, 15-16 October 2007) − Report by the Secretary General. (CM(2008)14, CM(2008)14-add, GR-DEM(2008)CB4-rev). Available online at https://search.coe.int/cm?i=09000016805d3dc8.

Haines-Young, R. & Potschin, M. (2018): CICES. Towards a common classification of ecosystem services. V5.1. Ed. by European Environment Agency (EEA). Available online at http://cices.eu/.

ipbes (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) (2019): The Global Assessment Report on Biodiversity and Ecosystem Services. Summary for policymakers.

IUCN (International Union for Conservation of Nature) (2016): WCC-2016-Res-069-EN: Defining Nature-based solutions.

IUCN (International Union for Conservation of Nature) (2020): IUCN Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS.

PSAC (Permanent Secretariat of the Alpine Convention) (2019): Climate-neutral and Climate-resilient Alps 2050. Declaration of Innsbruck Alpine Climate Target System 2050 7th Report on the state of the Alps “Natural Hazard Risk Governance”.

PSAC (Permanent Secretariat of the Alpine Convention) (2022): Multi-Annual Work Programme of the Alpine Conference 2023 - 2030.

UNEP (United Nations Environment Programme) (2022): Resolution adopted by the United Nations Environment Assembly on 2 March 2022. Nature-based solutions for supporting sustainable development.

6.2. Supplementary Literature

Brammertz, L. (2022). Nature Based Solutions: Vor- und Nachteile „naturbasierter Lösungen“.

El Harrak, M. & Lemaitre, F. (2023). European Roadmap to 2030 for Research and Innovation on Nature-based Solutions. Unter Mitarbeit von Kris Decleer, Robert McDonald, Siobhan McQuaid, Ignacio Palomo, Christopher M. Raymond und Laura Wendling. Hg. v. NetworkNature.

European Commission (2022). The vital role of Nature-Based Solutions in a Nature Positive Economy. Hg. v. Publications Office of the European Union. Luxembourg.

European Research Executive Agency (2022). Nature-based solutions. EU-funded NbS research projects tackle the climate and biodiversity crisis. Hg. v. Publications Office of the European Union. Online verfügbar unter https://data.europa.eu/doi/10.2848/42098.

Hauer, C. & Habersack, H. (2023). „Nature-based Solutions“ im integrativen Wasserbau. In: *Österr Wasser- und Abfallw* (75), S. 19–23.

Hudson, G.; Hart, S. & Verbeek, A. (2023). Investing in nature-based solutions. State-of-play and way forward for public and private financial measures in Europe. Hg. v. EIB.

ipbes (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) (2019). The golobal assessment report on biodiversity and ecosystem services. Summary for policymakers.

Kabisch, N.; Korn, H.; Stadler, J. & Bonn, A. (2017). Nature ‐ based Solutions to Climate Change Adaptation in Urban Areas. Linkages between Science, Policy and Practice: Springer Nature.

Mauchaza, B. T.; Harris, M.; Antonova, M.; Ramalheiro, F. & Iyengar, A. (2024). What is the state of evidence on how Nature-based Solutions promote transformative change for the What is the state of evidence on how Nature-based Solutions promote transformative change for the sustainable use and management of biodiversity in socio-ecological systems? Desk studies and production of knowledge syntheses. Unter Mitarbeit von Valerie Kapos, Caroline King-Okumu, Najma Mohamed und Melissa de Kock. Hg. v. Biodiversa+.

Naumann, S.; Burgos Cuevas, N.; Davies, C.; Bradley, S.; Mahmoud, I. H. & Arlati, A. (2020). Harnessing the power of collaboration for nature based solutions. New ideas and insights for local decision-makers. Hg. v. Publications Office of the European Union. Online verfügbar unter https://data.europa.eu/doi/10.2777/954370.

PLANALP Plattform Naturgefahren der Alpenkonvention (2022). Nature-based solutions in the context of natural hazards. Hg. v. Permanent Secretariat of the Alpine Convention.

PSAC (Permanent Secretariat of the Alpine Convention) (2019). Climate-neutral and Climate-resilient Alps 2050. Declaration of Innsbruck Alpine Climate Target System 2050 7th Report on the state of the Alps “Natural Hazard Risk Governance”.

Seddon, N.; Smith, A.; Smith, P.; Key, I.; Chausson, A.; Girardin, C.; House, J.; Srivastava, S. & Turner, B. (2021). Getting the message right on nature-based solutions to climate change. In: *Global change biology* 27 (8), S. 1518–1546.

Wild, T.; Bulkeley, H.; Naumann, S.; Vojinovic, Z.; Calfapietra, C. & Whiteoak, K. (2020). Nature-Based Solutions. State of the Art in EU-funded Projects. Hg. v. Publications Office of the European Union. Luxembourg.

Stocktaking Update 2024

An information source for further developing the activities of the Alpine Climate Board

Alpine Climate Board of the Alpine Convention

Mandate 2023-2024

ALPENKONVENTION
CONVENTION ALPINE
ALPSKA KONVENCIJA
CONVENZIONE DELLE ALPI

IMPRINT

This report is the result of the Alpine Climate Board's mandate, chaired by Austria and was elaborated by Helen Lückge (Climonomics) with inputs from the members.

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Executive Summary: The 2024 Stocktaking Update at a glance

Background: The role of the stocktaking for the Alpine Climate Board

The Alpine Climate Board (ACB) has become the central platform at Alpine level to bundle climate-related activities. With the Climate Action Plan 2.0 (CAP 2.0), the ACB has provided a broad pool of ideas for implementing specific sectoral activities that contribute to its vision of climate-neutral and climate-resilient Alps. The ACB itself is not an implementation body but rather aims at facilitating and supporting implementation activities of relevant stakeholders and multipliers in the Alps. To design relevant support activities, the ACB depends on a comprehensive overview on ongoing climate change mitigation and adaptation activities at transnational but also national level. A regular stocktaking thus has become an important building block for the activities of the ACB – building on the initial stocktaking in 2017. This 2024 update adds 73 new activities to the existing 171 stocktaking entries (2017, 2019, 2021-2022) and provides insights to the new cross-sectoral hotspots, which were developed under the 2023-2024 mandate of the ACB.

Main fields of action: which sectors see a high level of activity?

Again, the 2024 stocktaking update covers activities related to all sectors of the Alpine Climate Target System 2050 and the CAP 2.0. Nearly one fifth of the reported activities have a cross-cutting focus, thus impacting multiple sectors. These include general awareness raising, exchange and educational programmes, e.g. implemented by the Observer organisations CIPRA or Alpine Town of the Year. The three sectors transport, energy and tourism with close interlinkages each cover about 10-12% of the reported activities, reflecting the ambitions of the ACB itself (cross-sectoral hotspot “Energy transition”), the activities of the Working Group Transport of the Alpine Convention with many related activities as well as a broad range of tourism related projects of the Observer organisations but also including new projects under the Alpine Space Programme. As in the previous stocktaking update, the sector of natural hazards is also well covered in the stocktaking, and includes EUSALP activities. On the other hand, the “green” sectors water, soil, mountain agriculture and mountain forestry were no major focus in the stocktaking update, each of these sectors only received 2-3 inputs. For the sector Municipal Action, quite a high number of inputs were reported – this being due to the comprehensive feedback from the Alpine Town of the Year Association, which had not taken part in the previous stocktaking exercises.

Link to cross-sectoral hotspots of the ACB mandate and the pathways

Under its 2023-2024 mandate, the ACB went beyond the sectoral focus and looked more closely at the interfaces between the sectors to support synergies and avoid blind spots. Three cross-sectoral hotspots were identified: energy transition, lifestyles and nature-based solutions. The 2024 stocktaking update provides interesting insights to these cross-sectoral hotspots and, in general, confirms their relevance. Only 25% of all reported activities do not have a link to any of the three cross-sectoral hotspots. The largest link is visible to the hotspot

of “lifestyles” with 23 activities providing a contribution. Here, activities of the ACB itself but especially of some of the Observer organisations with broad awareness raising, capacity building and educational activities play an important role. Many activities in this cross-sectoral hotspot have their starting point in the tourism sector but clearly go beyond the sectoral scope. 13 reported activities are linked to the cross-sectoral hotspot “nature-based solutions”, especially as many new projects under the Interreg Alpine Space Programme contribute to this aspect. The energy hotspot has a direct link to the energy sector of the CAP 2.0 and all 10 activities reported for the energy sector also relate to the energy hotspot.

As in the previous stocktaking update in 2021-2022, the direct link of stocktaking inputs to the implementation pathways is mostly difficult to assess. Only few measures are directly dedicated to the implementation of the CAP 2.0 (e.g. activities of the Thematic Working Bodies of the Alpine Convention on Spatial Planning and Soil Protection). Most activities contribute in a more indirect way as they support the general objectives and rationales of the CAP 2.0. In this respect, a more detailed monitoring would be necessary as basis for further developing and implementing the CAP 2.0 and its implementation pathways.

Main fields of activity: types of activity and balance between mitigation and adaptation

The stocktaking also takes a look at which types of activity were taken forward at transnational and national level: projects, publications, planning or implementation measures, events, online tools and others. Similar to the initial stocktaking in 2017-2019 and the 2021-2022 update, the 2024 update covers all types of activities in a quite balanced manner. As positive outcome, it is interesting to note the rising importance of implementation measures: the share of implementation measures has increased compared to the previous stocktaking update for both mitigation and adaptation. When looking at the section “publication”, again the policy-oriented publications play the strongest role, thus also contributing to the implementation focus. This is, of course, a promising development as these implementation-oriented activities can support the activities of the ACB to implement the CAP 2.0.

Looking at the relevance of activities for climate change mitigation and/or adaptation, the 2017-2019 stocktaking displayed a balanced picture between mitigation and adaptation activities. The 2021-2022 update reflected a slight shift to a stronger adaptation focus, which was due to specific input from active members of the ACB with a strong adaptation focus. In 2024, the overall picture is more balanced again, even with a slightly stronger focus on mitigation. As in the previous stocktaking update, we can also see a strong role of inputs that have an integrated focus: about one fourth of all reported activity contribute to the vision of both climate-neutral and climate-resilient Alps.

Insights from the 2024 stocktaking update for further activities of the ACB

Considering this summary and main insights of the 2024 stocktaking update, the following conclusions can be drawn for further activities of the ACB:

- First, the 2024 stocktaking reconfirms the strong commitment of all policy levels and stakeholders in the Alps to reach the vision of climate-neutral and climate-resilient Alps 2050. 73 new projects were added to the stocktaking (nearly 50% more than in the last

stocktaking update in 2021-22), displaying the broad range of activities of stakeholders related to the ACB. The ACB can build on this pool of activities to increase visibility, transfer to other regions and exchange and thus to create a broader impact.

- Looking at the types of activities, it can be seen that implementation activities are well under way. Instead of kick-starting new activities, it seems reasonable to continue the approach of supporting stakeholders and multipliers in their work. This approach has already been pursued by the ACB during its recent mandate, e.g. with training sessions on improving stakeholder engagement.
- Regarding the two elements of the climate-neutral and climate-resilient Alps vision, there is no specific need for corrective action. Activities reported in the stocktaking cover mitigation and adaptation in a balanced way, integrated activities also take a strong role.
- Looking at the sectors of the CAP 2.0, the 2024 stocktaking update confirms that the ACB has a good overview on ongoing activities in most of the sectors. This is due to the active role of ACB members themselves in sectoral activities as well as related activities of the Thematic Working Bodies of the Alpine Convention. Some sectors are however covered to a lesser extent and it is more difficult for the ACB to receive insights into relevant activities and thus to identify support needs. Relating to the “green” sectors water, soil, ecosystems and mountain agriculture & forestry, a separate study on “Nature-based solutions” has however been launched by the ACB to fill information gaps and to provide relevant recommendations for further activities.
- As in the previous stocktaking update, some direct links to the implementation pathways of the CAP 2.0 can be seen. However, the sectoral “caretakers” and the Implementation Communities have not been specifically involved in the stocktaking update. Thus, the “monitoring function” of the stocktaking update with respect to the implementation pathways needs to be seen as limited. It needs to be discussed whether a specific monitoring activity could be useful under the next ACB mandate.

Overall, it can be summarised that the regular update of the stocktaking remains a meaningful support for the work of the ACB: it not only gives a summary on ongoing activities, it also shows (information) deficits and “blind spots” of the work of the ACB. To ensure a comprehensive overview of all sectors, the ACB needs to collect information on the sectors that are less represented in the stocktaking update via other sources, networking activities and outreach. This needs to be kept in mind for future updates of the stocktaking and a potential targeted update of the implementation pathways.

1. Background: The stocktaking as information source for the ACB

Role of the stocktaking over the years: from common starting point to information base

The Alpine Climate Board (ACB) was first established by the XIV Alpine Conference at the end of 2016 to bundle all relevant activities on climate change mitigation and adaptation that are carried out within the framework of the Alpine Convention. Since then, the ACB has established itself as a key player in the frame of the Alpine Convention and, with its Alpine Climate Target System 2050 (adopted a the XV Alpine Conference) and the new Climate Action Plan 2.0 (CAP 2.0; adopted at the XVI Alpine Conference) provided some new milestones that shape the activities of the Alpine Convention and all its implementation bodies.

The ACB understands itself as platform and "facilitator" rather than as an implementation body and thus depends on a good overview on ongoing activities and starting points. Thus, first activities of the ACB were built on a comprehensive stocktaking exercise to provide insights on relevant activities of the Thematic Working Bodies of the Alpine Convention (TWBs) with a link to climate change, to assess the role of Alpine-specific projects (Alpine Space Programme, Horizon 2020 etc.) and further activities and ideas reported by the Contracting Parties and Observers. This initial stocktaking was further developed into a regular information base to provide insights for the Implementation Communities of the ACB (as led by the "caretakers") but also the ACB itself to design specific activities and actions.

2024 Stocktaking Update: Insights on cross-sectoral activities and basis for monitoring

While previous activities of the ACB and both the Alpine Climate Target System 2050 and the CAP 2.0 were built around a sectoral approach, the major activities of the ACB in the 2023-2024 mandate took a cross-sectoral viewpoint. Three cross-sectoral hotspots were identified to capture better the synergies and innovation potentials coming along with a more integrated viewpoint. For each of the hotspots, specific activities were developed to provide insights and recommendations and to support all members and multipliers in the broader community of the ACB to implement the CAP 2.0 and its specific implementation steps. With this stocktaking update, the ACB wants to provide further insights to the cross-sectoral hotspots through an overview on relevant current projects.

At the same time, the 2024 stocktaking update aims at identifying gaps and catch-up needs with respect to the implementation of the CAP 2.0. These insights will become the basis for a potential targeted update of the implementation pathways.

Objectives and structure of this report

This synthesis report provides an overview of the 2024 stocktaking update and compares it to the results of the initial 2017-2019 stocktaking and the first update in 2021-2022. Chapter 2 provides an overview on the 73 feedbacks to the stocktaking, differentiated into activities with a transnational and national focus. Chapter 3 provides an indicator-based analysis, along the indicators of the initial stocktaking, and providing comparisons were possible. This chapter also

highlights some insights into further activities of the ACB. Chapter 4 gives an overview on the cross-sectoral hotspots of the ACB and insights from the stocktaking.

The Annex includes some key information on all reported activities and the factsheets collection (separate document) provides an in-depth information source for selected reported activities.

2. Overview on the inputs to the 2024 stocktaking update

The update of the stocktaking reconfirms the high commitment of all policy levels and stakeholders in the Alps to reach the vision of climate-neutral and climate-resilient Alps. In the initial stocktaking, a list of 118 activities was compiled and evaluated and a first update round in 2021-2022 added 53 relevant projects. With this stocktaking update, 73 new projects are added to the stocktaking – thus reaching nearly the milestone of 250 projects and activities.

The following table provides an overview of inputs provided by the members of the Alpine Climate Board.

- 53 activities with a transnational focus were reported. These include several activities of the previous and ongoing Presidency of the Alpine Convention, of the TWBs who support the implementation of the CAP 2.0 through their mandates (inputs via the Permanent Secretariat of the Alpine Convention), of related Action Groups of the EUSALP strategy as well as selected projects implemented by the Alpine Space Programme and other European programmes. Also, activities of CIPRA and Alpine Town of the Year (as Observers to the ACB) are reported under the transnational activities.
- 20 activities with national focus were reported from Germany, Italy, Switzerland, Austria and Slovenia. These include activities and projects implemented by the Contracting Parties or Observer organisations, which have a particular potential for transferability to other Alpine regions or countries and to directly contribute to the implementation of the CAP 2.0.

All reported activities were implemented or at least launched since the publication of the last stocktaking report in 2021-2022; some of them are already finalised.

Table 1: *Feedbacks to the 2024 stocktaking update*

Input provided by	Name of activity
Germany, UBA	ACB Permafrost webinar: “Permafrost thawing in the Alps: New insights on risks, monitoring & hazard management”
Austria, UBA (link to EUSALP AG8)	X-RISK-CC – ‘How to adapt to changing weather eXtremes and associated compound RISKs in the context of Climate Change
	Beyond the Expected: Dealing with the Case of Overload and Residual Risk of Natural Hazards in the Alpine Region
	CLISP-ALP – Climate-resilient spatial planning in the Alps
	Mainstreaming Climate Change Adaptation and Disaster Risk Reduction in the Alpine Macro-Region
	APCC Special Reports: “Strukturen für ein klimafreundliches Leben” ("Structures to enable climate-friendly living") & “Tourism and Climate Change”

Input provided by	Name of activity
	TRANSREAL: “Regionale Transformationsagenturen” (“Regional agencies for transformation”) Policy Paper
Italy	F2C- Fondazione Cariplo for Climate program (2019 - 2024)
	Decree on Supporting and Funding Renewable Energy Communities (2024-2025)
	Implementation project of the Budoia Charter for local adaptation to climate change
	IRRIFRAME
	RACES – Raising Awareness on Climate and Energy Saving
	CLIMO Climate-Smart Forestry in Mountain Regions
	CLIMAERA – Tools for territorial planning for climate change
Slovenia	CARE4CLIMATE – Awareness raising programme climate action
	Improving the energy efficiency of mountain facilities (2017-2018)
Alpine Town of the Year Association	Alps2030 – Involving young people
	UrbaBio – Urban green spaces
	Tour des Villes – study trip for representatives of Alpine Towns
	Climate Action in Alpine Towns
CIPRA	Ground:breaking - Improving soil, climate and biodiversity through desealing in urban and peri-urban areas of the Alps
	speciAlps2 & speciAlps Podcast
	SteinReich – dry stone walls and cairns
	Green Deals for Municipalities
	Alpine Climate Action, Re:Sources & Bon Appetit! - Education programs for young adults
	Alpine Climate Camps – Climate action & mountain sports
	Trata 2.1 – Study trip in Slovenia on sustainable mobility
Permanent Secretariat	Multi-Annual Work Programme of the Alpine Conference 2023-2030
	Simplon Alliance Alpine Action Plan 2022
	Booklet "Closing the gap on climate action" of the ACB
	Recommendations on climate change education (Slovenian Presidency)
	Preserving moors in the Alps (statement by the WG Soil Protection)
	Climate Scenarios in Alpine Countries and Indications for Spatial Planning; Overview of guidelines for municipalities for assessing and activating innerurban development potentials (activities of WG Spatial Planning)

Input provided by	Name of activity
	Knowledge transfer in risk communication (activity of WG PLANALP)
	Accelerating the electrification of road transport in the Alps; Implementation of the energy transition in transalpine logistics, measures and regulations; Assessment of the potential of combined transport for the modal shift in alpine crossing freight transport (activities of WG Transport)
	Beyond Snow (ASP project with involvement of Alliance in the Alps and the Permanent Secretariat)
Bavaria	AlpSenseRely – Study on early warning systems
	Foundation of the “Research center and early warning system for alpine natural hazards"
	International Peatland Science Conference (18-21 September 2024 in Freising, DE)
	„Klimaschutz- und Anpassungspotenziale in Mooren Bayerns“ (KliMoBay – Potential for climate change mitigation and adaptation in moors in Bavaria) project
DAV, German Alpine Club	National climate protection strategy of the DAV
	Moobly.de: Carpooling for mountain sports
Alpine Space Programme	ADAPTNOW – ADAPTation Capacity Strengthening for Highly Affected and Exposed Territories in the Alps NOW
	FRACTAL – Fostering green infrastructure in the Alps
	I-SWAMP – Integrated small wetlands of the Alps monitoring and protection
	MOSAIC – Managing protective forest facing climate change compound events
	PlanToConnect – Mainstreaming ecological connectivity in spatial planning systems of the Alpine Space
	TranStat – Transitions to Sustainable Ski Tourism in the Alps of Tomorrow
Activities reported by the ACB Chair	MulitBios; RiKoSt: An enabling approach to risk communication; AlpPlan network on green infrastructures; Amigo – Active commuter mobility; Bahn-zum-Berg/Zuugle; Booklet/Hiking guide with tours reachable by public transport (Protect our Winters with Bahn-zum-Berg); Technical report on Renewable Energies in Alpine protected areas (ALPARC); Cervino Project; Energy Governance Booklet; Training "Engaging stakeholders for climate action: how to better consider “the human factor” and make use of positive narratives; 9th Report on the State of the Alps "Alpine Towns"; Spatial Energy Planning in Styria, Vienna, Salzburg; Round table waterpower in Switzerland; Climate-neutral agriculture Grisons; Climate-neutral tourism destinations in Switzerland; AMooRe – Austrian Moor Restoration;

To avoid any confusion with the previous stocktaking campaigns, the new inputs were added at the end of the stocktaking table. This ensures that the previous numbering of projects can be maintained. The new inputs start with no. 172 in the overall list of projects (see Annex).

3. Indicator-based analysis of feedback – 2024 stocktaking and comparison to the previous stocktaking exercises

To provide continuity with the previous stocktaking activities of 2017-2019 and 2021-2022, this year's update used the same questionnaire. The information and criteria collected were the same, only some slight changes were incorporated to consider the new cross-sectoral approach of the ACB:

- In addition to the relevance of each input on the sectors of the CAP 2.0, the stocktaking update analyses if the inputs have a relevance for one of the cross-sectoral hotspots of the ACB: "energy transition", "lifestyles" and "nature-based solutions".
- In the description of the relevance for the ACB, the new questionnaire also asks if the relevant input has a relevance for developing further crosscutting activities under the ACB.

All inputs, including inputs to the initial stocktaking in 2017-2019 and the 2021-2022update, were assessed with the help of an overall evaluation table to get a comprehensive picture of the state of climate change mitigation and adaptation activities in the Alps and to see how priorities have changed over the last years.

This chapter provides a detailed overview of results for the main indicators of the stocktaking. It highlights the results of the 2024 update and provides a comparison to the previous stocktaking activities 2017-2019 and 2021-2022. Results of this analysis can be used by the ACB to further develop its activities, to identify deficits and to make better use of synergies with crucial partners and stakeholders.

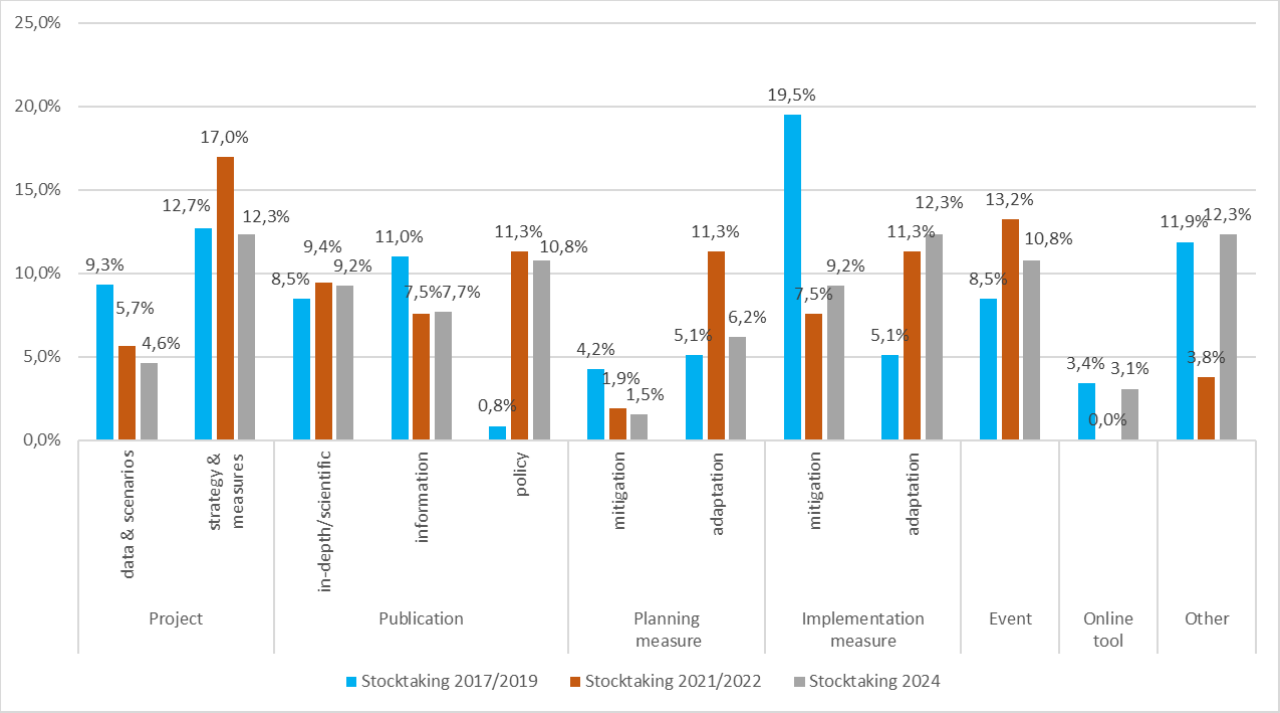
3.1 Type of activity and relevance for climate change

To identify the main types of activities, the classification scheme of the previous stocktaking was carried over in the update. This includes the following types of activities:

- Project (data & scenarios focus or strategy & measures focus)
- Publication (in-depth/scientific or information focus, policy focus)
- Planning measure (mitigation or adaptation)
- Implementation measure (mitigation or adaptation)
- Event
- Online info tools
- Other (set-up of networks, training, etc.)

The following figure provides an overview on the main types of activity, differentiated by stocktaking inputs 2017-2019 (up to no. 118), inputs 2021-2022 (no. 119 to 171) and inputs 2024 (no. 172 to 244). To allow an easier interpretation, the results per type of activity are presented as shares of the overall reported activities.

Figure 1: Overview: Type of activity (stocktaking 2017-2019, 2021-2022, 2024, in percent)



Considering this picture, the following conclusions can be drawn:

- With the 2024 stocktaking update, all types of the above-mentioned activities are covered. “Planning measures mitigation” and “online tools” play the lowest role but are still represented. Online tools include activity no. 172 with the Cervino data set and no. 174 with Bahn-zum-Berg/Zuugle.
- Apart from these two activity types with low occurrence, a quite balanced distribution can be seen for all other types of activities.
- As in the previous update, implementation measures have gained an increasing importance. The share of implementation measures has increased compared to the previous stocktaking update for both mitigation and adaptation. When looking at the section “publication”, again the policy-oriented publications play the strongest role, thus also contributing to the implementation focus.
- Regarding the planning and implementation measures, adaptation-related measures are again slightly better represented than mitigation-related measures. This is not necessarily a representative picture of overall activities in the Alpine region, but rather reflects the sources of inputs to the stocktaking with one large contribution on adaptation-related activities (see table 1).
- The share of events has decreased compared to the previous stocktaking update. After the restrictions of the COVID-pandemic, the number of online events has decreased again, especially the role of webinars as a form of online exchange.
- Others include: Strategic frameworks (Multi-Annual Work Programme, Simplon Alliance), new networks and several study trips (Alpine Town of the Year, activities in Slovenia).

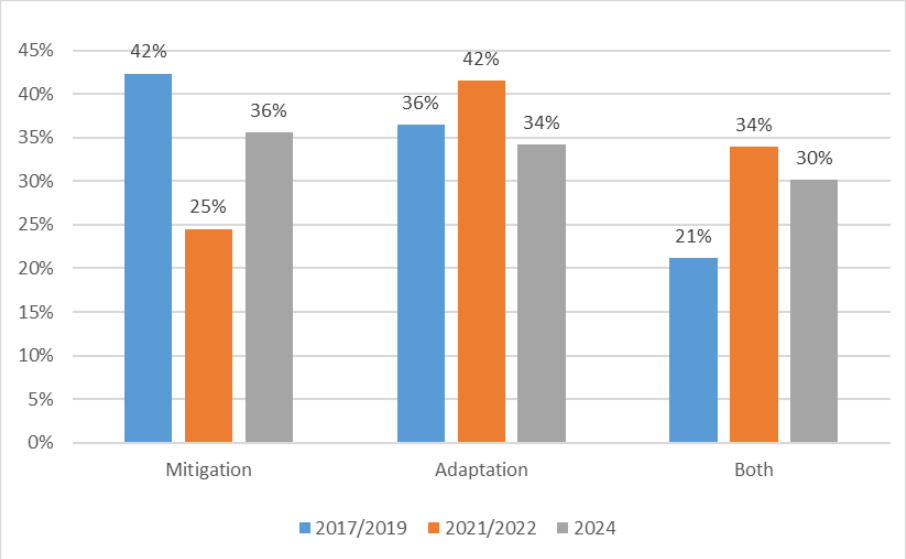
→ Insights for further ACB activities:

Implementation activities are well under way. Instead of kick-starting new activities, it seems reasonable to support stakeholders and multipliers in their work. This approach has already been pursued by the ACB during its recent mandate with its logic to work as a platform.

3.2 Relevance for climate neutral and climate resilient Alps: mitigation or adaptation focus

Looking at the relevance of activities for climate change mitigation and/or adaptation, the 2017-2019 stocktaking displayed a balanced picture between mitigation and adaptation activities. The 2021-2022 update reflected a slight shift to a stronger adaptation focus, which was due to specific input from active members of the ACB with a strong adaptation focus. In 2024, the overall picture is more balanced again, even with a slightly stronger focus on mitigation.

Figure 2: Relevance of adaptation & mitigation (stocktaking 2017-2019, update 2021-2022 and 2024, in percent)



- Looking at the grey bars in figure 2, it can be seen that the shares of mitigation, adaptation or both aspects in 2024 is similar to the initial stocktaking in 2017/2019. In absolute values, 26 activities with focus on mitigation were reported in 2024, 25 activities with adaptation and 22 activities with both focuses.
- Adaptation measures mostly include activities at transnational level (and only few activities with national focus). This was the other way around in the previous stocktaking and is due to a large range of new projects with adaptation focus that have started under the framework of the Interreg Alpine Space Programme or were launched by EUSALP AG8.
- The share of activities that cover both mitigation and adaption is slightly lower than in the last update in 2021-2022. Still, 30% of all reported activities have an integrated focus and thus contribute to the vision of both climate-neutral and climate-resilient Alps.

→ Insights for further activities of ACB: there is no need for corrective action, the ACB should rather ensure that balanced approach remains visible.

3.3 Relevance for different sectors of the Alpine Climate Target System

An important element of the stocktaking is the analysis of how the relevant sectors of the Alpine Climate Target System are covered by the reported activities. This provides insights for the implementation communities and their caretakers, but also for the ACB as platform to identify deficits and gaps.

This section illustrates which sectors are covered and how the 2024 stocktaking update compares to the 2021-2022 update and the initial stocktaking in 2017-2019.

Please note: the initial stocktaking in 2017-2019 used the topics covered at the time by the TWBs as reference. With the Alpine Climate Target System in place, the ACB moved to a more comprehensive approach with the aim to cover all sectors relevant for mitigation and adaptation activities in the Alps. To remain consistent, these sectors are now also used for the stocktaking. The inputs of the 2017-2019 stocktaking were adjusted accordingly.

<u>Analysis differentiated according to transnational and national focus</u>

The following table illustrates the relevant sectors of the reported activities, differentiated by activities with a transnational and a national focus. When comparing the results of the initial stocktaking in 2017-2019, the 2021-2022 update and the new update in 2024, the following results can be summarised:

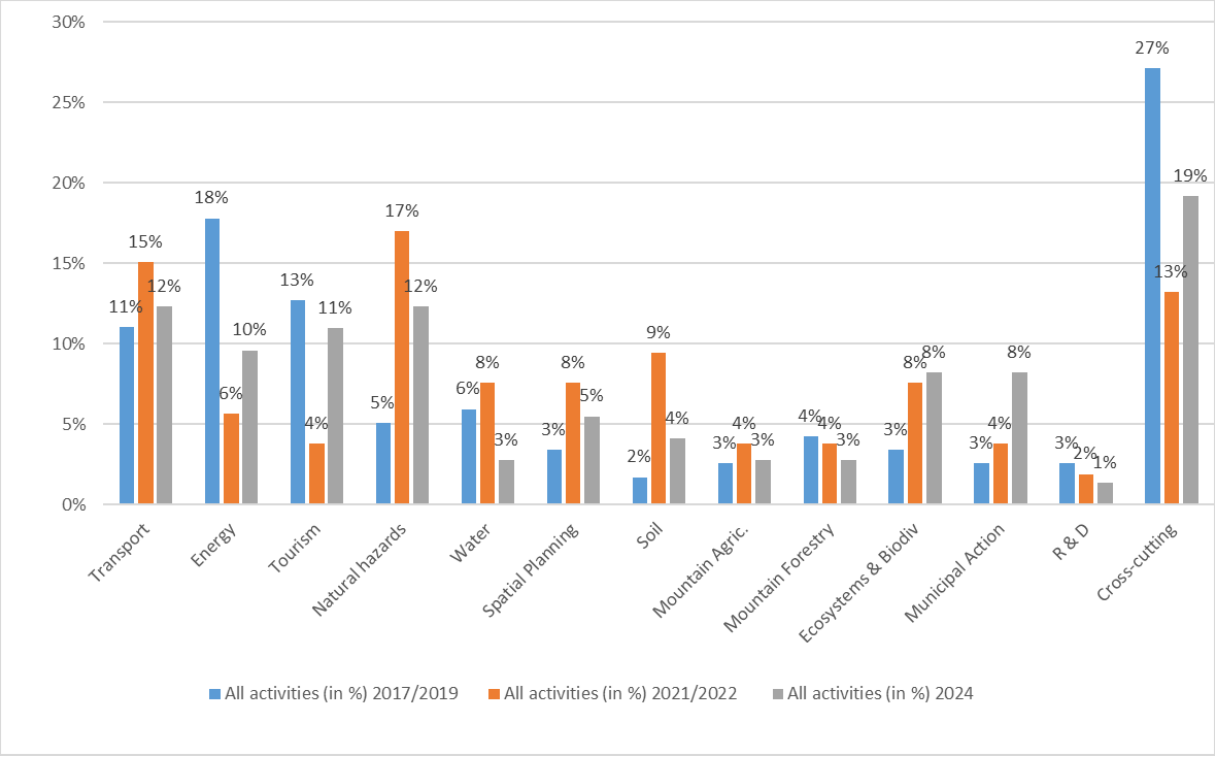
- “Cross-cutting activities” had the highest number of activities in the initial stocktaking but then only played a minor role in the 2021-2022 update. In this 2024 stocktaking update, they again play a more important role. This is mostly due to a large set of inputs coming from CIPRA and Alpine Town of the Year Association, which often have a crosscutting focus.
- The three sectors Transport, Energy and Tourism, with close interlinkages, have received a similar number of reported activities. Compared to the stocktaking update in 2021-2022, more activities were reported in the sectors Energy and Tourism – this also due to the activities of the ACB itself in the two relevant cross-sectoral hotspots (“energy transition” and “lifestyles”).
- The Natural hazards sector is well represented in the stocktaking, also including activities of EUSALP Action Group 8 thanks to active members of both the ACB and that group.
- Activities related to the “green” sectors Water, Soil, Mountain agriculture and Mountain forestry were no major focus in the stocktaking update, each of these sectors only received 2-3 inputs. On the other hand, Ecosystems and biodiversity play a stronger role than in the two previous stocktaking exercises, this being due to new projects in the Alpine Space Programme and several activities of CIPRA.
- For the Municipal Action sector, quite a high number of inputs were reported – this being due to the comprehensive feedback from the Alpine Town of the Year Association, which had not taken part in the previous stocktaking exercises.

Table 2: *Relevant sectors of the reported activities: main focus*

	Activities with transnational focus - Main links			Activities with national focus - Main links			All activities		
	2017/2019	2021/2022	2024	2017/2019	2021/2022	2024	2017/2019	2021/2022	2024
Transport	9	8	7	4	0	2	13	8	9
Energy	14	2	3	7	1	4	21	3	7
Tourism	11	1	5	4	1	3	15	2	8
Natural hazards	6	5	9	0	4	0	6	9	9
Water	7	4	1	0	0	1	7	4	2
Spatial Planning	3	4	4	1	0	0	4	4	4
Soil	1	4	2	1	1	1	2	5	3
Mountain Agric.	2	2	1	1	0	1	3	2	2
Mountain Forestry	5	2	1	0	0	1	5	2	2
Ecosystems & Biodiv	4	3	5	0	1	1	4	4	6
Municipal Action	2	1	4	1	1	2	3	2	6
R & D	1	1	1	2	0	0	3	1	1
Cross-cutting	18	2	10	14	5	4	32	7	14
TOTAL	**83**	**39**	**53**	**35**	**14**	**20**	**118**	**53**	**73**

Figure 3 displays the composition of the inputs per sector in percent, highlighting clearly the important role of crosscutting activities and showing the comparable importance of transport, energy, tourism, natural hazards and ecosystems and biodiversity.

Figure 3: Relevant sectors of the report activities – main focus for all activities (transnational and national focus), in percent



Contribution to the implementation of the CAP 2.0

A question in the stocktaking template is whether the reported activity can be seen as a part of one of the implementation pathways included in the CAP 2.0. It can be summarised that most reported activities have a strong link to the implementation pathways, but still need to be seen as “independent” activities of the relevant projects, networks or working groups. As many activities had already been launched before the CAP 2.0 was adopted, this result is however not surprising.

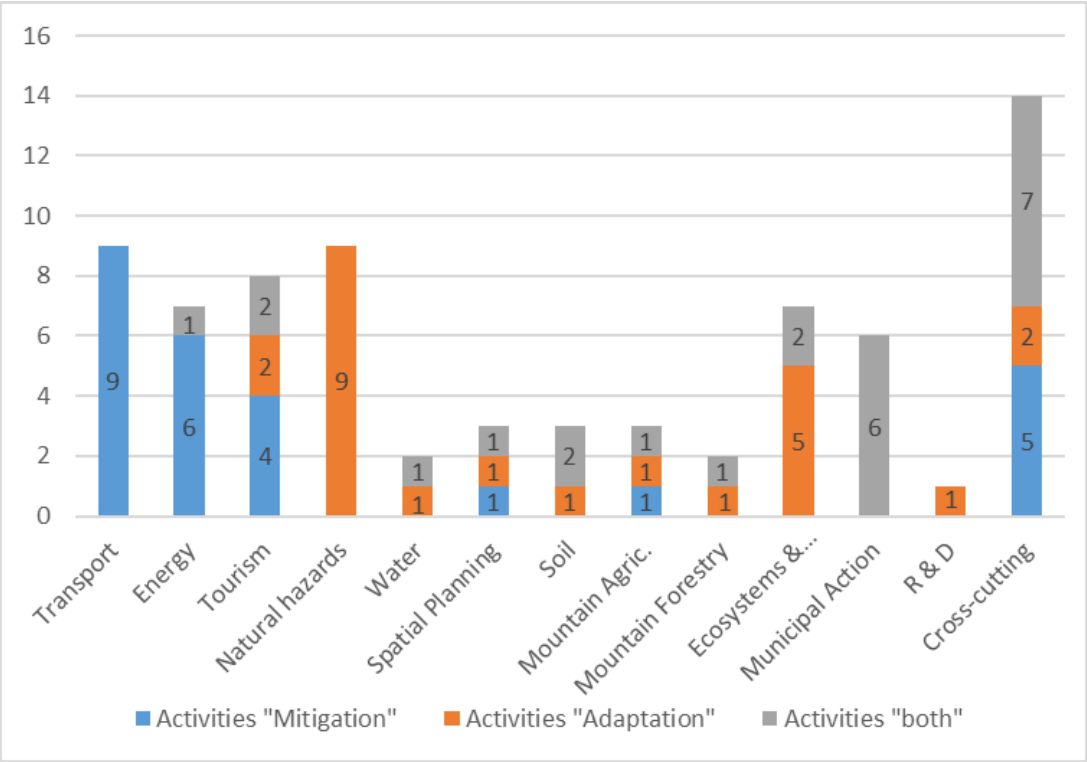
The activities having a direct link to the CAP 2.0, referring to specific implementation steps, are mostly those reported by the Working Group on Soil Protection and the Working Group on Spatial Planning and Sustainable Development.

Fields of action – adaptation and mitigation

When differentiating into adaptation- and mitigation-related activities within each sector, the insights from the initial stocktaking and the 2021-2022 update can be confirmed:

- Some sectors clearly have a stronger role for mitigation, e.g. transport and energy. The initial stocktaking also referred to “Green Economy”, which also had a clear mitigation focus but is now integrated into the specific sectoral activities or the “cross-cutting” ones.
- On the other hand, other sectors like natural hazards, water and ecosystems & biodiversity have a stronger adaptation focus.
- All the other sectors require an integrated approach, considering both mitigation and adaptation. The 2024 stocktaking update shows this integrated approach especially for tourism-related activities, including relevant new projects under the Alpine Space Programme, which look into the transformation of the tourism sector under changing climate conditions (no. 208 and no. 220). Also, the spatial planning activities, mountain agriculture and, of course, the municipal and crosscutting activities require an integrated approach considering both mitigation and adaptation.

Figure 4: Differentiation into mitigation- and adaptation-related initiatives per sector



→ Which insights can be derived for further activities of the ACB?

- The 2024 stocktaking update confirms that the ACB has a good overview on ongoing activities in most of the sectors covered by the CAP 2.0. This is due to the active role of ACB members themselves in sectoral activities as well as related activities of the TWBs. Some sectors are however covered to a lesser extent and it is more difficult for the ACB to receive insights into relevant activities and thus support needs. Relating to the “green” sectors water, soil, ecosystems and mountain agriculture & forestry, a separate study on “Nature-based solutions” has however been launched by the ACB to fill information gaps and to provide relevant recommendations for further activities.
- As in the previous stocktaking update, some direct links to the implementation pathways of the CAP 2.0 can be seen. However, the sectoral “caretakers” and the Implementation Communities have not been specifically involved in the stocktaking update. Thus, the “monitoring function” of the stocktaking update with respect to the implementation pathways needs to be seen as limited. It needs to be discussed whether a specific monitoring activity could be useful within the next ACB mandate.

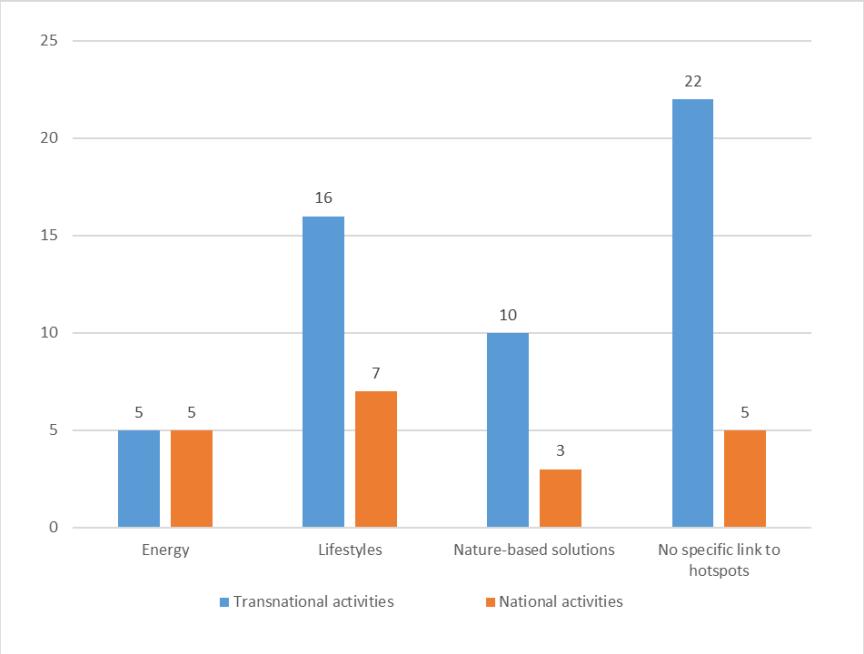
4. Relevance for cross-sectoral hotspots

With the 2024 stocktaking update, the ACB furthermore aims at getting more insights into its cross-sectoral hotspots: which ACB members, Observers, other Thematic Working Bodies of the Alpine Convention or stakeholders of the broader Alpine climate community contribute activities to the cross-sectoral hotspots? Moreover, how relevant are the selected hotspots in the frame of the overall stocktaking?

The following figure provides an overview and illustrates how the inputs of the stocktaking relate to the cross-sectoral hotspots. It can be seen that within the transnational activities (blue columns), the largest share of reported activities have no direct link to any of the cross-sectoral hotspots of the ACB. These inputs relate, for example, to activities with focus on resilience/adaptation in general (e.g. no. 180, without nature-based focus), to general information activities on climate change impacts (e.g. no 182) or to activities with general awareness raising focus (e.g. no. 187).

When looking at the activities with a link to the cross-sectoral hotspots, 30% of the reported activities relate to the lifestyles hotspot and 19% of the reported activities to the nature-based solutions hotspot. For the energy hotspot, only five transnational activities (9% of reported activities) were reported. When looking at the activities with national focus, about 25% of the activities have no link to the cross-sectoral hotspots. 35% of the reported activities with national focus are linked to lifestyles, 25% are linked to the hotspot energy transition and 15% are linked to the nature-based solution hotspot.

Figure 5: Link to the cross-sectoral hotspots of the ACB 2023-2024 mandate



The following sections provide a further analysis of the three cross-sectoral hotspots and deriving insights.

4.1 Cross-sectoral hotspot "Energy transition"

The energy transition towards a renewable and efficient energy system has seen a new dynamic with the start of the war in Ukraine. All Alpine countries have stepped up their efforts to move away from fossil fuels. This comprehensive transformation process goes clearly beyond changes in the energy system itself and requires contributions in many other sectors, e.g. transport, agriculture, tourism, spatial planning and buildings/settlement. In the Alps, these cross-sectoral considerations often have specific challenges and characteristics. Also, especially in the sensitive Alpine environment, potential trade-offs need to be considered, e.g. conflicts related to ecosystems and land-use, (over-)use of wood for renewable heating etc.

To ensure that these cross-sectoral interfaces that come along with the energy transition are better considered both in activities of the ACB itself, but also in all energy-related discussions and activities at Alpine level, the ACB launched a cross-sectoral hotspot "Energy transition" under its ongoing mandate (2023-2024). With the Booklet on Energy governance in the Alps (also to be submitted to the Alpine Conference), the ACB analyses relevant governance questions around the energy transition. For several "energy nexus", the governance booklet provides insights from best practices and ongoing "governance challenges" to improve cross-sectoral governance and make use of synergies between the different sectors.

The 2024 stocktaking supports the analysis of the governance booklet and provides an overview on additional activities. While the energy sector is one of the sectors that has received the highest number of inputs in a relative perspective, the absolute number of inputs is still not very comprehensive. So the inputs received can only be seen as spotlight.

The following table summarises the inputs that were reported for the cross-sectoral hotspot "Energy transition". In the last column, the relevant "energy nexus" is shown – thus the interface between the energy sector and other sectors of the CAP 2.0. The stocktaking provides interesting insights on the "Energy & transport" nexus, which is not covered in the booklet on Energy Governance.

Table 3: Inputs with relevance for the energy hotspot

No.	Name	Energy nexus
172	Cervino Project	Energy & transport
173	Technical report on Renewable Energies in Alpine protected areas (ALPARC)	Energy & spatial planning *(for more details see Energy booklet)*
217	Accelerating the electrification of road transport in the Alps	Energy & transport
218	Implementation of the energy transition in transalpine logistics, measures and regulations	Energy & transport
221	Energy Governance booklet	All energy nexus covered
225	Spatial Energy Planning in Styria, Vienna, Salzburg provinces	Energy & spatial planning *(for more details see Energy booklet)*

226	Waterpower round table in Switzerland	Energy & Water *(for more details see Energy booklet)*
236	Improving the energy efficiency of mountain facilities in Slovenia	Energy & tourism
237	National "Climate protection strategy" of the German Alpine Club DAV	Energy & tourism
240	Decree on Supporting and Funding Renewable Energy Communities (2024-2025)	Energy Communities

4.2 Cross-sectoral hotspot "Lifestyles"

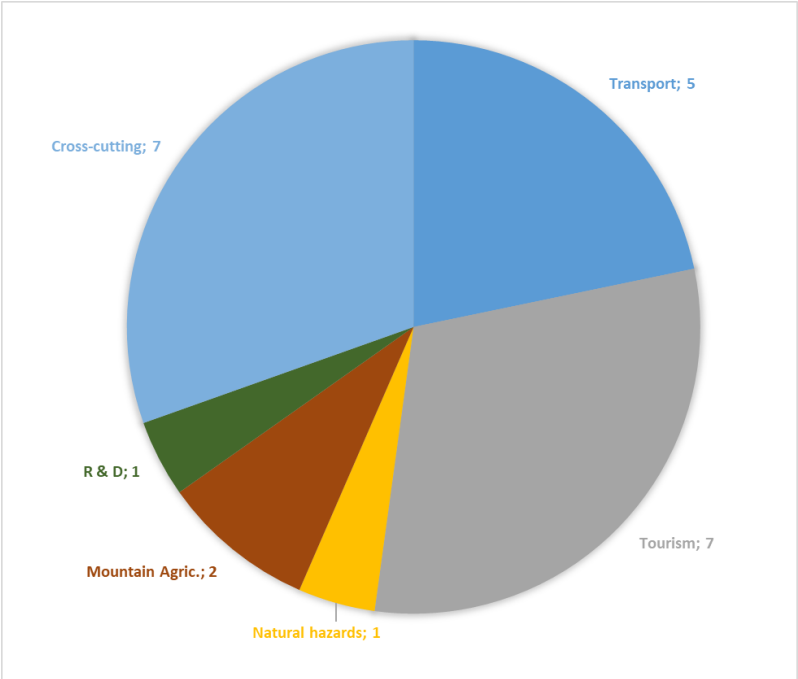
Within the "lifestyles" hotspot, the ACB aims at reaching out more broadly to multipliers and stakeholders, to bring the ideas and activities of the ACB "to the ground". Under the 2023-2024 mandate, several activities were implemented by the ACB itself, especially with the focus to support stakeholders at Alpine level to go "beyond the bubble" and to engage new stakeholders in their activities – thus motivating new target groups and actors to support the implementation of the CAP 2.0.

The 2024 stocktaking update highlights that this need of engaging stakeholders has been recognised by other Alpine initiatives/platforms/networks as well, especially CIPRA International has implemented a broad range of awareness raising and capacity building activities, partly with a focus on engaging young people for climate action in the Alps (e.g. no. 189 Alpine Climate Camps, no. 190 Re:Sources, no. 192 Alps2030).

Furthermore, the 2024 stocktaking includes activities that were already highlighted in the ACB booklet "Closing the Gap on Climate Action" and the training activities of the ACB itself.

The following figure illustrates how the reported lifestyles activities relate to the sectors of the CAP 2.0. It can be seen that the transport and tourism sectors play an important role, as they have a direct link to lifestyles and, of course, the crosscutting activities. Mountain agriculture also has an important impact on "what we eat" and is thus covered by the lifestyles activities.

Figure 6: Lifestyle activities of 2024 update and their link to sectors of the Climate Action Plan 2.0



4.3 Cross-sectoral hotspot "Nature-based solutions"

The third cross-sectoral hotspot of the 2023-204 ACB mandate refers to the role of nature-based solutions for climate-neutral and climate-resilient Alps. A first collection of relevant activities was already conducted in spring/summer 2024. On this basis, it was decided that a broader overview on the role of "nature-based solutions", relevant best practices, governance models and success factors would be interesting as basis for further activities of the ACB. Thus, an in-depth study on nature-based solutions was launched by the ACB in spring 2024, based on funding made available by the German Environment Agency. However, as this project is still under way, its results cannot be considered in the 2024 stocktaking.

Even if the "green" sectors water, soil, ecosystems, etc. are underrepresented in the 2024 stocktaking, the current update includes 10 activities that have a link to the nature-based solutions cross-sectoral hotspot:

- 5 relevant activities are new projects launched under the Interreg Alpine Space Programme (e.g. no. 196 X-RISK-CC, no. 204 FRACTAL, no. 205 I-SWAMP).
- 2 relevant activities are implemented as awareness raising/educational activities by CIPRA and Alpine Town of the Year for its communities (no. 186 SteinReich, no. 193 UrbaBio)
- Also, activities of the TWBs contribute to the cross-sectoral hotspot, e.g. the Soil Protection Working Group with its statement "Preserving moors in the Alps".

ANNEX 1: Overview table on reported activities – main information

All activities and updates in italics and purple font were added during the 2024 stocktaking update.
This includes new activities no. 172 to no. 244 as well as updates reported on the previously listed activities.

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
Activities implemented by Alpine Convention bodies						
1	Energy Platform (2013-2014, 3 workshops and background report)	Publication (in-depth/scientific)	Background report and accompanying workshops, agenda setting for implementing "renewable Alps" vision	Both	Energy	Energy Platform
2	Platform Ecological network *(2006-2019)*	Implementation measure adaptation	Raise awareness for the needs and methods to Increase ecosystem resilience by creating natural landscape elements in the form of corridors or stepping stones	Adaptation	Ecosystems & Biodiv.	Ecological network Platform
3	Alpine strategy for adaptation to climate change in the field of natural hazards (2013, PLANALP)	Publication (focus information)	Alpine strategy for adaptation to climate change in the fields of natural hazard (2012), brochure (2014), recent development RSA7	Adaptation	Natural hazards	Natural Hazards Platform PLANALP
4	Statement on the “Role of Ecological Connectivity for Adaptation to Climate Change Impacts in the Alps” (Platform Ecological Network, 2016)	Publication (focus information)	2 pages introductory document	Adaptation	Ecosystems & Biodiv.	Ecologic network Platform
5	6th Report on the State of the Alps "Greening the Economy in the Alpine Region" (+ Declaration of the XIV.	Publication (in-depth/scientific)	Report with Good Practice examples, data and information (focus energy efficiency and low carbon economy)	Mitigation	Crosscutting	Ad-hoc expert group RSA6 “Green Economy”

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
	Alpine Conference on Fostering a Sustainable Economy in the Alps)					
6	Task Force Climate Change of the Italian Presidency (2013-14)	Other	Agenda setting on Climate Change	Both	Crosscutting	Italy
7	Alpine Signals 7: Guidelines for Climate Change Adaptation at the Local Level in the Alps (IT, 2014)	Publication (focus information)	Guidelines for Climate Change Adaptation at the local level	Adaptation	Municipal Action	Italy
8	Guidelines on local adaptation to Climate Change for Water Management And Natural Hazards in the Alps (Platform Water Management, 2014)	Planning measure adaptation	Guidelines with focus water resources management and natural hazards Support for assessing vulnerability and resilience capacity	Adaptation	Water	Water Management Platform
9	Action Programme for a Green Economy in the Alpine Region *(2019)*	Planning measure mitigation	Development of Action Programme for Green Economy in the Alps	Mitigation	Crosscutting	Green Economy Advisory Board
10	Facing droughts in the Alpine Region *(2019)*	Planning measure adaptation	Expert paper, based on a questionnaire, two expert workshops and the 7th Alpine Water Conference (cf infra)	Adaptation	Water	Water Management Platform
11	Alps2050 - Common spatial perspectives for the Alpine Space. Towards a common vision (Project with the ESPON programme) *(2019)*	Project (focus data & scenarios)	Implementation of the Declaration on sustainable spatial development in the Alps, scientific base	Adaptation	Spatial Planning	Ad-hoc working group spatial planning
12	Joint Alpine-Carpathian Statement on Adaptation to Climate Change (2014)	Other	Joint statement with the Carpathian Region on adaptation, focus on exchange of information	Adaptation	Crosscutting	All contracting parties
13	Statement On the Value of Alpine Forests and the Alpine Convention's Protocol on Mountain Forests in the framework of the international forestry policies beyond 2015 (2014)	Publication (focus information)	Political statement, report on the state of Alpine forests, recommendations for monitoring, research, management, communication, and overview of the international institutional context	Both	Mountain forests	Mountain Forests Working Group

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
14	Statement on “Contribution of mountain farming to food security in Alpine regions” *(2016)*	Publication (focus information)	Statement on contribution of mountain farming to food security in Alpine regions (work programme 2014-2016), climate change adaptation with co-benefits	Adaptation	Mountain agriculture	Mountain Agriculture Platform
15	Statement on "Mountain agriculture and energy "*(2019)*	Publication (focus information)	Overview of the potential role of mountain agriculture in energy production and energy saving, highlighting co-benefits and with innovative examples from the entire alpine region	Mitigation	Mountain agriculture	Mountain Agriculture Platform
16	Best Practice Examples for land-use and nature conservation-compatible renewable energy projects in the Alps (DE, 2016)	Publication (in-depth/scientific)	Report with 28 exemplary renewable energy examples that avoid land-use conflicts and protect nature	Mitigation	Energy	BMUB Germany
17	Towards Renewable Alps	Publication (focus information)	Progress report towards the "vision Renewable Alps" for 2015-16	Mitigation	Energy	Permanent Secretariat
18	Flyer on Climate change in the Alps (*2017)*	Publication (focus information)	Information flyer on climate change in the Alps	Both	Crosscutting	Permanent Secretariat
19	Recommendations for the sustainable organisation of meetings and events of the Alpine Convention (2016)	Publication (focus information)	Check-list and recommendations drafted by the Permanent Secretariat, referring to existing standards	Mitigation	Energy	Permanent Secretariat
20	We are Alps Press Tour *Topic 2019: climate change, natural hazards and governance. No edition in 2020 and 2021 due to the Covid-pandemic*	Other	Annual press tour with changing specific focus topic (2015: Climate change); every edition is carried out with sustainable transportation means	Mitigation	Transport	Permanent Secretariat
21	Alpen-Forum-Innsbruck *(2015-2017)*	Event	Series of discussion workshops on specific fields of action on climate change	Both	Crosscutting	Permanent Secretariat

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
22	5th Alpine Water Conference 2014 and workshop "Water and risk management facing climate change: towards the local adaptation"	Event	Conference based on results of the Water Management platform, including other mountain regions	Adaptation	Water	Water Management Platform
23	International Conference and Appeal on climate protection at municipal level (Alliance in the Alps, Alpine Town of the Year, CIPRA International, 2015)	Event	International conference + joint appeal to the UN Climate Conference	Mitigation	Crosscutting	Alliance in the Alps, Alpine Town of the Year, CIPRA
24	Contribution to the report by the European Environmental Agency "Climate change, impacts and vulnerability in Europe 2016"	Publication (in-depth/scientific)	Inputs to EEA report, especially chapter on climate change in the Alps	Both	Crosscutting	Permanent Secretariat
25	Multi-Annual Work Programme of the Alpine Conference 2017-2022 + Alpine Conference Declaration	Other	"Taking action on climate change" is one of the 6 priorities	Both	Crosscutting	All contracting parties
26	Multi-Annual Work Programme of the Alpine Conference 2011-2017 (+ Declaration of the XIV. Alpine Conference on the Multi-Annual Work Programme)	Other	Climate change was one of the 5 priorities	Both	Crosscutting	All contracting parties
27	Cooperation with the European Environmental Agency	Other	Partnership agreement with EEA and contribution to EEA's activities (incl. Climate-ADAPT platform, Technical Paper on Adaptation in Mountain Regions)	Adaptation	Crosscutting	Permanent Secretariat
28	7th Report on the State of the Alps "Natural Hazard Risk Governance" *(2019)*	Publication (in-depth/scientific)	Principles and good practices in the field of risk governance	Adaptation	Natural hazards	Natural Hazards Platform PLANALP
29	6th Alpine Water Conference	Event	Conference "Water Management in a Field of Conflicting Interests: Between Natural Hazards and Nature Protection" (Herrenchiemsee, DE, 2016)	Adaptation	Water	Water Management Platform

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
30	ForumAlpinum & 7th Alpine Water Conference	Event	Conference "Alpine Water – Common Good or Source of Conflict" (Breitenwang, AT, 2018)	Adaptation	Water	ISCAR, Water Management Platform
31	Application of the Common Guidelines for the use of Small Hydropower in the Alpine region *+ Report on the application of the guidelines published in 2019*	Publication (in-depth/scientific)	Evaluation of the implementation of the Alpine Convention´s guidelines for balancing the interests of energy production and ecology	Mitigation	Water	Water Management Platform
32	Report on Interactions between mountain forests and flood protection *(2019)*	Publication (in-depth/scientific)	Overview of the role and requirements of protective forests, also in the view of climate change	Adaptation	Mountain forests	Mountain Forests Working Group
33	Mobility solutions in the Alps Database *(2015)*	Publication (in-depth/scientific)	Best-practice examples of sustainable mobility solutions in remote Alpine territories and for logistics and freight delivery	Mitigation	Transport	Transport Working Group
34	Analysis of innovative technologies for freight transport *(2019)*	Publication (in-depth/scientific)	Studies on combined transport, rail freight and alternative fuels	Mitigation	Transport	Transport Working Group
35	ClimaHost competition *2nd edition planned for 2021-2022 (Germany + Permanent Secretariat)*	other	Contest rewarding good practices in mitigation and energy management in Alpine hotels and restaurants	Mitigation	Tourism	Germany, Austria, Permanent Secretariat
Activities implemented by Contracting Parties with direct reference to Alpine Convention						
36	Energy Forum (CH, during the "Mountain week" at EXPO2015)	Event	Workshop during the Expo 2015 to discuss the potential role of common principles and guidelines for RES development in the Alps	Mitigation	Energy	Switzerland
37	Constructive Alps (since 2010)	Other	4th Constructive Alps award for sustainable architecture in the Alps (new	Both	Energy	Switzerland, Liechtenstein

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			construction and renovation); travelling exhibition *5th Constructive Alps award (2020) with a strong focus on climate conscious architecture, travelling exhibition* *6th Constructive Alps award (2022) ongoing, award ceremony and travelling exhibition foreseen in 2022*			
38	Alpine Building Conference (DE, 2016)	Event	International conference	Both	Energy	BMUB Germany
39	Virtual Alpine Observatory VAO (DE, since 2014)	Project (focus data & scenarios)	Network of High Altitude Research Stations; (www.vao.bayern.de) (e.g. observatories Sonnblick and Kitzsteinhor (AT), Jungfraujoch/ Gornergrat (CH), Schneefernerhaus (DE), Otlica (Slovenia), facilities of EURAC Research (Italy) and OSUG (France) Associated partners from Norway, Georgia, Bulgaria, Czech Republic, Slovakia: The VAO is always open to new partners and is set for continued expansion in the coming years. VAO is currently trying to become an EGTC	Adaptation	Crosscutting	Project consortium of alpine research stations
40	Workshop "The future of Alpine forests in light of the potential impacts of climate change: threats and opportunities" (Udine/I, 17.05.2013)	Event	Final conference of MANFRED and ALPFFIRS projects	Adaptation	Mountain forests	Project consortium MANFRED and ALPFFIRS (see below)
41	Best practice guide on energy management in alpine hotels	Publication (focus information)	Best practice guide for hotels, based on one specific example in South Tyrol	Mitigation	Energy	BMUB Germany

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
42	Workshop "Sustainable Economy in the Alps – Climate mitigation and Energy Efficiency in Hotel and Restaurant businesses"	Event	Workshop for exchanging experiences and launching a network for climate change initiatives in the hotel and restaurant industry	Mitigation	Energy	BMUB Germany
42	Online platform "Alpine Energy" for knowledge transfer on Energy Efficiency in the Hotel and Restaurant businesses *(please note: the platform is out of date and not online anymore)*	Online info tools	Online info tool on energy efficiency in the hotel and restaurant business	Mitigation	Energy	BMUB Germany
44	AlpInfoNet project	Other	Pilot activities and handbook for cross-border information on sustainable mobility	Mitigation	Transport	Bavarian Ministry of the Interior, for Building and Transport and further partners, Transport Working Group
Networks and platforms with transnational focus						
45	CAPA – Climate Adaptation Platform for the Alps	Online info tools	Transnational knowledge portal for climate adaptation, filling gaps of EU Climate Adapt platform	Adaptation	Crosscutting	UBA Austria with other partners, EUSALP AG8
46	Network of national adaptation policy makers of the Alpine countries	Other	Transnational network of national adaptation policy makers	Adaptation	Crosscutting	All contracting parties
47	Alpine Pearls	Implementation measure mitigation	Umbrella brand of tourism destinations with focus on sustainable mobility for guests	Mitigation	Transport	Network of Alpine tourism destinations, initiated by Austrian Federal Ministry for Sustainability and Tourism

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
48	Alpine Partnership for Local Climate Action (ALPACA)	Other	Information, exchange and joint awareness raising action on climate mitigation and adaptation measures with focus on local level, bringing together existing initiatives and networks	Both	Crosscutting	CIPRA, Alliance in the Alps, Alpine Town of the Year Association with support from Germany, associated partners
Projects/activities with project character with transnational focus						
49	C3-Alps - Capitalizing Climate Change Knowledge for Adaptation in the Alpine Space *(Project ASP)*	Project (focus data & scenarios)	Capitalisation project bringing together existing knowledge on adaption in the Alps	Adaptation	Crosscutting	Project consortium under the lead of UBA Austria
50	100max	Project (focus strategy & measures)	100max is an Alpine game for climate protection: 70 household testing climate-friendly lifestyles	Mitigation	Crosscutting	CIPRA
51	Project "cc.alps"	Project (focus data & scenarios)	Improve the performance of climate mitigation and adaptation measures; state-of-the art reports for different sectors	Both	Crosscutting	Project consortium under the lead of CIPRA
52	Project "climAlp"	Other	Information campaign for the promotion of energy efficient building and renovation, using regional timber	Mitigation	Energy	CIPRA
53	Project "PEMO"	Project (focus strategy & measure)	Effective reduction of CO2 emissions by motivating employees to commute to work by sustainable means of transport	Mitigation	Transport	Project consortium under the lead of CIPRA
54	Project "Alpstar"	Project (focus strategy & measure)	Development of strategy and measures to make the Alps carbon-neutral; pilot projects, e.g. on mobility	Mitigation	Crosscutting	Project consortium under the lead of Ministry for

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
						Environment Slovenia
55	Project "MountEE"	Project (focus strategy & measure)	Support for energy-efficient buildings and renovation, focus on public buildings; support to municipalities in three mountain areas	Mitigation	Energy	Project consortium under the lead of CIPRA
56	Project "dynAlp-climate"	Implementation measure mitigation	20 municipalities and regions put into practice concrete actions for climate protection	Adaptation	Crosscutting	Project consortium under the lead of Alliance in the Alps
57	Project "Recharge Green" *(Project ASP)*	Project (focus strategy & measures)	Strategies and tools to reconcile renewable energy development and nature conversation; cost and benefits of different strategies	Mitigation	Energy	Project consortium under the lead of Forschungsinstitut für Wildtierkunde und Ökologie, Veterinär-medizinische Universität Wien
58	CLISP Transnational Strategy for Climate Proof Spatial Planning *(Project ASP)*	Project (focus strategy & measures)	Mainstreaming climate adaptation into spatial planning, vulnerability assessment for sectors with relevance to spatial planning	Adaptation	Spatial planning	Project consortium under the lead of UBA Austria
59	Alpine Climate Strategy (WWF)	Publication (focus policy)	A position paper of the WWF European Alpine Partnership	Both	Crosscutting	WWF
60	Alpine ecological connectivity for the next generations – Alpine Nature 2030	Implementation measure adaptation	Strategy and measures towards Alpine ecological connectivity; specific measures are currently developed in the frame of the AlpBionet2030 project: coherent and complementary Alps-wide system of Strategic Alpine Connectivity	Adaptation	Ecosystems& biodiv.	AlpArc

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			Areas (SACA) and integrated wildlife management.			
61	Bergsteigerdörfer (Mountaineering villages)	Implementation measure adaptation	Initiative of Alpine clubs to promote sustainable tourism; villages that participate in the initiative agree to dissociate from classical forms of tourism	Both	Tourism	Alpine Clubs (ÖAV, DAV, Alpenverein Südtirol, Alpenverein Slovenia)
62	Energy efficiency in mountain huts	Implementation measure mitigation	Tool to measure CO_2 footprint of Alpine huts and to identify measures for reducing energy consumption and CO_2 emissions	Mitigation	Energy	Club Arc Alpin (CAA)
63	Umweltgütesiegel für Alpenvereins-hütten - Environment Certificate for mountain huts	Implementation measure mitigation	Reward of Alpine huts with a certification when certain criteria of environmentally friendly and sustainable management are met; these include the use of biofuel, increase of energy efficiency, reduction of CO_2 emissions	Mitigation	Tourism	DAV, ÖAV, AVS
64	Project "So schmecken die Berge" (taste of the mountains)	Implementation measure mitigation	In the framework of alpine hut management, hut owners are motivated to increasingly use ingredients and products that are produced/ cultivated in the close vicinity of the alpine hut	Mitigation	Tourism	Alpine Clubs
65	Adapt-Alp (Project ASP)	Project (focus strategy & measures)	Products and recommendations for natural hazard and disaster management	Adaptation	Natural hazards	Project consortium under the lead of Bayerisches Staatsministerium für Umwelt und Gesundheit

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
66	ALP FFIRS - Alpine Forest Fire Warning System (Project ASP)	Project (focus strategy & measures)	Development of the Alpine Forest Fire Danger Scale; tool equipped with a warning system that issues a daily alert level bulletin for the Alpine Space	Adaptation	Mountain forests	Project consortium under the lead of Agenzia Regionale per la Protezione Ambientale del Piemonte
67	Alp-Water-Scarce - Water Management Strategies against Water Scarcity in the Alps (Project ASP)	Project (focus strategy & measures)	Tools to mitigate the risk of water scarcity and instruments for the long-term management of water resources	Adaptation	Water	Project consortium under the lead of Université de Savoie
68	ClimAlpTour - Climate Change and its Impact on Tourism in the Alpine Space (Project ASP)	Project (focus strategy & measures)	Vulnerability assessment for tourism in the Alps and development of adaptation strategies	Adaptation	Tourism	Project consortium under the lead of Regione de Veneto
69	GoApply – Multidimensional governance of climate change adaptation in policy making and practice (Project ASP)	Project (focus strategy & measures)	Improve adaptation governance: vertical implementation, mainstreaming, involvement of different governance levels	Adaptation	Crosscutting	Project consortium under the lead of UBA Austria
70	MANFRED - Management strategies to adapt Alpine Space forests to climate change risks (Project ASP)	Project (focus strategy & measures)	Development of adaptive forest management strategies and tools to support forestry practice	Adaptation	Mountain forests	Project consortium under the lead of Forstliche Versuchs- und Forschungs-anstalt Baden-Württemberg
71	PARAmount - imProved Accessibility: Reliability and security of Alpine transport infrastructure related to mountainous hazards in a changing climate (Project ASP)	Project (focus data & scenarios)	Vulnerability assessment for transport infrastructures with respect to natural hazards; implementation of early warning systems	Adaptation	Transport	Project consortium under the lead of Austrian Federal Ministry for Sustainability and Tourism

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
72	PermaNET - Long-Term Permafrost Monitoring Network (Project ASP)	Project (focus data & scenarios)	Development of permafrost monitoring network and strategy for dealing with natural hazards and their consequences	Adaptation	Natural hazards	Project consortium under the lead of Provincia Autonoma di Bolzano-Alto Adige
73	RocktheAlps – Harmonized ROCKfall natural risk and protection forest mapping in the ALPine Space (Project ASP)	Project (focus data & scenarios)	Development of rockfall risk zoning tool and harmonised map of rockfall risk and protection forests	Adaptation	Natural hazards	Project consortium under the lead of National research institute of science and technology for environment and agriculture (Grenoble)
74	SEAP_Alps – Supporting local authorities in the implementation of Sustainable Energy Action Plans in the Alpine Space Area (Project ASP)	Project (focus strategy & measures)	Adapting the SEAPs concept of the EU Covenant of Mayors to the Alpine region, platform for knowledge transfer	Both	Energy	Project consortium under the lead of Città Metropolitana di Torino
75	SedAlp -Sediment management in Alpine basins: integrating sediment continuum, risk mitigation and hydropower (Project ASP)	Project (focus data & scenarios)	Mapping and monitoring sediment and woody debris processes in Alpine basis; predictive tools and strategies to manage sediment-related hazards	Both	Water	Project consortium under the lead of Austrian Federal Ministry for Sustainability and Tourism
76	SILMAS - Sustainable Instruments for Lakes Management in the Alpine Space (Project ASP)	Project (focus strategy & measures)	Range of tools for sustainable management of Alpine lakes + catchments; educational material	Adaptation	Water	Project consortium under the lead of Région Rhône-Alpes France

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
77	Links4Soils *(Project ASP)*	Project (focus strategy & measures)	Link and improve soil management strategies and approaches, tools and knowledge for Alpine soil protection *Completed in 2020 with several outputs.*	Adaptation	Soil	Project consortium under the lead of Tyrol
78	The SINFONIA project for Alpine Smart Cities *(Project ASP)*	Implementation measure mitigation	Initiative between Bolzano and Innsbruck to deploy large-scale integrated and scalable energy-solutions; achieve 40-50% primary energy savings. *Project ended 07/2020.*	Mitigation	Energy	Contracting parties and project consortium
79	BB-CLEAN - Strategic tools towards a sustainable use of biomass for low carbon domestic heating *(Project ASP)*	Implementation measure mitigation	Development of transnational policies for a sustainable use of biomass for domestic heating to minimise negative environmental impacts and improve a smart use of this resource in the Alpine Space	Mitigation	Energy	Project consortium under the lead of Catholic University of the Sacred heart Milano
80	SMART ALTITUDE - Alpine winter tourism territories demonstrating an integrated framework for a low-carbon, high-impact and resilient future *(Project ASP)*	Implementation measure mitigation	Low-carbon policy implementation in winter tourism territories, taking into account the needs of mitigation and adaptation	Both	Tourism	Project consortium under the lead of municipality Les Orres (France)
81	MELINDA - Mobility Ecosystem for Low-carbon and INnovative moDal shift in the Alps *(Project ASP)*	Implementation measure mitigation	Inducement of a behavioural change in mobility patterns in a bottom-up manner and support policy making on mobility, air quality and territorial development; thanks to a better integration of mobility data and real time monitoring of mobility behaviours and patterns during a test, the project partners will support the development of services for multimodality and modal shift	Mitigation	Transport	Project consortium under the lead of Insiel S.p.A.

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
82	SaMBA - Sustainable Mobility Behaviours in the Alpine Region *(Project ASP)*	Implementation measure mitigation	Promotion of mobility behaviour change by reducing the perceived gap between sustainable transport modes and private cars through reward/pricing policies that are equitable and directly related to the external costs of transport	Mitigation	Transport	Project consortium under the lead of Regione Piemonte
83	GreenRisk4ALPs - Development of ecosystem-based risk governance concepts with respect to natural hazards and climate impacts - from ecosystem-based solutions to integrated risk assessment, *(Project ASP)*	Planning measure adaptation	Development of ecosystem-based concepts to support risk governance with respect to natural hazards and climate impacts	Adaptation	Ecosystems & Biodiv.	Project consortium under the lead of Bundesforschungs-zentrum für Wald Österreich
Projects and activities with national focus (with potential for transferability)						
84	Klimafreundlicher Bergsport – Climate-friendly mountain sports (project, DAV)	Implementation measure mitigation	Awareness-raising campaign on climate change in the Alps with target group mountain sports; improve accessibility of Alps by public transport	Both	Tourism	Deutscher Alpenverein DAV
85	Bergsport mit Zukunft - Future-proof mountain sports (project, DAV)	Implementation measure mitigation	Follow-up project of Klimafreundlicher Bergsport; three thematic Work Packages: climate-friendly infrastructure of DAV, education for sustainable development, resource protection in mountaineering	Mitigation	Tourism	DAV
86	Improvement of the public transport for mountaineers in the Naturpark Karwendel (project DAV)	Implementation measure mitigation	Reduction of CO^2 footprint of hikers/mountaineers/climbers/bikers on their trips by choosing public transport; awareness raising	Mitigation	Tourism	DAV

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87	ALPENHUMUS	Project (focus data & scenarios)	Project detecting effects of current climate change on C-storage in humus layers in the Alps *Completed in 2020* *Report as Book available, only in German:* *Alpenhumus als klimasensitiver C-Speicher und entscheidender Standortfaktor im Bergwald*	Mitigation	Soil	Germany (BMEL)
88	Klima-Toolbox Surselva	Planning measure adaptation	Toolbox for developing a plan of action, together with regional decision-makers	Adaptation	Crosscutting	CIPRA
89	Austrian Assessment Report 2014 (AAR14)	Publication (in-depth/scientific)	Austrian Assessment Report 2014, based on model of IPCC reports	Both	Crosscutting	UBA Austria
90	CC-Act: Awareness raising, capacity building and training on climate change adaptation at municipality level	Online info tools	Interactive online decision support tool for municipalities intended for joint application with multiplier agents	Adaptation	Crosscutting	UBA Austria
91	FAMOUS - Methods and tools for adaptation to climate change: Manual for provinces, cities and regions	Publication (focus information)	Support adaptation processes in Provinces and at municipal level; development of methods and tools	Adaptation	Crosscutting	UBA Austria
92	Good Practice Brochure: Our Municipalities in Climate Change	Publication (focus information)	Good practice brochure depicts 11 diverse examples of successful adaptation from different Austrian regions	Adaptation	Crosscutting	UBA Austria
93	klimaaktiv mobil - Mobility management for leisure and tourism	Implementation measure mitigation	Mobility management programme with focus on tourism; supports purchase of environmental-friendly vehicles and investments in cycling infrastructures	Mitigation	Transport	Austrian Federal Ministry for Sustainability and Tourism

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
94	Environmental Support Schemes (Austria)	Other	Environmental Support Schemes provides financial support for environmental projects	Both	Crosscutting	Austrian Federal Ministry for Sustainability and Tourism
95	Implementation Plan for Electric Mobility (Austria)	Planning measure mitigation	Measures and initiatives to encourage the development and use of electric vehicles	Mitigation	Transport	Austrian Federal Ministry for Sustainability and Tourism
96	Mobility Management and Fuel saving initiative (Austria)	Implementation measure mitigation	Development and implementation of projects for the promotion of sustainable mobility; training sessions for fuel-efficient driving	Mitigation	Transport	Austrian Federal Ministry for Sustainability and Tourism
97	Sustainable mobility in practice (Slovenia)	Implementation measure mitigation	Awareness raising and information project on sustainable mobility, since 2017 with focus on schools	Mitigation	Transport	Slovenia, Ministry for Environm. and spatial planning
98	Life ViVaCCAdapt (Adapting to the impacts of climate change in the Vipava Valley)	Implementation measure adaptation	Adaptation project for Vipava Valley with focus on pilot decision support system (DSS) for irrigation in order to rationalise water consumption	Adaptation	Mountain farming	Slovenia, Ministry for Environm. and spatial planning
99	Climate mitigation and adaptation support for municipalities in Tyrol	Publication (focus information)	Information folder for Tyrolean communities with facts and links to climate change and adaption to climate change	Both	Crosscutting	Tyrol
100	Course for Climate protection Consultants (Kommunaler Klimaschutzbeauftragter) (Tyrol)	Other	Training for municipal staff; participants get holistic and application-oriented information about climate protection	Mitigation	Energy	Tyrol
101	Strategy Tyrol 2050	Planning measure mitigation	Energy strategy: until 2050 the energy consumption in Tyrol is to be halved,	Mitigation	Energy	Tyrol

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			share of renewable energies increased by 30%			
102	Liechtenstein Aktionsplan Klimabericht	Planning measure mitigation	Action Plan for implementation of Liechtenstein's climate strategy	Mitigation	Crosscutting	Liechtenstein
103	ACRP – Austrian Climate Research Programme	Other	The ACRP supports high quality research aimed at advancing the science of climate change, adaptation and (partly) mitigation in AT	Both	Crosscutting	Austrian Federal Ministry for Sustainability and Tourism
104	Klimawandelanpassungsmodellregionen - climate adaptation model regions	Implementation measure adaptation	Support for climate adaptation model regions, the participants become flagship regions for climate change adaptation	Adaptation	Crosscutting	Austrian Federal Ministry for Sustainability and Tourism
105	Austrian Climate and Energy Fund (KLI.EN)	Implementation measure mitigation	Fund to support the reduction of GHGs in Austria; focus on research and development	Mitigation	Energy	Austrian Federal Ministry for Sustainability and Tourism
106	Green Electricity Act 2012 and Feed-In tariff ordinance	Implementation measure mitigation	System of fixed feed-in tariffs for various forms of renewable electricity generation; 2012 amendment includes expansion targets for RES production until 2020	Mitigation	Energy	Austrian Federal Ministry for Sustainability and Tourism
107	Increased energy efficiency in buildings	Implementation measure mitigation	Different support programmes to improve energy efficiency in buildings	Mitigation	Energy	Austrian Federal Ministry for Sustainability and Tourism
108	Increased share of renewable energy for space heating (Austria)	Implementation measure mitigation	Different support programmes for exchanging heating systems with focus renewable heating	Mitigation	Energy	Austrian Federal Ministry for Sustainability and Tourism

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
109	Programme for rural development (Austria)	Implementation measure mitigation	The Austrian Agri-Environmental Programme 2014–2020 includes several measures designed to reduce GHG emissions from the agricultural sector	Mitigation	Mountain farming/ Agriculture	Austrian Federal Ministry for Sustainability and Tourism
110	Local adaptation to climate change in Alpine municipalities in Italy	Event	4 seminars with public officers and experts from local and subregional institutions to spread information on the Climate Action Plan of the Alpine Convention, based on local adaptation guidelines	Adaptation	Crosscutting	Italy
111	The Lombardy Region's "Document of Regional Adaptation to Climate Change" (Plan) - DARACC	Planning measure adaptation	Action Plan for Adaptation in Lombardia; governance tool to define priority fields for action	Adaptation	Crosscutting	Lombardy Region
112	The Cortina Charter (La Carta di Cortina)	Implementation measure mitigation	Charter to reduce environmental footprint of winter sport (events); implementation of specific measures, e.g. renovation of existing winter sport facilities and new public transport links	Mitigation	Tourism	
113	ADAMONT Project (France)	Planning measure adaptation	Partnership and integrated research action on adaptation in medium-mountain territory (near Grenoble); knowledge exchange and operational approach	Adaptation	Crosscutting	France
114	TEPCV Tarentaise Vanoise (France)	Planning measure mitigation	Regional strategy focusing on reduction of GHG; TEPCV = territory with positive energy and green growth	Mitigation	Crosscutting	Region Tarentaise Vanoise
115	Climate adaptation consulting for municipalities (Unterstützung von Gemeinden bei der Anpassung an den Klimawandel)	Implementation measure adaptation	Support of municipalities in developing risk and vulnerability analysis, to conduct stakeholder workshops and to develop	Adaptation	Crosscutting	Tyrol

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			specific adaptation measure; implementation of the project in 12 municipalities in Tyrol			
116	LIFE – ClimAct: Climate action campaign for low- income households (Doppelplus Tirol)	Implementation measure mitigation	Initiating change in everyday action of low-income households; The CO2 reduction will be reached with 60 volunteer counsellors called „energy and climate coaches“ and over 1000 coachings. *End of project 03/2021 – working on the follow-up project*	Mitigation	Energy	Tyrol
117	WAVE (2019)	Project (focus data & scenarios)	Atmospheric measurements	Adaptation	Other (monitoring)	Bavaria
118	AlpEnDAC I and II (2015, 2018)	Project (focus data & scenarios)	Development: Alpine Environmental Data Analysis Centre	Adaptation	Other (monitoring)	Bavaria
Activities implemented at transnational level (2021-2022 stocktaking update)						
119	YOALIN - Youth Alpine Interrail	Implementation measure mitigation	Yoalin enables 100 selected young people to travel sustainably across the Alps by public transport in the summer (2018, 2019, 2021) to create awareness for sustainable modes of transport.	Mitigation	Transport	CIPRA International
120	MoVe the Alps - Conference on cycling	Event	Conference dedicated to climate-friendly bike holidays in the Alps	Both	Transport	Switzerland
121	Climate Action in Alpine towns	Implementation measure mitigation	Pilot project on municipal climate action, connecting the expertise fo the Alpine Convention with the green priority of the Territorial Agenda.	Both	Municipal action	Switzerland

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
122	EUSALP Energy Observatory	Project (focus data & scenarios)	Establishment of an Alpine-wide body for monitoring of energy data, harmonisation of standards & methodologies; expert exchange;	Mitigation	Energy	EUSALP AG9
123	Stock-taking summary of permanent soil monitoring areas in the perimeter of the Alpine Convention	Planning measure adaptation	Summary of permanent soil monitoring areas in the perimeter of the Alpine Convention	Both	Soil	Working Group Soil
124	Adaptation at Altitude Programme: Strengthening Adaptation Knowledge, Interregional Learning and Exchange	Planning measure adaptation	This Programme aims at increasing knowledge on climate change and appropriate adaptation solutions in mountains, feeding into science-policy platforms for informed decision making.	Adaptation	Ecosystems & biodiv.	UNEP
125	Declaration of the XVI Alpine Conference on integrated and sustainable water management in the Alps	Other	Declaration addressing the protection/requalification of rivers, adaptation to climate change (floods and droughts), hydropower and governance in the field of water management.	Adaptation	Water	France
126	Alpine-wide conference on water resources and alpine rivers: adaptation to the challenges of climate change	Event	2-day conference organised by the French Presidency of the Alpine Convention, approx. 100 participants from 6 countries	Adaptation	Water	France
127	Young Academics Award 2020 – Emissions in the Alps: climate change and air quality, measurement and measures	Other	Award by the Alpine Convention to 5 Master theses on climate change issues	Both	Research & Development	Permanent Secretariat
128	Youth Parliament of the Alpine Convention (YPAC) – 2019 session on Climate change	Event	"Parliamentary exercise by 10 highschools from 7 Alpine countries	Both	Crosscutting	Permanent Secretariat

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			Outputs: 9 resolutions (demands) from the youth to decision-makers"			
129	Report on Climate-friendly and climate-resilient Mountain Agriculture and Forestry in operationalization of the Alpine Climate Target System	Publication (focus policy)	Report of WG Mountain Agriculture & Forestry on the 2019-2020 mandate and how the activities contribute to the Alpine Climate Target System.	Both	Mountain agriculture & mountain forestry	WG Mountain Agriculture and Forestry
130	Green Economy Progress Report	Publication (focus policy)	Summary of current status and ongoing activities regarding the implementation of a Green Economy in the Alps. Recommendations on concrete measures to sharpen the profile of an Alpine Green Economy.	Mitigation	Crosscutting	Ad-hoc working group Green Economy
131	Report on Contingency Planning in the Area of Natural Hazards	Project (focus strategy & measures)	Comparative analysis of challenges, strengths and weaknesses between contingency planning and natural hazard management	Adaptation	Natural hazards	Natural hazards Working Group
132	Exhibition of natural hazard models and risk communication tools	Event	Joint workshop of EUSALP AG8 and PLANALP WG to implement knowledge transfer and exchange on good natural disaster risk reduction practices, including risk communication focusing on different social groups.	Adaptation	Natural hazards	Natural hazards Working Group
133	Report on the Economical and prudent use of soil in the Alps	Publication (in-depth/scientific)	Overview report on the use of soil in the Alps, key facts & figures, main challenges regarding prudent use of soil, possible solutions and the role of soil monitoring	Both	Soil	Working group Soil

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
134	Report Towards a modal shift of transalpine freight transit	Publication (in-depth/scientific)	Overview report on potential policy and infrastructural measures to improve modal shift, including proposals on intersectoral governance	Mitigation	Transport	Working Group Transport
135	Reduction of mobility demand and shift to environmentally sustainable modes: strategies and measures in the Alps	Publication (in-depth/scientific)	The report summarised the activities of WG Transport regarding the collection and good practice analysis on measures that reduce transport demand through transport saving spatial structures, new working solutions, pooling of shipments, regional distribution chains, etc.	Mitigation	Transport	Working Group Transport
136	Linking Alps Project (Project ASP)	Project (focus strategy & measures)	By using innovative tools and transnationally aligned strategies for linking information mobility service, the options for low carbon mobility will be increased, by offering seamless mobility chains for passenger.	Mitigation	Transport	Project consortium under the lead of Austria Tec
137	E-smart - Integrated e-mobility planning in the Alpine Space (Project ASP)	Project (focus strategy & measures)	Transnational project cooperation to develop an integrated approach to electric vehicle charging infrastructure planning and e-mobiliy services development, focus on Local Public Transport and Last-Mile Freight Logistics.	Mitigation	Transport	Project consortium under the lead of Ricerca sul Sistema Energetico
138	ALPTREES Sustainable use and management of non native trees in the alpine region	Project (focus strategy & measures)	Developing a transnational approach for dealing with the challenges in non-native tree species	Adaptation	Mountain forestry	Project consortium under the lead of

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
	(Project ASP)		management, taking into account positive impacts with respect to climate adaptation but also their risks for Alpine biodiversity and eocsystems.			Federal Research and Training Centre for Forests, Natural Hazards and Landscape (AT)
139	HEALPS 2 Healing Alps: Tourism based on natural health resources for the development of Alpine regions (Project ASP)	Project (focus strategy & measures)	Develop and improve framework conditions and tools for a better utilisation of Alpine-specific natural health resources for the development of innovative tourism products and service chains - taking into account challenges like climate change.	Adaptation	Tourism	Project consortium under the Paracelsus Medical University Salzburg
140	ALPGRIDS Increasing RES uptake through Microgrids in the Alps (Project ASP)	Project (focus strategy & measures)	ALPGRIDS aims at creating a transnational enabling environment to foster microgrid solutions, supporting in paticular the creation of local energy communities.	Mitigation	Energy	Project consortium under the lead of Auvergne-Rhône-Alpes Energy Environment Agency
141	LUIGI Linking Urban and Inner-Alpine Green Infrastructure - Multifunctional Ecosystem Services for more liveable territories (Project ASP)	Project (focus strategy & measures)	Development of common approaches, tools, business models, awareness raising on the role of a green infrastructure network between mountain/rural and urban areas.	Adaptation	Ecosystems & biodiv.	Project consortium under the lead of Metropolitan City of Milan
142	ADO - Alpine Drought Observatory (Project ASP)	Project (focus data & scenarios)	The project ADO aims to create an online drought monitoring platform and develop policy implementation guidelines for proactive drought	Adaptation	Water	Project consortium under the lead of EURAC Research

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			management in the Alpine Space region.			
143	CHEERS Project	Project (focus strategy & measures)	The CHEERS project focuses on the provision of approaches and tools to salvage Alpine cultural assests affected by natural risks.	Adaptation	Natural hazards	Project consortium under the lead of ###
144	OpenSpaceAlps - Sustainable development of alpine open spaces by enhancing spatial planning governance	Project (focus strategy & measures)	Foster multi-level transnational spatial governance with the aim to maintain open spaces as part of alpine Green infrastructure.	Adaptation	Spatial planning	Project consortium under the lead of ###
145	Stocktaking on organic agriculture in the Alps and Developing organic agriculture scenarios for Alpine regions	Publication (focus policy)	In its mandate 2021-2022, the MAMF Working Group has launched a stocktaking on organic agriculture in the Alps. Based on this, organic agriculture scenarios for Alpine regions shall be developed.	Both	Mountain Agriculture	WG Mountain Agriculture and Forestry
146	Promotion of sustainable value chains in forestry and farming sectors	Publication (focus policy)	Study report to promote sustainable value chains in forestry and farming sectors by involving the relevant actors. A focus will be laid on linkages between mountain farming and forestry and urban centres. The objective will contribute to the implementation of the GEAP as well as to IP_Agr1 of the ACB.	Both	Mountain forests	WG Mountain Agriculture and Forestry
147	Alpine-wide concept for soil data harmonisation & monitoring	Publication (in-depth/scientific)	Development of Alpine-wide concept to coordinate- harmonise and simplify soil data collection within the Alps.	Both	Soil	WG Soil Protection
148	Potential of technologies for the promotion of sustainable passenger transport in the Alpine region	Publication (focus information)	Review of new technologies like hydrogen-powered trains and their potential contribution to sustainable transport in the Alps.	Mitigation	Transport	WG Transport

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
149	Policies and measures/instruments for sustainable mobility in the Alpine Area	Publication (focus policy)	Review of policies, measures and instruments to support sustainable mobility in the Alps	Mitigation	Transport	WG Transport
150	Climate Hour	Event	Local climate-related events to showcase diverse climate activities and inspire local action, initiated by the Swiss Presidency.	Both	Ecosystems & biodiv.	Swiss Presidency
151	MoVe Inn Now	Event	MoVe INN now is an environmental eduction project with the aim to sensitise children and young people to the characteristics, state and importance of Alpine ecosystems and links it with climate-friendly mobility.	Both	Water	Swiss Presidency
152	White Paper "Forest fires in the Alps" of EUSALP AG8	Publication (focus policy)	White Paper of AG8 to provide a blueprint for the development of regional integrated forest fire management plans.	Adaptation	Mountain forests	EUSALP AG8
153	Study of Physical Natural Hazard Models and new prototype of interactive model	Project (focus data & scenarios)	Analysis of existing hazard models and assessment of risk communication tools & instruments. Based on this analysis, development of a new interactive physical hazard model and educational concepts.	Adaptation	Natural hazards	EUSALP AG8
154	Report on Land take in the Alpine region: the data perspective	Publication (in-depth/scientific)	Contribution to the implementation of Pathway IP_SP1, focusing on a common data source on land take in the Alpine countries.	Both	Spatial Planning	WG Spatial Planning and Sustainable Development

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
155	Collection of good practices for growth and shrinking strategies	Publication (focus information)	Contribution to the implementation of Pathway IP_SP1, focusing on a collection of good practices as starting point for further activities.	Both	Spatial Planning	WG Spatial Planning and Sustainable Development
156	Land saving targets in Alpine countries and regions - Status report	Publication (focus information)	Contribution to the implementation of Pathway IP_SP1 by providing a status report on land saving targets as basis for further activities.	Both	Spatial Planning	WG Spatial Planning and Sustainable Development
157	Workshop on soil functions and spatial planning in the Alps,	Event	Joint workshop of WG Soil Protection and WG Spatial Planning to address tools and processes that are needed to enable a fact-based decision making on soil functions and soil protection (29/30. March 2022)	Both	Soill	WG Spatial Planning and Sustainable Development & WG Soil Protection
Activities implemented at national level (2021-2022 stocktaking update)						
158	Climate & Air Energy Plan Monaco with Energy Transition Pact (Vers un Etat climatiquement neutre et économe en énergie)	Planning measure mitigation	Action Plan on climate mitigation measures as implemented by the Government of Monaco. Implementation through Energy Transition Pact which includes individuals, associations, entrepreneurs, institutions.	Both	Energy	Monaca
159	National Strategy on Biodiversity Stratégie Nationale pour la Biodiversité"	Planning measure adaptation	National Strategy for Biodiversity to comply with requirements of the Convention on Biological Diversity. The strategy comprises 7 strategic orientations and is linked to both mitigation and adaptation.	Both	Ecosystems & biodiv	Monaco

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
160	Advisory program "Climate-fit Tyrol regions" (Beratungsprogramm „Klimafitte Tiroler Regionen“)"	Implementation measure adaptation	Together with interested regions / community associations, awareness of the effects of climate change is raised in the context of an information event, in order to subsequently work out measures for adaptation to climate change or for climate protection in a workshop with relevant actors in the region.	Adaptation	Crosscutting	The free advisory service is carried out by the project partners Klimabündnis, Energie Tirol and alpS.
161	Green Deal Olympia Region Seefeld	Implementation measure mitigation	Development of sustainable tourism strategy in the Seefeld Plateau region, in close collaboration with the municipalities. The tourism association sees itself here as a link and regional developer. Seefeld would like to act as a pilot region in the coming years to start a sustainable change in tourism in Tyrol.	Mitigation	Tourism	Seefeld region
162	Climate alliance companies program (Klimabündnis-Betriebe Programm)	Implementation measure mitigation	Advisory program for companies that want to join Climate alliance: KlimaCheck with inspection of the company and collection of all relevant data, evaluation of possible measures, joint definition of company-specific goals and measures to implement within next 5 years.	Mitigation	Crosscutting	Land of Tyrol

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
163	KlimaAlps Project	Implementation measure adaptation	Project focusing on education and awareness raising with respect to climate change adaptation: training of climate educators and set-up of "KlimaTopes" as places where climate change is already visible + traveling exhibition.	Adaptation	Crosscutting	Land of Tyrol
164	Bavarian Report 2021 on the Climate (Klima-Report Bayern 2021)"	Publication (focus information)	Report and further information & tools on Climate change impacts in Bavaria. A specific chapter deals with impacts and potential adaptation measures in the Alps.	Adaptation	Crosscutting	Climate-Centre, Bavarian Environmental Agency
165	Pilot Study Bavarian Climate Impact Maps	Planning measure adaptation	Development of a methodology for climate impact maps in Bavaria, combining the analysis of climate change effects and the sensitivity of regions towards climate change impacts. Identification of sensitive areas and typology.	Adaptation	Crosscutting	Climate-Centre, Bavarian Environmental Agency
166	Monitoring Permafrost Zugspitze Summit (Monitoring Permafrost Zugspitzgipfel)	Implementation measure adaptation	Installation of permanent measuring station for observation of temperatures in the permafrost at the peak of the Zugspitze	Adaptation	Soil	Geological Survey, Bavarian Environmental Agency
167	Educational trail about alpine soils	Implementation measure adaptation	Educational adventure trail about alpine soils in the Bavarian alps.	Mitgiation	Soil	Bavarian Environment Agency
168	GOAL –Governance of local climate adaptation	Implementation measure adaptation	GOAL supports climate adaptation in small municipalities in Austria and the Alpine region. From analysis of	Adaptation	Municipal Action	Environment Agency Austria, Climate and

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			good practices (also in other countries) to policy recommendations.			Energy Fund Austria
169	Natural Hazard and Climate Change Check for Municipalities	Planning measure adaptation	Councelling tool and audit procedure in Austria to support local authorities in reviewing and enhancing their risk precaution measures.	Adaptation	Natural hazards	Cross-sector WG in Austria, mandated by the Conference of State Environment Ministers
170	Project Flood Knowledge	Planning measure adaptation	Developing a cross-border coordinated approach to better deal with flood-related natural hazards.	Adaptation	Natural hazards	Project in the frame of the Austrian-German Interreg Programme
171	RiKoST - Risk communication strategies	Implementation measure adaptation	Target-group oriented risk communication to improve resilience to natural hazards, focusing on cross-border risks.	Adaptation	Natural hazards	Regions South Tyrol and Carinthia, EURAC,
Activities implemented at transnational level (2024 stocktaking update)						
172	*Cervino Project (Interreg ASP, small-scale project)*	*Online info tools*	*Set-up of an online platform to facilitate exchange and visualisation of energy data within the Alpine territory.*	*Mitigation*	*Energy*	*Project consortium under the lead of Regione Liguria*
173	*Technical report on Renewable Energies in Alpine protected areas (ALPARC)*	*Publication (in-depth/scientific)*	*Survey to obtain information on status-quo and potential for RES in protected areas and conflicts that came up during project realisation.*	*Mitigation*	*Energy*	*ALPARC*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
174	*Bahn-zum-Berg/Zuugle*	*Online info tools*	*Online search platform that provides information on hiking tours in the Alps and how they can be reached by public transport.*	*Mitigation*	*Transport*	*Verein Bahn-zum-Berg*
175	*Booklet/Hiking guide with tours reachable by public transport*	*Publication (focus information)*	*Printed hiking guide with tours reachable by public transport*	*Mitigation*	*Transport*	*Protect our Winters with Bahn-zum-Berg*
176	*Amigo – Active commuter mobility*	*Implementation measure mitigation*	*Testing experimental approaches to promote sustainable commuter mobility.*	*Mitigation*	*Transport*	*Project consortium under the lead of the Energy Institute of Vorarlberg*
177	*RiKoSt: An enabling approach to risk communication*	*Planning measure adaptation*	*In a cross-border context, new approaches to risk communication are tested, considering social & cultural circumstances and personal involvement of affected stakeholders.*	*Adaptation*	*Natural hazards*	*Project consortium under the lead of the Agency for Civil Protection of Bolzano - South Tyrol*
178	*AlpPlan network on green infrastructure*	*Other - Network*	*Network to foster exchange on spatial planning and the role of green infrastructures in the Alps.*	*Adaptation*	*Spatial planning*	*Network coordinated by the German Academy for Territorial Development in the Leibniz Association Academy (ARL*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
179	*MultiBios*	*Project (focus strategy & measures)*	*MultiBios aims to develop a better understanding of a holistic governance and management of multiple hydro-climatic risks to improve the social-ecological resilience of Biosphere Reserves*	*Adaptation*	*Ecosystems & Biodiv.*	*Project consortium under the lead of CIPRA International*
180	*MountResilience EU*	*Project (focus strategy & measures)*	*MountResilience will conceptualise, test, and scale up multi-level, multidimensional and re-applicable climate change adaptation and nature-based solutions for mountainous areas.*	*Adaptation*	*Crosscutting*	*Project consortium under the lead of UNIMONT*
181	*MountAdapt - Impacts of climate change on healthcare*	*Project (focus strategy & measures)*	*The project focuses on the impacts of climate change on healthcare and on potential measures with synergies between the two fields of action.*	*Adaptation*	*Research & Development*	*Project consortium under the lead of EUROQUALITY SAS (Paris)*
182	*ACB Permafrost webinar: "Permafrost thawing in the Alps: New insights on risks, monitoring & hazard management"*	*Event*	*Webinar of the ACB to present latest scientific findings related to permafrost in the Alps.*	*Adaptation*	*Natural hazards*	*ACB*
183	*Ground:breaking - Improving soil, climate and biodiversity through desealing in urban and peri-urban areas of the Alps*	*Project (focus strategy & measures)*	*This project highlights the effects of land unsealing and develops political recommendations. It includes implementation measures in four municipalities as well as awareness-raising measures.*	*Adaptation*	*Soil*	*CIPRA International*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
184	*speciAlps2*	*Project (focus strategy & measures)*	*speciAlps 2 reconciles the natural treasures of the Alpine region in a compatible way with those seeking recreation in the Alps. In this way, tourism should be gently managed and contribute to the nature conservation of the Alps.*	*Mitigation*	*Tourism*	*CIPRA International*
185	*speciAlps Podcast*	*Other - Podcast*	*The speciAlps podcast series and a webinar delve into the topic of visitor guidance for a broad audience.*	*Mitigation*	*Tourism*	*CIPRA International*
186	*SteinReich*	*Implementation measure adaptation*	*In six pilot regions in the Alpine region, people create dry-stone walls and cairns at selected sites under guidance.*	*Adaptation*	*Ecosystems & Biodiv.*	*CIPRA International*
187	*Green Deals for Municipalities*	*Project (focus strategy & measures)*	*This project aims at empowering local initiatives to act more effectively on climate protection in a global context. Qualification measures in the field of adult education form the basis for this work.*	*Both*	*Municipal Action*	*CIPRA International*
188	*Alpine Climate Action*	*Event*	*In four online workshops, young adults learn about a range of political engagement – and how they can use it to campaign for climate protection.*	*Both*	*Crosscutting*	*CIPRA International*
189	*Alpine Climate Camps*	*Event*	*The project combines mountain sports and climate protection while encouraging young climate activists. In two camps, young people find new motivation for climate protection.*	*Both*	*Tourism*	*CIPRA International*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
190	*Re.Sources*	*Project (focus strategy & measures)*	*The Re.sources project brings together young people from different Alpine countries to work on questions around involvement in environmental and climate protection activities.*	*Mitigation*	*Crosscutting*	*CIPRA International*
191	*Bon Appetit!*	*Event*	*During workshops and job shadowings, young people from the Alpine region dig into the earth, taste and process regional products and visit farms in their region.*	*Mitigation*	*Agriculture*	*CIPRA International*
192	*Alps2030*	*Other*	*Workshops and pilot activities to raise awareness and to engage young people to carry out local project with linkage to the SDGs.*	*Mitigation*	*Crosscutting*	*CIPRA International*
193	*UrbaBio*	*Planning measure adaptation*	*Representatives of Alpine Towns develop innovative solutions for participation in the planning and implementation process to improve urban green spaces.*	*Both*	*Municipal Action*	*CIPRA International*
194	*Tour des Villes*	*Other*	*Study trips for representatives of Alpine Towns to learn about innovative solutions for sustainable settlement development, with special focus on conversion sites.*	*Both*	*Municipal Action*	*CIPRA International*
195	*Climate Action in Alpine Towns*	*Implementation measure mitigation*	*Alpine towns implemented climate actions related to spatial planning and citizen participation.*	*Both*	*Municipal Action*	*CIPRA International, in the framework of the Swiss*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
						Presidency of the Alpine Convention and the TA 2030.
196	*X-RISK-CC – 'How to adapt to changing weather eXtremes and associated compound RISKs in the context of Climate Change*	*Project (focus strategy & measures)*	*X-RISK-CC aims to support risk managers and policy makers in addressing the compound risks of climate change extremes (cascading impacts) by developing new knowledge, local risk management actions and transnational guidelines.*	*Adaptation*	*Natural hazards*	*Project consortium under the lead of EURAC (Interreg ASP)*
197	*Beyond the Expected: Dealing with the Case of Overload and Residual Risk of Natural Hazards in the Alpine Region*	*Publication (in-depth/scientific)*	*Assess the status quo of dealing with cases of overload and residual risk in the different Alpine countries and states regarding the natural hazards floods, torrential hazards, avalanches, rockfall and landslides.*	*Adaptation*	*Natural hazards*	*EUSALP AG8*
198	*CLISP-ALP – Climate-resilient spatial planning in the Alps*	*Publication (in-depth/scientific)*	*Study to analyse the status quo of connecting climate change adaptation and spatial planning (including an analysis on CC impacts and role of spatial planning)*	*Adaptation*	*Natural hazards*	*EUSALP AG8*
199	*Mainstreaming Climate Change Adaptation & Disaster Risk Reduction in the Alpine Macro-Region*	*Publication (in-depth/scientific)*	*Governance study on potentials for mainstreaming and scaling climate change adaptation and disaster risk reduction in the EUSALP countries.*	*Adaptation*	*Natural hazards*	*EUSALP AG8*
200	*AlpSenseRely*	*Project (focus data & scenarios)*	*Study to analyse reliability and potential of early warning systems based on remote sensing.*	*Adaptation*	*Natural hazards*	*Study under the lead of theTechn. University of Munich*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
201	*Foundation of the "Research center and early warning system for alpine natural hazards"*	*Other (new research centre)*	*New Research centre at TUM that will provide an information service to monitor risks like landsclides, rockfalls and other natural hazards.*	*Adaptation*	*Natural hazards*	*Techn. University of Munich*
202	*International Peatland Science Conference (18-21 September 2024 in Freising, DE)*	*Event*	*International Science Conference on Peatlands*	*Both*	*Ecosystems & Biodiv.*	*Bavaria*
203	*ADAPTNOW – ADAPTation Capacity Strengthening for Highly Affected and Exposed Territories in the Alps NOW*	*Planning measure adaptation*	*This project works on strengthening adaptive capacities of Highly Affected and Exposed Territories through provision of tools and practices.*	*Adaptation*	*Crosscutting*	*Project consortium under the lead of Auvergne-Rhone-Alpes (Interreg ASP)*
204	*FRACTAL – Fostering green infrastructure in the Alps*	*Implementation measure adaptation*	*FRACTAL (as follow-up of LUIGI project), aims at standardising requirements to plan green infrastructures at municipal level.*	*Adaptation*	*Ecosystems & Biodiv.*	*Project consortium under the lead of Free Univers. of Bolzano (Interreg ASP)*
205	*I-SWAMP – Integrated small wetlands of the Alps monitoring and protection*	*Implementation measure adaptation*	*Roll-out of a method for the conservation of small Alpine wetlands with an approach based on both science-based decision-making and responsibilisation of local communities.*	*Adaptation*	*Water*	*Project consortium under the lead of University of Padua (Interreg ASP)*
206	*MOSAIC – Managing protective forest facing climate change compound events*	*Implementation measure adaptation*	*MOSAIC focuses on hazard-resilient and sustainable protective forest management, which is essential for managing climate-related risks. Set-*	*Adaptation*	*Mountain Forests*	*Project consortium under the lead of INRAE (Interreg ASP)*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			up an Alpine network of forest living labs.			
207	*PlanToConnect – Mainstreaming ecological connectivity in spatial planning systems of the Alpine Space*	*Implementation measure adaptation*	*The PlanToConnect project partners will cooperate with stakeholders in pilot areas to develop and test an Alpine spatial planning strategy for ecological connectivity, and a capacity-building package for its implementation.*	*Adaptation*	*Ecosystems & Biodiv.*	*Project consortium under the lead of Urban Planning Institute of the Republic of Slovenia*
208	*TranStat – Transitions to Sustainable Ski Tourism in the Alps of Tomorrow*	*Planning measure adaptation*	*The TranStat project aims to support co-constructed transition processes in mountain resorts, understood as ski resorts associated with their territory.*	*Adaptation*	*Tourism*	*Project consortium under the lead of INRAE*
209	*Multi-Annual Work Programme of the Alpine Conference 2023-2030*	*Other (Work Programme)*	*The MAP identifies climate change as one of the three priority areas for the activities of the Alpine Convention until 2030. It sets the strategic framework for all activities of the Alpine Convention.*	*Both*	*Crosscutting*	*Developed under the Swiss Presidency, approved by Alpine Conference*
210	*Simplon Alliance Alpine Action Plan 2022*	*Other (Action Plan)*	*Joint action plan of the Alpine Convention and the Zurich Process to accelerate action in the fields of Alpine crossing freight transport, passenger transport and tourism mobility.*	*Mitigation*	*Transport*	*Developed under the Swiss Presidency, approved by Alpine Conference*
211	*Booklet "Closing the gap on climate action"*	*Publication (focus information)*	*This brochure provides guidance on the development of new “rope teams” for climate action, including*	*Both*	*Crosscutting*	*Alpine Climate Board*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			good practice examples in the four areas of mobility, housing, food and leisure/culture.			
212	*Recommendations on climate change education*	*Publication (focus policy)*	*Recommendations on the importance of formal school systems in the frame of climate change education, based on a discussion in the Permanent Committee of the Alpine Conference, a large-scale conference and good practices.*	*Both*	*Crosscutting*	*Slovenian Presidency of the Alpine Convention 2023-2024*
213	*Preserving moors in the Alps*	*Publication (focus policy)*	*Statement on the importance of moor protection in the Alps and best practice examples.*	*Both*	*Soil*	*WG Soil Protection*
214	*Climate Scenarios in Alpine Countries and Indications for Spatial Planning*	*Publication (in-depth/scientific)*	*Meta-analysis of climate scenarios for Alpine countries and conclusions on future spatial challenges related to them.*	*Adaptation*	*Spatial Planning*	*WG Spatial Planning and Sustainable Development*
215	*Overview of guidelines for municipalities for assessing and activating innerurban development potentials*	*Publication (focus information)*	*Analysis of existing documents to illustrate the availability of guidelines already exist and there is no deficit in knowledge, but in implementation.*	*Both*	*Spatial Planning*	*WG Spatial Planning and Sustainable Development*
216	*Knowledge transfer in risk communication*	*Implementation measure adaptation*	*PLANALP is identifying best practice examples for successful risk communication from all alpine countries addressing people living in areas affected by natural hazards.*	*Adaptation*	*Natura hazards*	*Natural Hazard Working Group (PLANALP)*
217	*Accelerating the electrification of road transport in the Alps*	*Publication (focus policy)*	*Report with recommendations, based on a stakeholder meeting and relating to ongoing work on the draft*	*Mitigation*	*Transport*	*WG Transport*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			EU-AFIR (alternative fuels infrastructure regulation) regulation			
218	*Implementation of the energy transition in transalpine logistics, measures and regulations"*	*Publication (focus information)*	*Overview of the current and future landscape of decarbonisation policies for freight transport in the Alpine countries and the EU*	*Mitigation*	*Transport*	*WG Transport*
219	*Assessment of the potential of combined transport for the modal shift in alpine crossing freight transport"*	*Publication (focus policy)*	*Report with recommendations, based on a stakeholder meeting*	*Mitigation*	*Transport*	*WG Transport*
220	*Beyond Snow*	*Implementation measure adaptation*	*BeyondSnow aims to increase the socio-ecological climate resilience of snow tourism destinations to enable them to retain or even increase their attractiveness for residents & tourists.*	*Adaptation*	*Tourism*	*Project consortium under the lead of EURAC (Interreg ASP programme)*
221	*Energy Governance Booklet*	*Publication (focus information)*	*The booklet illustrates good practices and ongoing governance challenges to illustrate how the transition to renewable energies and energy efficiency requires the collaboration with other sectors.*	*Mitigation*	*Energy*	*Alpine Climate Board*
222	*Training "Engaging stakeholders for climate action: how to better consider "the human factor" and make use of positive narratives*	*Event*	*Training session with three parts to help members of the broader ACB community to better consider the "human factor" in their activities.*	*Both*	*Crosscutting*	*Alpine Climate Board*
223	*Report on the State of the Alps No.9 "Alpine Towns"*	*Publication (in-depth/scientific)*	*The RSA 9 focused on the role of Alpine Towns for sustainable development in the Alps. Part 1 of*	*Both*	*Crosscutting*	*Swiss Presidency of the Alpine*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			the RSA 9 highlights some key indicators on how Alpine towns are affected by climate change. Part 2 with the scenario analysis highlights potential ways forward.			*Convention 2021-2022*
224	*CLIMAERA*	*Project (focus strategy & measures)*	*The objective of the CLIMAERA project is to prepare and make available useful tools for territorial planning policies on the issues of "Air Quality" and "Climate-Energy" with positive effects on the quality of life of the cross-border population*	*Mitigation*	*Spatial Planning*	*Project consortium under the lead of Regione Ligura (Interreg Alcotra programme)*
Activities implemented at national level (2024 stocktaking update)						
225	*Spatial Energy Planning in Styria, Vienna, Salzburg*	*Project (focus data & scenarios)*	*Development of a planning tool for spatially optimised development of heat supply infrastructures. A digital HEATatlas provides cartographic layers on energy demand, energy supply infrastructures and RES potentials.*	*Mitigation*	*Energy*	*Project consortium including a large range of partners from Austria*
226	*Round table waterpower in Switzerland*	*Event*	*Participatory approach to define sites for hydropower development/ expansion in CH (expansion target for seasonal storage production of 2 TWh/a).*	*Both*	*Water*	*Switzerland, Federal Council*
227	*Climate-neutral agriculture Grisons*	*Implementation measure mitigation*	*The Canton of Grisons has set up a platform and pilot approach to enable small-scale farmers (with often limited capacities) to explore*	*Both*	*Mountain agriculture*	*Switzerland, Canton of Grisons*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			climate-neutral (and resilient) practices.			
228	*Climate-neutral tourism destinations in Switzerland*	*Implementation measure mitigation*	*Developing an approach for transforming whole tourism regions into climate-neutral destinations, including methodological aspects like CO_2-footprint but also innovative communication approaches.*	*Mitigation*	*Tourism*	*Project consortium under the lead of University of Applied Sciences, Grissons*
229	*AMooRe – Austrian Moor Restoration*	*Implementation measure mitigation*	*AMooRe aims to initiate the implementation of the Austrian Moorland Strategy 2030+, on the one hand by directly implementing measures within the project, and on the other hand by developing further strategic foundations as well as action and decision-making mechanisms.*	*Mitigation*	*Ecosystems & Biodiv.*	*Project consortium under the lead of Region Vorarlberg (EU Life programme)*
230	*Trata 2.1*	*Other*	*Study trip for Slovenian delegation to learn about sustainable commuter mobility models in the border triangle of CH-A-Li*	*Mitigation*	*Transport*	*CIPRA International*
231	*APCC Special Report Strukturen für ein klimafreundliches Leben ("Structures to enable climate-friendly living")*	*Publication (focus policy)*	*Scientify report (similar to IPCC approach) to analyse necessary framework conditions to better enable climate-friendly lifestyles.*	*Both*	*Crosscutting*	*Climate Change Centre Austria*
232	*APCC Special Report Tourismus und Klimawandel (Tourism and climate change)*	*Publication (focus policy)*	*Detailed report that sheds light on the complex relationships between tourism and climate change for*	*Both*	*Tourism*	*Climate Change Centre Austria*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
			Austria as important tourism destination.			
233	*TRANSREAL: Policy Paper Regionale Transformationsagenturen (Regional transformation agencies)*	*Publication (focus policy)*	*Pilot activities and policy paper to explore the role of "regional transformation agencies" as governance institutions that act as change makers.*	*Both*	*Crosscutting*	*Project consortium involving Umwelt-bundesamt GmbH and Institute for Multi-level Governance and Development, University of Vienna*
234	*Klimaschutz und Anpassungspotenziale in Mooren Bayerns (Climate change mitigation and adaptation potentials in Bavarian moors – KliMoBay)*	*Project (focus data & scenarios)*	*The KliMoBay project focuses on three main areas of peatland utilisation and protection.*	*Both*	*Soil*	*Project consortium under the lead of University for Applied Sciences Weihenstephan.*
235	*CARE4CLIMATE*	*Planning measure mitigation*	*Integrated project involving awareness-raising, education and training of key stakeholders, to support the implementation of measures to help Slovenia meet its greenhouse gas emission reduction targets by 2030.*	*Mitigation*	*Crosscutting*	*EU Life Project implemented by Slovenia*
236	*Improving the energy efficiency of mountain facilities (2017-2018)*	*Implementation measure mitigation*	*Refurbishment of mountain facilities/buildings, including capacity building and strengthening the cooperation of NGOs in the field of environmental protection.*	*Mitigation*	*Energy*	*German Alpine Club*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
237	*National "Climate protection strategy" of the German Alpine Club DAV*	*Implementation measure mitigation*	*The climate protection strategy of the DAV aims at climate neutrality by 2030. Measures will be implemented in the sections of the DAV, focusing on mobility, infrastructure, hut maintenance and courses.*	*Mitigation*	*Crosscutting*	*German Alpine Club*
238	*Moobly.de: Carpooling for mountain sports*	*Implementation measure mitigation*	*A new carpooling site with a special focus on destinations in the Alps for mountain sports has been launched by the travel agency of the DAV (Summit Club). The site facilitates carpooling to the courses and travels of the Summit Club, but is open for public and is now used for events of the alpine clubs.*	*Mitigation*	*Transport*	*German Alpine Club*
239	*F2C- Fondazione Cariplo for Climate program (2019 - 2024)*	*Implementation measure mitigation*	*Elaboration and implementation of Climate Transition Strategies in alpine territories on thematic projects enhancing mountain-specific assets (e.g. forests) in some areas of the Italian Alps.*	*Both*	*Crosscutting*	*Fondazione Cariplo*
240	*Decree on Supporting and Funding Renewable Energy Communities (2024-2025)*	*Implementation measure mitigation*	*A Ministerial Decree stimulates the set-up of Renewable Energy Communities (CER) and widespread self-consumption in Italy including in mountain areas: it foresees a non-repayable contribution and an incentive tariff.*	*Mitigation*	*Energy*	*Italy*

No.	Name of activity	Type of activity	Description	Mitigation/ Adaptation	Thematic Focus	Implemented by
241	*Implementation project of the Budoia Charter for local adaptation to climate change*	*Implementation measure adaptation*	*The Budoia Charter for local adaptation to climate change in the Alps is a voluntary declaration for subregional administrations and communities committing them to enforce adaptation measures in a mountain context. The Charter diffusion was supported by an implementation project and a Manual for local use by Municipalities and other subregional communities.*	*Adaptation*	*Municipal Action*	*CIPRA Italy*
243	*RACES – Raising Awareness on Climate and Energy Saving*	*Project (focus strategy & measures)*	*The project encourages the experimentation of sustainable lifestyles through the direct involvement of families. One of the pilot cities is Trento, in the Italian Alps.*	*Mitigation*	*Crosscutting*	*Project consortium under the lead of City of Florence*
244	*CLIMO Climate-Smart Forestry in Mountain Regions*	*Project (focus strategy & measures)*	*CLIMO aims to translate the concept of Climate-Smart Agriculture (CSA) into the forestry sector.*	*Adaptation*	*Mountain Forests*	*Project coordinated by the European Cooperation in Science and Technology*

Webinar

Climate action and lifestyle: Explaining and overcoming barriers to climate action

15 December 2022, 15:30 – 17:00 on Zoom

The recent booklet "Closing the gap on climate action – Building new rope teams to support climate-neutral & resilient living in the Alps" of the Alpine Climate Board (ACB) gives insights into how the Alps can become a frontrunner for climate action. To really implement the vision of the Alpine Climate Target System 2050, the ACB needs broad support from different stakeholders and all Alpine citizens. But how to motivate people to join the rope team of the ACB, especially in this time of crisis and growing resignation?

Join us for our next webinar! Our inputs will look at barriers, drivers (and motivation) for behavioural change, focusing on mitigation to climate change, some featured good practices of the ACB booklet will share their experiences and, together, we want to develop ideas on how to change the mindset on climate action from a picture of uncertainty and regulation into a positive and motivating one.

Language

The webinar will be held in English.

Registration and link

The conference is free of charge. Please register here by 14 December 2022. All participants will receive the Zoom link prior to the webinar.

Privacy policy

Due to the Data Protection Ordinance (GDPR), registration is only possible using the form. Individual inputs are recorded by the organisers with the consent of those responsible. Recording of audio or video of the event and/or parts of it is prohibited for copyright reasons.

Contact

Please do not hesitate to get in touch with Katharina Zwettler from the Austrian Ministry for Climate Action (katharina.zwettler@bmk.gv.at) if you have any questions.

Further information

This webinar is part of a series of events, organised by the Alpine Climate Board of the Alpine Convention. You will find more information about the ACB, our aims and activities on our website.

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Programme

15:30 **Welcome and introduction**
Helmut Hojesky, Chair of the Alpine Climate Board

15:40 **Input presentation**

Practice what you preach!? A positive mindset towards climate action in the Alps.
Stéphane La Branche, IPBC scientific coordinator independent researcher and social climatologist

16:05 **About the booklet "Closing the gap on climate action – Building new rope teams to support climate-neutral & resilient living in the Alps" and best practices**

- The Grisons' project on climate-neutral agriculture: enabling innovation through shared experiences, presented by Sibyl Huber
- The project "VinziRast am Land – Hühnerstall" on ecological building and social sustainability, presented by Sebastian Held
- The tourism shift starts at the heart of the ski resort of Métabief (an example from the Jura region), presented by Olivier Erard
- The project Bahn zum Berg on reaching destinations for outdoor activities by public transportation, presented by Veronika Schöll

16:30 **Interactive session**
Building a bridge between barriers and best practices. Sharing insights and experiences on how to overcome barriers to act:

- Which solutions are most suitable to address the different barriers?
- Can you share any experiences in implementing these solutions in your projects/ongoing activities?

16:50 **Wrap-up and next steps**
Helmut Hojesky and Tomaž Miklavčič, Slovenian Presidency of the Alpine Convention

Agenda-setting workshop for ACB activities on cross-sectoral climate action

Cross-sectoral approaches to support the energy transition in the Alps

27 March 2023, 9:30 – 12:30 on Zoom (https://bmk-gv-at.zoom.us/j/69838474350?pwd=QUtRNktUdW5MZHgxVVdCSm93L2Q0QT09)

Over the last months, all Alpine countries have stepped up their efforts to move away from fossil fuels. This is due to the war in the Ukraine and other recent global developments.

A comprehensive transformation process goes clearly beyond changes in the energy system itself and requires contributions in many other sectors, e.g. transport, agriculture, tourism, spatial planning and buildings/settlement. Especially in the sensitive Alpine environment, potential trade-offs need to be considered, e.g. conflicts related to ecosystems and land-use.

With this Workshop, focusing on cross-cutting activities related to energy, the Alpine Climate Board aims at contributing an Alpine viewpoint to the ongoing discussions and to ensure that the ideas of the relevant implementation pathways are considered in all energy-related discussions at level of the Alpine Community. With this agenda-setting workshop, we would like to kick-off our new hotspot "Cross-sectoral approaches to support the energy transition in the Alps". We want to develop ideas for cross-sectoral activities, check where we can join forces and, where necessary, identify additional research or exchange efforts.

Language

The workshop will be held in English.

Registration and link

The conference is free of charge. Please register here by Wednesday, 22 March 2023. All participants will receive the Zoom link prior to the workshop.

Privacy policy

Due to the Data Protection Ordinance (GDPR), registration is only possible using the form. Individual inputs are recorded by the organisers with the consent of those responsible.

Contact

Please do not hesitate to get in touch with Katharina Zwettler from the Austrian Ministry for Climate Action (katharina.zwettler@bmk.gv.at) if you have any questions.

Further information

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Programme

9:30 **Welcome and introduction to the new cross-sectoral approach of the ACB**
Helmut Hojesky, Chair of the Alpine Climate Board

Quick introductory round and selected insights to cross-sectoral activities linked to the energy transformation
All participants (if you would like to give a 1-2 minute oral presentation of one of your projects/initiatives with a focus on energy and a cross-sectoral approach, please let us know in advance)

10:10 **Workshop Phase 1: Identify cross-sectoral interfaces with high need for action**
We want to identify cross-sectoral interfaces of our four energy pathways as included in the Climate Action Plan 2.0. These questions guide our discussion:

- Where are cross-sectoral interfaces with specific/urgent need for action?
- What constitutes the need for action? (e.g. specific barriers linked to project implementation, missing human resources, unclear legal situation, but also positive dynamics linked to specific windows-of-opportunity etc.)
- Are you already involved in tackling the relevant cross-sectoral interface?

11:00 **Workshop Phase 2: Developing "common threads of action" linked to the cross-sectoral interfaces**
In breakout sessions, we want to draw "common threads" through our overview of cross-sectoral interfaces. Looking at all four energy pathways:

- Where do we see similar need for action, similar barriers, topics or issues that we can merge into joint activities?
- Which types of activity are most suitable?
- Which role can the ACB play in implementing these activities?

11:40 **Exchange on initial ideas and further development**
Breakout groups present their "common threads". Discussion along the following questions:

- Which proposals are best suitable to be further developed by the ACB?
- Which new ropeteams can be build around these proposals?
- Which proposals hold potential to be further developed into a project?
- Which funding possibilities are available?

12:15 **Wrap-up and next steps**
Helmut Hojesky, Chair of the Alpine Climate Board

Webinar

Permafrost thawing in the Alps: New insights on risks, monitoring & hazard management

Webinar of the Alpine Climate Board

28 September 2023, 10:00 – 12:00 on Zoom

In June 2023, thousands of tonnes of rock have broken off the Fluchthorn massif in the Silvretta Alps, taking off part of the southern summit. This incident – which fortunately did not lead to any casualties – shows impressively how climate change affects the stability of permafrost and that there is a high need for action. We need to get a better understanding about permafrost distribution in the Alpine regions, its stability, and what kind of risks and hazards are expected by this increasingly thawing high-mountain permafrost in the future.

As Alpine Climate Board (ACB), a working body of the Alpine Convention (AC), we want to bring you up to date on the latest scientific findings related to permafrost in the Alps and where we stand with respect to a cross-border and integrated monitoring (as part of our Climate Action Plan 2.0). We want to highlight activities on how stakeholders in the Alps deal with permafrost thawing and which risk management measures are already implemented or foreseen.

Language

The webinar will be held in English.

Registration and link

The webinar is free of charge. Please register here by Wednesday, 27 September 2023. All participants will receive the Zoom link prior to the webinar. Please take note that this webinar will be recorded and published on the channels of the Alpine Convention.

Privacy policy

Due to the Data Protection Ordinance (GDPR), registration is only possible using the registration form. Recording of audio or video of the event and/or parts of it by the participants is prohibited for copyright reasons.

Contact

Please do not hesitate to get in touch with Katharina Zwettler from the Austrian Ministry for Climate Action (katharina.zwettler@bmk.gv.at) if you have any questions.

Further information

You will find more information about the ACB, our aims and activities on our website.

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Programme

10:00 **Welcome and introduction**
Helmut Hojesky, Chair of the Alpine Climate Board

10:10 **Input presentations**

State-of-the-art on permafrost research in the Alps
Dr. Isabelle Gärtner-Roer (University of Zurich)

Risk management strategies for tourism infrastructures, municipalities and national parks
Dr. Ingo Hartmeyer (GeoResearch)

Permafrost and climate change – Challenges for Alpine Clubs and mountain sports
Dr. Tobias Hipp (German Alpine Club)

Questions and answers

11:20 **Interactive discussion on permafrost thawing in the Alps**

- Individual risk precaution: Is permafrost thawing already perceived as individual risk in the Alps? Is this risk already considered in individual risk precaution measures? What is necessary to improve awareness on this risk factor?
- Risk management planning: What, in your opinion, is necessary to improve risk management and disaster warning? Which specific measures are necessary to deal with cross-border risks?
- Role of the ACB: What can the ACB/Alpine Convention contribute to better deal with the challenges from permafrost thawing?

Collecting ideas from the participants via padlet

11:40 **Wrap-up and next steps**
Helmut Hojesky

Workshop of the
Alpine Climate Board and the Alpine Biodiversity Board

Alpine Biodiversity through the Climate Lens: Nature-based solutions (NbS), biodiversity data, and best practices

5. October 2023, 13:00 – 16:30, online (Zoom)

The aim of the event is to exchange on the impacts of climate change on biodiversity in the Alps, to discuss data harmonisation for biodiversity in the Alps, to network and to identify synergies and interfaces between the Alpine Climate Board (ACB) and Alpine Biodiversity Board (ABB) of the Alpine Convention (AC).

Programme

13:00	**Welcome and introduction** Paolo Angelini (Chair of the ABB) and Helmut Hojesky (Chair of the ACB)
13:30	**Keynotes**
	Presentation of results of the workshop on "Biodiversity in mountain areas in national and EU biodiversity strategies" (17.4.2023) Irina Kozban (BfN Germany)
	Overview of the linkages between (the loss of) biodiversity and climate change / Nature-based Solutions for Climate Change Action Lorenzo Ciccarese (ISPRA)
	Biodiversity data in Austria Martin Götzl (Environmental Agency Austria)
	Questions and answers
14:20	**Bio break**

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14:35 **Presentation and discussion of best practices**

Pilot project: Biodiversity and climate change in the Nature Park Ötscher Tormäuer
Florian Schublach (Nature Park Ötscher-Tormäuer)

Project INNsieme connect: Activities at the interface between biodiversity and climate change
Ann-Kristin Winkler (WWF)

Questions and answers

15:15 **Interactive part: harmonisation of Alpine-specific biodiversity data**

Overview of status quo

- Update on the status of the ABB's work on a project for representing and monitoring biodiversity in the Alpine region
- Update on the status of the ACB's work on biodiversity and nature-based solutions

Working in break-out groups

Participants will engage in discussions in two break-out groups. The aim of this interactive part is to exchange in detail with experts on the two topics, followed by a plenary session.

- Group 1: Synergies between Alpine biodiversity and climate-specific data

- Group 2: Specific activities related to nature-based solutions

16:00 **Plenary Session: Presentation of results from break-out groups**
Reporting back and bringing together the findings of the break-out groups and defining next steps in order to support and bring forward the work of the two Boards.

16:20 **Wrap-up and next steps**
Paolo Angelini and Helmut Hojesky

Language

The workshop will be held in English.

Registration and link

The workshop is free of charge. Please register here by Wednesday, 4 October 2023. All participants will receive the Zoom link in the morning of 5 October. Please take note that this webinar will be recorded and published on the channels of the Alpine Convention.

Privacy policy

Due to the Data Protection Ordinance (GDPR), registration is only possible using the registration form. Recording of audio or video of the event and/or parts of it by the participants is prohibited for copyright reasons.

Contact

Please do not hesitate to get in touch with Gerald Gimpl or Katharina Zwettler from the Austrian Ministry for Climate Action (gerald.gimpl@bmk.gv.at; katharina.zwettler@bmk.gv.at) if you have any questions.

Further information

You will find more information about the ABB and the ACB, our aims, and activities here: https://www.alpconv.org/en/home/organisation/thematic-working-bodies/ and on the website of the ACB: www.alpineclimate2050.org

Training of the Alpine Climate Board: Save the date

Engaging stakeholders for climate action: How to better consider "the human factor" and make use of positive narratives A hands-on training for multipliers

6 November 2023, 13:30 – 18:30, Bolzano/Bozen (IT)
+ Introductory session on 17 October 2023, 13:45 – 16:00, online (Zoom)
+ Optional follow-up session(s)

Climate action is a lot about engaging people to take decisions, to act, to accept, and to make changes in their lives and ways of working. The implementation of the Climate Action Plan 2.0 also needs to reach stakeholders "beyond the bubble" and get them on board. This requires skills to motivate and accompany people in many different situations, e.g. by using positive narratives. First insights into how to better engage with people in the frame of climate action will be explored during a training offered by the Alpine Climate Board (ACB) of the Alpine Convention (AC) to all members of the ACB, its "rope teams", and the interested community.

Background

With the Alpine Climate Target System 2050, the ACB provided a vision for a climate-neutral and climate-resilient Alpine region and a basis for the Climate Action Plan 2.0. As an integrated vision applicable to the whole Alpine area and to all relevant sectors, the Target System and the Action Plan, however, remain at an abstract level and do not provide specific information for different local contexts. We thus need approaches which are customised to the specific local context and to the challenges and needs of Alpine stakeholders. To reach out to stakeholders "beyond the bubble", we need to learn to know them, listen to them, and adapt our approaches and narratives to their situations.

Objectives of the training

In this training, we want to introduce members of the ACB and its implementation communities, Observer organisations of the AC as well as crucial multipliers working at Alpine level to a range of methods for developing customised climate action approaches – focusing on human factors and positive narratives which connect strongly to local settings and specific needs. The training should make it easier for the participants to design and implement adapted measures to engage stakeholders, such as workshops, pilot actions, etc.

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The training is organised in three parts:

1. In a **preparatory online session on 17 October 2023, 13:45 – 16:00,** you will receive a methodological introduction to the topic.

2. The **main part, live in Bolzano/Bozen (IT) on 6 November 2023, 13:30 – 18:30,** is then designed as a "hands-on" training session in which you start applying the method yourself, get to know the difficulties, and develop first elements for impactful climate actions in your communities.

3. In a **follow-up session**, we invite you to continue working on the application of the method in your **specific pilot cases**, e.g. to develop an adapted approach for selected municipalities, civil society organisations or associations or companies.

Methods

The training will offer a mix of theoretical input on change, engagement processes, and narratives as well as practical exercises, which will give each participant the opportunity to fully absorb the training content. Participants will be invited to work on their own topics and cases in light of the proposed input. This training will help "sharpen one's antennae" to better understand the stakeholders and their situations and to adapt the proposed projects and change processes.

The following issues will be addressed:

- Understanding stages of change and social diffusion models: analysing the situation of stakeholders and their needs at different stages of change
- Sharpening your "role" for accompanying change processes: adapting one's approach to the situation of stakeholders and the different stages of change.
- Handling different reactions: Understanding and dealing with the effects that change and engagement measures have on stakeholders, including resistance.
- Applying specific tools to support change processes: using positive narratives and other methods to support engagement and change.
- Bridging the gap from knowing to doing: designing actions and projects whilst taking into consideration the psycho-sociological factors.

Language

The training will be held in English.

Venue

The introductory session (webinar) is online (Zoom). The hands-on training will be held in Bolzano/Bozen, back-to-back with the 77th meeting of the Permanent Committee of the Alpine Conference. We will meet at Eurac Research, Viale Druso/Drususallee 1, I – 39100 Bolzano/Bozen.

Registration and link

Both events are free of charge. Please register here by 12 October 2023.

Privacy policy

Due to the Data Protection Ordinance (GDPR), registration is only possible using the form. Recording of audio or video of the event and/or parts of it is prohibited for copyright reasons.

Contact

Please do not hesitate to get in touch with Katharina Zwettler from the Austrian Ministry for Climate Action (katharina.zwettler@bmk.gv.at) if you have any questions.

Further information

The training is part of a series of events organised by the ACB. You will find more information about the ACB, our aims, and activities on our homepage.

Training of the Alpine Climate Board – Live session in Bolzano

Engaging stakeholders for climate action: how to better consider "the human factor" and make use of positive narratives
A "hands-on" training for multiplicators

6 November 2023, 13:30 – 18:30, Bolzano/Bozen

Climate action is a lot about engaging people to take decisions, to act, to accept and to make changes in their lives and ways of working. The implementation of the Climate Action Plan 2.0 also needs to reach out to stakeholders "beyond the bubble" and to get them on board. This requires skills to motivate and accompany people in many different situations, e.g. by using positive narratives. First insights on how to better engage with people in the frame of climate action will be explored during a training offered by the Alpine Climate Board (ACB) of the Alpine Convention (AC) to all members of the ACB, its "rope teams" and the interested community.

Programme

13:00	Welcome coffee
13:30	Getting started and intro – Welcome word – Getting to know each other – Review expectations of the group and group agreements – Practical modalities for the day
14:10	Review of concepts from online session and complementary concepts – Concept of resistances – Questions and discussion
14:30	Case study work – Who is involved in the process? What could their needs and resistances be? – Set-up of the "support" process

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15:30 **Key ingredients to design a process**
- Presentation of key ingredients
- Reflection of previous steps

15:45 **Coffee break**

16:15 **Two models to help understand change and engagement processes: the Stages of Change Model (Proschaska and Di Clemente) and the Theory of Social Diffusion (E.M. Rogers)**
- Introduction to the concept and Q&A
- Application of models in case study groups

17:30 **Wrap-up of case study work**
- Debriefings from groups in twinning approach
- Exchange on new insights, difficulties, etc.

18:00 **Closure of the workshop and outlook**
- Debriefing of the day: overall process, topics, case study work...
- Identify wishes for 3rd session
- Outlook on future activities of the ACB

19:30 **Common dinner at restaurant Fink**

Language

The training will be held in English.

Venue

The main part of the training will be held in Bolzano/Bozen, back-to-back to the 77th meeting of the Permanent Committee. We will meet at the Bolzano/Bozen office of the Permanent Secretariat of the Alpine Convention, Viale Druso/Drususallee 1, I – 39100 Bolzano/Bozen. The training is in the 2/3 seminar room (entrance of EURAC- floor 0 – right next to the elevator).

Contact

Please do not hesitate to get in touch with Katharina Zwettler from the Austrian Ministry for Climate Action (katharina.zwettler@bmk.gv.at) if you have any questions.

Further information

The training is part of a series of events, organised by the ACB. You will find more information about the ACB, our aims and activities on our website.

Hands-on training of the Alpine Climate Board – Session III online

Engaging stakeholders for climate action: how to better consider "the human factor" and make use of positive narratives

12 January 2024, 9:30 – 11:30, Zoom (see link below)

Climate action is a lot about engaging people to take decisions, to act, to accept and to make changes in their lives and ways of working. The implementation of the Climate Action Plan 2.0 also needs to reach out to stakeholders "beyond the bubble" and to get them on board. This requires skills to motivate and accompany people in many different situations, e.g. by using positive narratives.

During our Training session in Bolzano, we got to know analytical tools to better understand the individual process of change and the theory of social diffusion. In our final online session, we want to explore how stories and narratives can be used within these frameworks by providing a reflexion on crucial ingredients for telling good stories and by getting to know different approaches for developing collective narratives.

Furthermore, we want to use the opportunity to discuss ideas for further activities and to explore how the community of "ACB multiplicators" can be further developed.

Programme

Zoom Link : https://bmk-gv-at.zoom.us/j/61353922658?pwd=ekVRQWtodzlpUkxZRHg1K3paYms5dz09

9:20	Coming in and opportunity for catching up
9:30	Welcome and introduction to Session III Review of concepts from Bolzano Session and how stories and narratives play a role in these concepts
9:45	Reflection on crucial ingredients for telling a good story – Group work: discussion of the two stories and analysis of their "ingredients" (template to guide the group work will be provided) – Reflection in the group – Short presentation of some storytelling frameworks and where to find more information → Preparation: please re-read the two short stories attached!

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10:15	**Toolbox for collective/community narratives** – Presentation of different concepts for building collective/community narratives – Group work (same case studies as in Bolzano): Which narrative concept could be appropriate for the relevant case study? How could a narrative be developed/improved for the case study?
10:45	**Discussion of potential follow-up activities for the ACB** – Which other topics, aspects or challenges could be addressed in further activities of the ACB? – How could the "ACB community of multiplicators" be further strengthened and developed? – Which elements/formats could be interesting for developing a joint project proposal and which funding programmes could be relevant?
11:25	**Wrap-up and closure of the training session** **Outlook on next steps of the ACB**
11:30	**End of the workshop**

Language

The training will be held in English.

Contact

Please do not hesitate to get in touch with Katharina Zwettler from the Austrian Ministry for Climate Action (katharina.zwettler@bmk.gv.at) if you have any questions.

Further information

The training is part of a series of events, organised by the ACB. You will find more information about the ACB, our aims and activities on our website.

Workshop

The energy transition and the "not in my backyard" phenomenon.

Exchanging views and ideas on solutions for climate-neutral and climate-resilient Alps 2050

Thursday, 4 April 2024, 10:30 – 16:00, Hotel Heffterhof in Salzburg (AT)

The energy transition refers to the global shift from fossil fuel-based energy systems to renewable energy sources. This transition is important to reach our goals, such as those aimed at climate-neutral and climate-resilient Alps 2050. There are many answers to the question of how this transition can be made possible. What we already know is that the energy transition needs space. We also know that space is limited and has to fulfil many – sometimes contradictory – requirements. Focusing on the "not in my backyard" phenomenon (hereafter "NIMBY"), the Alpine Climate Board (ACB) of the Alpine Convention (AC) and CIPRA Austria invite you to a workshop on the energy transition and the "not in my backyard" phenomenon.

Background

The NIMBY phenomenon, which has been empirically observed and was first identified in environmental justice movements in the USA in the 1980s and 1990s, refers to the discrepancy between general attitudes towards environmental improvement – we will talk explicitly about renewable energy technologies and wind energy – and specific attitudes towards them. In other words, people are in favour of the construction of certain environmental technologies that bring about change because they make a positive contribution to the system, but they would rather not have them near their own homes.

Target groups

Our workshop is targeted to the following groups (but open to all interested individuals): Developers of renewable energy projects, Scientific community, Environmentalists, Members of the public, e.g.

Objectives of the workshop

We want to exchange views and ideas on solutions that work towards climate-neutral and climate-resilient Alps 2050. We will discuss four main questions, focusing on the fourth:

- What is the vision of climate-neutral Alps, focusing on the wind energy system?
- How can the NIMBY phenomenon be overcome in the energy transition?
- What common interests do the stakeholders have?
- How can diverging interests be brought together?

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Programme

10:00	Get together
10:30	Welcome and introduction by the hosts *Paul Kuncio (CIPRA AT), Helmut Hojesky and Katharina Zwettler (ACB/BMK AT)*
10:35	Keynote speech on the NIMBY phenomenon and the sustainable energy transition
10:50	Presentation of the detailed agenda by our moderator *Wilfried Pistecky (Consulting Engineer and Mediator)*
11:00	Panel discussion between stakeholder representatives with recording/visualisation of needs and interests
12:00	Lunch break
13:00	Plenary discussion of ideas/solution options for the needs and interests explored in the morning
14:15	Coffee break
14:30	Panel discussion between representatives of the stakeholders to assess the ideas/solution options collected on the basis of the needs and interests
15:30	Summary of the results
15:45	Recap and farewell by the hosts

Panel: Gregor Schamschula (Ökobüro), Stefan Moidl (Austrian Wind Energy Association), Kaspar Schuler (CIPRA International), Elisabeth Lux (Initiative Windkümmerer), Sigrid Stagl (Vienna University of Economics and Business)

Moderator: Wilfried Pistecky is a certified mediator. He will guide us through this process in order to facilitate constructive discussions.

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Logistics

Language

The webinar will be held in English.

Venue

The workshop will be held at Hotel Heffterhof (Maria-Cebotari-Straße 1-7, 5020 Salzburg, AT). We reserved a limited number of rooms (until 13 March). If you would like to stay overnight, please contact Heffterhof directly: +43 662/641996-402; veranstaltung@heffterhof.at

Registration

The workshop is free of charge. Please register here by 28 March 2024. The number of participants is limited (maximum 30).

Privacy policy

Due to the General Data Protection Regulation (GDPR), registration is only possible using the form. Audio or video recordings of the event and/or parts of it are prohibited for copyright reasons.

Contact

Please do not hesitate to get in touch with Katharina Zwettler from the Austrian Ministry for Climate Action (katharina.zwettler@bmk.gv.at) and/or Paul Kuncio from CIPRA Austria (paul.kuncio@cipra.org) if you have any questions.

Further information

CIPRA Austria has published three interviews with three different stakeholders/experts in the field of energy transition and NIMBY. You can find the interviews here: https://www.cipra.org/de/cipra/oesterreich/alpenkonvention (103/2023, 104/2023 and 105/2023; only available in German).

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Excerpt of the programme of AlpWeek 2024 – Alps in our hands

Tuesday 24 September 2024, 14:00-15:30

Session 1: Climate neutral and climate resilient Alps 2050: what about the human factor?

Session leaders and invited experts: Katharina Zwettler, Chair of the Alpine Climate Board (ACB), Federal Ministry for Climate Action (Austria), Orsolya Lelkes (Psychodrama Director)

Short description: Where do we, the Alpine Climate Board (ACB), see obstacles to the implementation of activities in our work towards climate neutral and climate resilient Alps 2050? The ACB offers formats to improve communication skills and methods to support multipliers working at the Alpine level to develop tailor-made approaches to climate action. We focus on human factors and positive narratives, linked to local contexts and specific needs. We would like to start the workshop by sharing our first learnings with you, then get insights into YOUR experiences and processes related to climate action and sustainable development. We will explore these themes using experiential learning methods, incorporating the wisdom of the body, emotions and intuition alongside cognitive understanding, with the goal to strengthen and inspire each other.

Thursday 26 September 2024, 9:00-16:00

Side event: Engaging Stakeholders for Climate Action

Organiser: Alpine Climate Board

Climate action is a lot about engaging people to take decisions, to act, to accept, and to make changes in their lives and ways of working. The implementation of the Climate Action Plan 2.0 also needs to reach stakeholders "beyond the bubble" and get them on board. This requires skills to motivate and accompany people in many different situations. First insights into how to better engage with people in the frame of climate action will be explored during a training offered by the Alpine Climate Board (ACB) of the Alpine Convention (AC).

The following issues will be addressed:

- Understanding stages of change and social diffusion models: analysing the situation of stakeholders and their needs at different stages of change.
- Sharpening your "role" for accompanying change processes: adapting one's approach to the situation of stakeholders and the different stages of change.
- Handling different reactions: Understanding and dealing with the effects that change and engagement measures have on stakeholders, including resistance
- Applying specific tools to support change processes: using positive narratives and other methods to support engagement and change
- Bridging the gap from knowing to doing: designing actions and projects whilst taking into consideration the psycho-sociological factors

Webinar of the Alpine Climate Board

Thoughts on a Spatial Climate Plan for Alpine cities

25 November 2024, 9:00-10:30, Zoom (see link below)

The Alpine Climate Board (ACB) of the Alpine Convention is pleased to invite you to a webinar in which Theresa Janesch (graduate in the master's programme of Spatial Planning, Technical University of Vienna; currently working at RPK-ZT in Klagenfurt am Wörthersee, AT), a spatial planner specialising in the cross-cutting issues of climate change and spatial development, will take the floor. Together with her supervisor *Sibylla Zech, Head of Research Unit of Regional Planning and Regional Development at the Technical University of Vienna*, Theresa Janesch will give us insights into her master's thesis titled "Help, the Alps are Glowing! Thoughts on a Spatial Climate Plan for the City of Lienz".

The aim of the thesis was to develop the first draft of a spatial climate plan using the city of Lienz (AT) as a case study. In this context, a spatial climate plan is understood as planning that leads to integrated measures for mitigation and adaptation to climate change as well as spatial structures that enable climate-friendly behaviour. This first draft is intended to serve as a starting point for a discussion on supplementing spatial planning instruments.

Central ideas from the thesis:

- Due to the expected effects of climate change, a transformation of spatial structures in the Alpine region – including those in Alpine towns – is urgently needed.
- Forward-looking urban planning can make a crucial contribution to this transformation.
- Although climate plans for Alpine towns already exist, there is often a lack of integrated measures with a spatial reference and a lack of localisation of these measures.
- A transformation towards a climate-friendly urban structure can only be initiated if the spatial measures are specifically localised in a plan.

The most important outcome of the spatial climate plan is the mapping of spatial structures and measures that can not only support climate-friendly behaviour but are also effective in climate mitigation and adaptation. The vision uses maps to show what a climate-friendly spatial structure for the city of Lienz could look like. The ideas are illustrated with visualisations and a selection of 60 specific measures. In addition, the effect of the localised measures is reflected in a comparison of selected spatial structures of the city of Lienz in the current and planned state.

Federal Ministry
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Climate Action, Environment,
Energy, Mobility,
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Take a look at the master's thesis and download it here (in German).

Programme of the webinar

- Introduction, welcome and brief information on the Alpine Convention and the Alpine Climate Board
- Presentation of the master thesis "Help, the Alps are Glowing! Thoughts on a Spatial Climate Plan for the City of Lienz" by Theresa Janesch
- Trialogue with Theresa Janesch, Sibylla Zech and Katharina Zwettler
- Questions from the plenum

Background

In the Climate Action Plan 2.0, the ACB emphasised the need for an Alpine-wide concept of "Spatial planning for climate action" to ensure a climate-proof framework for spatial planning as one focus area for further climate action across the Alps. With this webinar we want to highlight an example of concrete work that has been done on this idea. After a short presentation of the master's thesis, we will ask specific questions and discuss the work in a trialogue format.

Check our website for updates to the webinar programme: https://alpineclimate2050.org/news-events/

You will find more information about the Alpine Climate Board, our aims, and the implementation pathways by following the link www.alpineclimate2050.org or visiting the website of the Alpine Convention.

The webinar will be held in English and is free of charge. Please register **here** by Friday, 22 November 2024. Due to the EU General Data Protection Regulation, registration is only possible using this form. You will receive the Zoom link prior to the webinar.

Please do not hesitate to get in touch with Katharina Zwettler from the Austrian Ministry for Climate Action (katharina.zwettler@bmk.gv.at) if you have any questions.

Representatives of all sectors of activity in the Alps and from local to national and cross-border level are invited to participate. Please share this invitation with your respective networks. Thank you!