

## D.T5.3.1 Report New Recommendations for governance of protection forests and ecosystem-based risk mitigation

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# GREEN RISK 4 ALPS



WP T5 RIGOR – Risk governance support

Responsibility for Deliverable

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## GreenRisk4Alps Partnership

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## Introduction

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### *Mission and aim of the work package in the light of the overall project goal*

The GreenRisk4Alps project has faced two fundamental challenges. First: What is necessary to mainstream an ecosystem-based natural hazard risk governance in the Alpine space? The assumption was that this would require the development of harmonized, responsive, transparent, and efficient strategies. These overall strategies consist of assessment procedures, monitoring of protection forests and risk management practices, suggestion for implementation strategies and finally mechanisms for actor's involvement.

This leads to the second question for the project: Which actors and how do they have to be involved to implement and support the chosen risk management approach? Six Pilot Action Region (PAR) in five project partner states served as the subject of analysis to evaluate the specific regional-focused actions of stakeholder (actors and institutions) involvement and decision-making process. Based on a multi-actor and multi-risk approach, the GreenRisk4Alps-Project aims at transnational policy improvement by complying the recent policy needs and cross-sectoral challenges in an innovative way.

The following will focus on the stakeholder-based actions and lessons learned in the six Pilot Action Region (PAR). The critical inclusion of the results of CAPHAZ-NET WP 2 Report (2010) is especially necessary for the evaluation. The extent to which the last-mentioned goal 'transnational policy improvement' could be achieved under the contemporary challenge of the COVID-19 pandemic needs to be discussed. The necessary contact restrictions have made the exchange within the project, but also the involvement of actors, more difficult in general.

Under the light of stakeholder involvement, a specific aim of the analysis is to gain a better understanding of how the acceptance of scientific results (nature hazard modelling) at the local and/or regional level can be increased. A special perspective also applies to the question of how conflicts and resistances about the assessment of scientific and/or local (experience-based) knowledge can be overcome. For this reason, it was planned that all relevant actors should be involved and provided with science-based risk communication support during the project. However, due to the COVID-19 pandemic, this goal could not be fully implemented.

At the end there will be seven general basic recommendations for practical implementation to advance governance of protective forests and ecosystem-based mitigation.

# 1 Research Object and few Definitions

## 1.1 The Pilot Action Regions (PAR)

For the following analysis, the specific features of the six Pilot Action Regions are briefly presented and the actors and/or institutions involved during the project period are listed. The list of actors is based on a query among the PARs in April/May 2021.

### 1.1.1 Val Ferret, Italy

Val Ferret is a side valley of the municipality of Courmayeur, located in the Aosta Valley Autonomous Region, in north-western Italy. The valley has relevant tourist periods in winter (cross-country skiing, alpinism) and in summer (cycling, trekking, etc.) and many activities are related to tourism (hotels, restaurants, camping). Val Ferret was included as a PAR of GreenRisk4Alps because **it is a tourist valley located in a high-risk alpine region for all mass movement processes.**

The following actors were involved during the project period (see Table 1):

Table 1: Actors of Val Ferret

Level	Institutions or Actors
National	<i>none</i>
Municipal	<ul style="list-style-type: none"> <li>• Municipality of Courmayeur</li> </ul>
Regional/local	<ul style="list-style-type: none"> <li>• Aosta Valley Forestry Corps</li> <li>• Aosta Valley Hydrogeological Management of Mountain Basins</li> <li>• Aosta Valley Functional Center</li> <li>• Aosta Valley Hydraulic Works</li> <li>• Local Avalanches Commissions</li> <li>• Aosta Valley Mountain Rescue</li> <li>• Local touristic operators</li> </ul>

### 1.1.2 Kranjska Gora, Slovenia

The municipality of Kranjska Gora was chosen as a Pilot Action Region due to its location in the Slovenian Alpine area, its extensive forest cover and its important role in tourism and sport activities. As an example of good practice related to forest, the environment, tourism, sport and natural hazard management, the world-famous Planica Valley with its newly built Nordic Centre was chosen. The centre represents the logical continuation of almost a century of sport and tourism activities in this environmentally sensitive area, where forest, particularly protective forest, plays an important role.

The **main challenge** is the increase of bark beetles, which cause a reduced protective function of the forest, and a lack of a national hazard mitigation strategy.

The following actors were involved during the project period (see Table 2):

Table 2: Actors of Kranjska Gora

Level	Actors
National	<ul style="list-style-type: none"> <li>• Institute of the Republic of Slovenia for Nature Conservation</li> </ul>



	<ul style="list-style-type: none"> <li>• Triglav National Park public institute</li> <li>• Chamber of Agriculture and Forestry- Special advisor for area of Municipalities of Jesenice and Kranjska Gora</li> <li>• Infrastructure Construction Company Gorenjska gradbena družba (GGD) PLC.</li> <li>• APUS Ltd., private company specialized in natural risk management</li> </ul>
Municipal	<ul style="list-style-type: none"> <li>• Slovenian Water Agency, upper Sava river section</li> <li>• Municipality of Kranjska Gora: <ul style="list-style-type: none"> <li>○ Department for environment and spatial planning,</li> <li>○ Department for agriculture, economy and public activities,</li> <li>○ Civil protection local headquarters</li> <li>○ Utility service Komunala Kranjska Gora</li> </ul> </li> <li>• Agriculture communities Dovje and Podkoren</li> </ul>
Regional/local	<ul style="list-style-type: none"> <li>• Slovenian Forest Service- regional unit Bled and central unit</li> <li>• Private forest owners</li> <li>• Police station Kranjska Gora</li> <li>• Hunters association of Kranjska Gora</li> <li>• RTC Ropeways Kranjska Gora PLC.</li> </ul>

### 1.1.3 Oberammergau/Ettal, Germany

In Oberammergau and the nearby Municipality of Ettal, Germany, rockfalls, debris flows, and floods are challenges and flood protection structures require high maintenance costs. The protection forest fulfils an important protective function in this context. The forests in the region protect the communities and its infrastructure from various natural hazards, especially in Oberammergau from the torrent "Große Laine" and in both communities partly from rockfalls and avalanches. From these facts arises the immense importance of the establishment, management and maintenance of the protective forests with their typical challenges. **Loss of the forest would lead to a significant challenge for the safety of settlements near the "Große Laine".**

The following actors were involved during the project period (see Table 3):

Table 3: Actors of Oberammergau

Level	Actors
National	<ul style="list-style-type: none"> <li>• Bavarian State Ministry for Food, Agriculture and Forestry</li> </ul>
Municipal	<ul style="list-style-type: none"> <li>• Municipality of Oberammergau</li> <li>• Municipality of Ettal</li> </ul>
Regional/local	<ul style="list-style-type: none"> <li>• Regional Forest Office Weilheim</li> <li>• Regional Nature Conservation Office</li> <li>• Road construction Office Weilheim</li> <li>• Water Management Office Weilheim</li> <li>• Nature Park Ammergau Alps</li> </ul>

	<ul style="list-style-type: none"> <li>• Local Forest Owner Associations</li> <li>• Local Farmer Associations</li> <li>• Representative of local hotel owners</li> </ul>
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#### 1.1.4 Parc des Baronnies, France

The Baronnies provençales are located on the borders of two large regions, two-thirds in Rhône-Alpes, in the department of Drôme, and one third in Provence-Alpes-Côte d'Azur, in the department of Hautes-Alpes. The main challenges in the nature park are forest fires, rockfall and related forest management. **Hazard zones for all natural hazards exist for all municipalities, but there is a lack of an integrated territorial risk management approach that would improve risk prioritization processes with a specific communication strategy between all actors, stakeholders and protection services.**

The following actors were involved during the project period (see Table 4):

Table 4: Actors of Parc des Baronnies

Level	Actors
National	<ul style="list-style-type: none"> <li>• scientists from university</li> </ul>
Municipal	<ul style="list-style-type: none"> <li>• mayors</li> <li>• representative of the national forest office</li> </ul>
Regional/local	<ul style="list-style-type: none"> <li>• representatives of the park</li> <li>• representatives for the forestry purposes</li> <li>• representatives for the natural risks purposes</li> <li>• representative of the fire department</li> </ul>

#### 1.1.5 Southern Wipptal, Italy

The Southern Wipp Valley is located in the northeast of Italy, in the autonomous province of South Tyrol. Forests are known to influence various types of gravity-induced natural hazards in the Southern Wipp Valley, such as landslides, snow avalanches, mudflows, and rockfalls. **At the community level, there is a good understanding of the overall hazard situation, but comparatively little is known about the factors that contribute to the associated risks.** In the mountainous communities surrounding the town, gravitational mass movements such as landslides, rockfalls, mudflows, and snow avalanches occur.

The following actors were involved during the project period (see Table 5):

Table 5: Actors of Southern Wipptal

Level	Actors
National	<ul style="list-style-type: none"> <li>• relevant representatives of the province of Autonome Provinz Bozen / Provincia autonoma di Bolzano – Alto Adige</li> <li>• Representatives of the Civil Protection Agency (i.e. The coordinator of EU projects)</li> <li>• Representatives of the Torrent and Avalanche Control North (i.e. director)</li> <li>• the Civil Protection Agency of South Tyrol</li> <li>• the Agency for Torrent and Avalanche Control</li> <li>• provincial Geological office of South Tyrol</li> </ul>

	<ul style="list-style-type: none"> <li>• European Geoscience Union</li> <li>• head of the provincial warning center</li> <li>• research group Risk Governance of Eurac Research</li> <li>• Director of the Geological department South Tyrol</li> <li>• Agency of Civil Protection, director of Provincial Warning center</li> </ul>
Municipal	<ul style="list-style-type: none"> <li>• major Vipiteno</li> <li>• Vice-counselor of Vipiteno/Sterzing</li> <li>• city councillor Vipiteno</li> <li>• the PAR municipality technician</li> <li>• major of Colle Isarco/Gossensass</li> <li>• sectoral agencies</li> <li>• environmental agencies, such as the forest inspectorate of Vipiteno/Sterzing</li> <li>• Office of Geology and Building Materials Testing</li> <li>• Mayor of Val di Vizze/Pfitsch</li> <li>• Mayor of Brennero/Brenner</li> <li>• a collaborator of the Civil Protection Agency</li> <li>• representative of the municipality of Courmayeur (sector tourism)</li> <li>• Municipality of Vipiteno/Sterzing</li> </ul>
Regional/local	<ul style="list-style-type: none"> <li>• representatives of the local forest inspectorate (i.e. director, deputy)</li> <li>• New Chief of the local forest department</li> <li>• Municipality of Gries am Brenner (local historian)</li> </ul>

### 1.1.6 Vals/Gries am Brenner, Austria

The two Austrian municipalities of Gries am Brenner and Vals are located near the South Tyrolean/Italian border in the Brenner region south of Innsbruck. The communities are located in a mountainous region and are heavily impacted by the transalpine Brenner traffic routes. Long-term oriented and ecosystem-based risk reduction while improving the quality of life are the only strategic solutions. In both communities, torrents and rockfall are considered the main challenges. **An effective risk management system for natural hazards with quantification of values that could be based on various risk avoidance and ecosystem-based mitigation strategies is of high interest to both communities.**

The following actors were involved during the project period (see Table 6):

Table 6: Actors of Vals/Gries am Brenner

Level	Actors
National	<ul style="list-style-type: none"> <li>• Higher Federal College of Forestry Bruck a. d. Mur</li> <li>• Tyrolean Hunting Association</li> <li>• Forest Directory of Tyrol</li> <li>• Austrian service for avalanche and torrent control</li> </ul>
Municipal	<ul style="list-style-type: none"> <li>• mayors of the PAR communes</li> </ul>

	<ul style="list-style-type: none"> <li>• expert of the service for avalanche and torrent control</li> <li>• head of the district forest inspection</li> <li>• a representative of the district forest inspection</li> </ul>
Regional/local	<ul style="list-style-type: none"> <li>• forest warden</li> <li>• fire brigade commander</li> <li>• police department, alpine police &amp; mountain rescue</li> <li>• road maintenance office</li> <li>• local historian</li> <li>• student</li> </ul>

## 1.2 Governance – an approximation

The main objective of this report is to mainstream an ecosystem-based natural hazard risk governance in the Alpine Space with a specific focus on the governance of protective forests. To sharpen the term, a short definition of governance is offered as a first step and an initial definition of forest governance is provided in the next step. It is then briefly clarified to what extent this understanding can differ from a specific ‘governance of protective forest’.

### 1.2.1 Governance, Forest Governance or Governance of protective forests

A brief and general definition from the United Nations Commission on Global Governance (1995): “*Governance* is the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which confliction or diverse interests may be accommodated and co-operative action may be taken”. So, governance refers to the formal and informal rules, organizations and processes through which public and private actors articulate their interests and make and implement decisions. Building on that, the UN Food and Agriculture Organisation defines *forest governance* as the way in which public and private actors, including formal and informal institutions, smallholder and indigenous organizations, small, medium-sized, and large enterprises, civil-society organizations, and other stakeholders negotiate, make, and enforce binding decisions about the management, use and conservation of forest resources.<sup>1</sup>

A ‘new’ concept is used in the GreenRisk4Alps project. In contrast to the short introduced traditional understanding of governance, which still refers to the hierarchical relationship between government and private actors, there are “new modes of governance” which “depicts the self-governance of non-state actors, as well as a broader spectrum of institutionalized arrangements (or modes) for ‘plurilateral’ coordination” (Böhling & Arzberger 2014, p.43). Secco (2014) describes these new types of forest governance, which are “confronting an increasing number of new or persistent forest challenges”. Which “are typically multi-actor, multi-sector and multi-level” (Secco 2014, p. 57).

Transferred to the challenges of forest governance in the Alpine Space there can be elements like increasing decentralization, cross-sector interaction, actors involvement and shared responsibilities in decision-making, existing already in programs like the “Protective Forest Platform” (Bundesschutzwaldplattform) in Austria or the ‘Mountain Forest Initiative’ (Bergwaldoffensive) in Bavaria. For such an integrative governance process, the perspectives of communities, institutions as well as citizens are absolutely necessary (see Ulrich 1998). At the same time, due to the peculiarity of the Alpine region and its forests, it is not surprising that specialized approaches of protective forest governance like the one mentioned before can be identified.

In the alpine natural and cultural area, individual and social interests are bundled in a special way: private use and recreational interests oppose individual and collective protection interests, in particular interests of the common good (Arzberger 2012, p.13; Köck 2010, p. 530). Alpine protective forest management is usually justified with protection against natural hazards, for example in Article 10 of the current Bavarian Forest Act. As can already be seen from the term ‘protective forest’ in the different protective forest governance approaches, which are already more or less installed in the alpine countries, we can find a ‘natural connexion’ to the challenge of ‘dealing with risks’. This is also i.e. shown by the results of the Interreg-Project “Schutzwaldplattformen und -foren in Tirol und Bayern“ (2009 – 2012). It also states that the local and regional societies in the alpine region are changing. A more and more urban-shaped society is changing the environment in which natural hazards and the needs of protective forest management are dealt with. That goes

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<sup>1</sup> <http://www.fao.org/sustainable-forest-management/toolbox/modules/forest-governance/basic-knowledge/en/?type=111>

alongside changed expectations of safety and the design of the surrounding local/regional environment, nature and infrastructure (see Walker et al., 2010, p.8).

While the institutional description of these governance arrangements makes the added value clear, the local and regional anchoring still seems to present those responsible with major challenges. The actor and PAR-focused GreenRisk4Alps approach has set the goal of finding solutions for sustainable mechanisms to implement and establish interactions, relationships and networks in alpine communities and regions to achieve a broad acceptance of forest-based risk management as well as the acceptance of implementation of “green risk management strategies”.

### 1.2.2 Connecting ‘governance of protective forests’ and ‘ecosystem-based risk mitigation’

As could be shown, the idea of risk mitigation is already a part of managing protective forests. As a common rule, the responsibility for this lies with the forest owners and forest administrations whereby the discussion about the way is increasingly taking place in different participative approaches (see above). We can perceive another development too: In the alpine region, there has been a general increase in the participatory processes in the context of spatial development and order as well as natural space management (Probst et al. 2019; Engel 2009, p. 20ff; Stoll-Kleemann 2005; Steininger & Steininger 2002). “Enhanced levels of participation, coordination and reflexivity are often regarded as necessary preconditions for more legitimate and more effective environmental policy-making“(Hogl et al. 2012, S. 17).

It is the request to the actors in the project GreenRisk4Alps to find an acceptable way connecting the scientific and technical approach of an ecosystem-based risk mitigation strategy, like protective forest management, with the governance of risk to find a ‘new way’ and to come to ‘new recommendations’ for governance. Why is it so important connecting these different perspectives? As the risk researcher Ortwin Renn (2008) notes “there are different models of conceptualizing the way that risks are handled, from a simple and linear ‘technocratic’ model, where ‘objective science is seen to directly inform policy-making’ to the ‘transparent (inclusive) risk governance model’” (Walker et al. 2010, p. 16). The GreenRisk4Alps approach follows in the PARs the recommendation of Renn, that for an integrative risk governance “science, politics, economic actors and representatives of civil society are invited to play a role in both assessment and management” (2008, p.11). However, it should be noted that due to the limited project duration, the focus had to be on the risk assessment.

#### Connecting the new modes of (forest) governance and risk governance

Regardless, there are principles of good governance that generally apply to both risk and forest governance as well. These common principles can be used as guiding ideas for governance arrangement at lower levels, as well as for multi-level governance systems with its multiple interlinks among institutions and levels (Secco 2014, p. 58f).

According to the Framework for Assessing and Monitoring Forest Governance (FAO 2011) there are six principles which to consider:

1. **Accountability** – people and institutions should be accountable for their actions
2. **Effectiveness** – governance mechanisms should achieve the ends they are intended to achieve
3. **Efficiency** – governance should work with a minimum of resources
4. **Fairness/equity** – the benefits and burdens of a forest resource should be in a way generally viewed as just
5. **Participation** – all interested people /parties should have an opportunity to be consulted or to participate in key decisions affecting forests
6. **Transparency** – information about forests and how they are governed should be reasonably available to all.

And the following principles can be found under the heading “Good Risk Governance”:

1. Participation
2. Transparency
3. Nature-Based
4. Efficiency
5. Reliability

Under the aim of the GreenRisk4Alps it is important how the participation process is organized and implemented, assuming that a ‘good’ (i.e. inclusive, transparent, legitimate, etc.) decision-making process may be instrumental to an effective and successful later phase of implementation of risk mitigation measures (see also Secco 2014, Hogg et al. 2012). This seems particularly important because existing interactions of public and private stakeholders dealing with collective problems of managing protective forest or dealing with natural hazards can be observed in few PARs. But there seems to be a problem with the acceptance of scientific results, like the experiences in PAR “Vals/Gries am Brenner” show (see Chapter 3.3.6).

### 1.2.3 New protective forest governance as risk governance

In the past two decades, the risk management of natural hazards has become increasingly important. In particular, the strategy of avoiding and protecting against floods is also a focus of (scientific) observation. So, the GreenRisk4Alps project relates in particular to the results of the research program and results of ‘CapHaz-Net – Social Capacity Building for Natural Hazard. Toward More Resilient Societies (2009 – 2012)’ who have examined droughts, heat waves and forest fires in southern Europe, floods in Central Europe, but also natural alpine hazards such as landslides, flash floods and avalanches. WP 2, which deals with the development of a risk governance approach, is of particular interest.

In their report Walker et al (2010) defining first the goal of ‘New Governance’ as an empowerment of the people through the increased participation in the process. Furthermore, they argue that involving more actors in policy enables them to recognize and to appreciate the existence of diversity in the “real” world, and so a plurality of perspectives can be included in decisions. On the other hand, they find in many cases, “what looks like multi-level governance is actually just multi-level participation” (Walker et al. 2010, p. 13). The authors suspect that the reason for this lies in excessive demands on the responsible actors, “but the fact that so many different organizations are involved in decision-making and service delivery, which makes it very hard to identify who is responsible for what” (p.13). And under the light of the ‘climate change debate they pointed out, that “many of the risks experienced in contemporary society are *not* new- natural hazards have troubled society for a very long time and, just because there are now additional problems of technological hazards to attend to does not mean that earlier problem of the risks posed by natural hazards have been resolved. Also, with climate change, ‘natural’ hazards are increasingly taking on an explicitly social dimension” (p. 18). This fits in with the statement above that dealing with natural hazards and the public awareness of the need to protect alpine forests is basically a centuries-old consciousness – as old local and feudal forest regulations show (for example: 1502 Tyrol, 1568 Bavaria).

Of course, a distinction must be made between the traditional awareness of the dangers of the Alpine region and the modern approach of risk governance of natural hazards. Risk Governance requires the inclusion of the various social and political spheres in the process of risk evaluation. That is why it is necessary to involve the actors and stakeholders who represent these spheres and rationalities. Managing the Risk needs a clear understanding for “the complex web of actors, rules, conventions, processes and mechanisms concerned” (Renn 2008, p. 9) and a transparent communication process, so everyone understands how management decisions are taken.

In summary, it can be stated at this point: the governance of protective forest understood as governance of risks induced by natural alpine hazards is based on a living networks of multiple actors beyond the state, so that different voices are heard, and a wide range of knowledge and capabilities are drawn on; a greater flexibility, the sharing of skills and resources is possible; a good communication and coordination makes cooperative solutions between levels possible. (com. Walker et al. 2010, p. 24)

From the results of 'CapHaz-Net WP 2' (Walker et al. 2010, p. 16), two points are of special interest to GreenRisk4Alps regarding risk perception and evaluation and the later actor's involvement.

1. The increased importance of risk perception as our reliance upon science and technology becomes destabilized: "More important than all the ingenious probability scenarios of the experts becomes the question of who believes there to be a risk, and why" (cited from Beck 2006, p. 42)
2. Increasing doubt or lack of confidence in society's ability to respond and cope effective with low-certainty risks

This shows that communication between those responsible, participants and stakeholders is at the heart of risk governance approaches. Consequently, this is how it represents the on the theory of Renn (2008, p. 48) based framework of the 'CapHaz-Net' risk governance approach, too. So, the essential communication process in surrounded by for in connected elements of risk governance "Pre-assessment" – "Appraisal" – "Characterization/Evaluation" – "Management". (Walker et al. 2010, p. 16, 25f.) With a view to the important communication process Renn (2006, p. 356) mentioned two major challenges of risk governance:

- generating and collecting knowledge about the risk;
- making decisions about how to mitigate, control or otherwise manage it.

It is important to understand that this makes the difference to the accustomed communication processes in natural hazard or protective forest management, where people are informed how to act in nature or in cases of danger and what to do in hazard situations. Or, forest owners receive recommendations on how to manage their forests and for example private builders get restrictions in the choice of their property. In addition it is to be noted that in the case of natural hazard management the coordination and collaboration between the authorities and rescue teams is crucial and part of a disaster response and emergency management for a long time. But as explained, these were usually partial and not holistic, and integrative approaches to comprehensive stakeholder communication.

Understanding Communication as a part of or a way to knowledge building and decision focusses on participation as an important principle of good risk governance. Walker et al. 2010, p. 27 emphasizes that communication "is understood to encompass many forms and purposes of flow of information between different actors involved" in the governance of protective forests and ecosystem-based risk mitigation. This includes different modes of interaction, participation, and partnership rather than only flows of 'expert to non-expert' information. Part of the communication process has been an integrated decision between the actors whose knowledge counts and is given respect in the local or regional decision building and how different forms of knowledge can be brought together and be critically evaluated in a transparent manner (Walker et al. 2010, p. 27).

Participation is an essential part of every "new governance approach" and was implemented in different project phases in the six PARs and especially in the context of the Rapid Risk Appraisal method. Therefore, this principle will be part of the evaluation.

Participation, as involvement in common matters, describes a fundamentally reciprocal relationship between action and dialogue. The scope, range and quality of this relationship can vary



(Nanz 2012, p. 23). As illustrated, participatory processes are more than pure communication processes; they are based on a mutual working relationship - the initiator or sponsor of the process is dependent on those involved and vice versa (see Figure 1).

The pyramid (see Figure 1) clarifies the increase in participation rights with each rung, but also shows that the obligation to assume responsibility for those involved increases at the same time. For the processors, this means that the willingness to give the right of co-determination must also be linked to the willingness to give up power on the higher level.

Goals	Process initiator/ Sponsor	Participants
<i>Strengthening competence, integration into the process</i>	<b>Empowerment</b>	
	Handing over responsibility	Take responsibility
	<b>Participation</b>	
<i>Conduct dialogues, optimize results</i>	Implementation based on partnership	Active support
	Involve interested parties / Make participation possible	Bring in own ideas
<i>Advertise projects, create transparency, ensure acceptance</i>	<b>Consultation</b>	
	Accept impulses, ideas & criticism	Bring in questions of understanding
	<b>Information</b>	
	Give information	Willingness to be informed

Figure 1: Adapted "ladder of participation" (Arnstein 1969): Levels of participation from the perspective of the litigation organizer and those involved. (Source: Transferred graphic Arzberger & Seidl 2014: 9)

### 1.3 Risk assessment as a highlighted part of the governance of protection forests and ecosystem-based risk mitigation

Based on the risk governance framework developed in the project 'Social Capacity Building for Natural Hazards' (Walker et al 2010, p. 25ff), five central elements can be distinguished:

- **Risk Pre-assessment:** identification of natural hazards, framing a risk as a relevant problem, identification of its implication, selection of scientific convention for risk assessment
- **Risk Appraisal:** i) scientific assessment of the risks of human health and the environment and ii) the scientific assessment of societal concerns related to the risk as well as social and economic implications
- **Risk characterization or evaluation:** processes of delineation and justifying a judgement about the tolerability or acceptability of a given risk. These judgments find their form e.g. in determination the boundaries of land use planning zones limiting developments in risky areas
- **Risk management:** review of all options for taking action, based upon the information and knowledge generated in previous phases
- **Risk Communication:** communication with the public through hazard warning systems, informing people on how to act and broader hazard education; disaster response and emergency management systems

Due to the limited project duration and the restrictions caused by the COVID-19 pandemic, the element 'Risk Appraisal' were mainly processed in the GreenRisk4Alps project. This has two major components:

- a) a spatially explicit assessment which uses the natural hazard and forest protective effects modelling results (see A.T1.2). It consists of an exposure assessment and of a more detailed spatial analysis in selected hotspot areas
- b) the 'Rapid Risk Appraisal', a participatory tool, which provides an overview of the main perceived risks in each PAR and their management practices

Even if this procedure may not bring really new insights in the overall field of protective forests because the natural hazards are already known in general, they might encourage a change of perspective, the awareness and handling of risks and the management of protective forests as ecosystem-based risk mitigation. The GreenRisk4Alps project places a great emphasis on new modelling methods, but it is just as important to understand that the risk assessment and the - potential already established or the new to be developed - risk management are acts of communication first of all, only is the second step about the content like technical skills or behavioural actions. This finding is important for the subsequent evaluation, because "risk governance potentially may go further towards equalizing knowledge claims and giving recognition to a greater diversity of voices" (Walker et al. 2010, p.26). Because the GreenRisk4Alps project also combines this approach with the hope that the involved stakeholders are developing a greater degree of trust and acceptance for an ecosystem-based risk management in the alpine area. This will be discussed later.

#### 1.4 Rapid Risk Appraisal in GreenRisk4Alps

Although further background information, details and results from the Risk Assessment methodology will be provided in the reports D.T3.2.1 and D.T3.5.1, a brief overview of the method is to be given here for later evaluation.

The assumption is that local stakeholders and experts are to retain information on hazards and elements at risk in their area. This knowledge is important for a comprehensive risk assessment including the locations and types of natural hazard processes and the determination of the exposed and vulnerable assets they threat in each PAR, because often scientific ready-to-use data isn't available to the desired extent. The hope is that through the involvement of locals in risk assessment, qualitative information and knowledge on local particularities can be rapidly made available. For this, the Rapid Risk Appraisal (RRA) methodology focuses on acquiring information on both the natural and the social components which constitute different risks. The hope is, that the entry points for improved risk management measures can be identified too. (Cocuccioni et al. 2019)

The following focuses on the assessment of the participatory process between the PAR-actors and their involved Stakeholders (see tables Point 2.1). The analysis of the knowledge and awareness that sure differs amongst stakeholders in and between the PARs is not part of this report. But there will be clues as to whether a participatory process can serve as a starting point not only for the risk appraisal but also for the trust and community building between science, authorities, and local actors.

#### 1.5 Stakeholder: institutions or actors? A short critical reflection

For the analysis and classification of the results, it is necessary to classify the terms used in a theoretical framework. One aim of the GreenRisk4Alps project is to develop recommendations for governance of protective forests. To do this, the research, participation and communication processes are analysed and compared in the six PARs.

The question is whether the governance approach is the right one for the intended analysis. The governance concept – which is also used in the ‘CapHaz-Net Research’ – is strongly linked to the scientific concept of ‘institutions’ (Hegele & Radtke 2018, p. 267; Döhler 2014, p. 82). Especially in the issues of policy implementation raised here, this reaches its limits, due to its lack of micro-foundation on the local personal actors (com. Blatter 2006). To analyze the “shape of formal and informal interaction systems from state and private actors” (Bohne 2014, p. 171), to perceive the interactions in the PARs and to make suggestions for trust and community building in the PARs, we decided to examine the (communication) relationships between the local actors. At this point it must be reiterated that the requirements of COVID-19 infection protection have severely restricted the social interactions between the actors in person.

*In short:* We understand stakeholders as personal actors, who both represent their own interests and concerns and are shaped by their own values and - if they belong to an organization - represent the interests of their institution. This constructivist assumption is also based on the fact that every stakeholder - regardless of whether it is a person or an organization, influences the process, regardless of its level of activity on site. For this, we are not following an institutional stakeholder approach.

The assessment of the institutional progress and development is part of the research program of work package 4. They are responsible for applying the RIU-model of knowledge transfer between institutions and actors within the project. Existing communication and decision instruments are validated and subsequently adapted during pilot activities to raise acceptance for implementing protection and mitigation measures.

## 2 Actors' involvement

A short questionnaire was sent to all PARs in April 2021. The aim was to gain a brief overview of the participatory approaches used in the different PARs and to get a better understanding of mechanisms for actors' involvement in natural hazards risk governance and protective forest management as an ecosystem-based risk mitigation strategy.

### 2.1 Forms of actors' involvement of the six PARs

The responsible contact persons were asked the following questions about the way in which the actors in the project regions were included:

- **What exactly happened to involve actors during the project period in the PAR?**
  - General?
  - Were the results from WPs 1- 4 included during actors involvement?
    - If yes: when and how?
    - If no: why not?
- **How often did an interaction take place and when?**

#### 2.1.1 Val Ferret, Italy

An average of two events per year were held in the PAR Val Ferret. In particular, four major workshops and living labs were organized. These events were organized within the WP2 PAR mitigation development plan. The Rapid Risk Appraisal (RRA) survey, within WP 3, was carried out during an event at the end of 2019. The Forest Assessment Tool (FAT) was used in March 2021. Communication including a few short meetings with local actors and authorities was conducted throughout the whole duration of the project.

#### 2.1.2 Kranjska Gora, Slovenia

In the PAR Kranjska Gora there were four events for forest owners and experts in the field of risk management and prevention during the project. Three events had the character of round table meetings, the fourth one, in September 2020, was a Rapid Risk Appraisal Workshop. Several individual interviews with actors were also conducted from Autumn 2019 till Autumn 2020. In each event and interview current results of the project were presented, for example maps of different natural hazards and protective forest areas.

Communication with local actors throughout the whole duration of the project was done on at least a monthly basis.

#### 2.1.3 Oberammergau/Ettal, Germany

In the PAR Oberammergau/Ettal they started with an initial information meeting for both involved municipalities and the local stakeholders in January 2019. Three workshops followed, one in the Ettal und two in Oberammergau with a focus on the effects of over tourism and the possibilities of creative visitor management. Hiking, biking, and climbing routes were developed and coordinated jointly. In Oberammergau, solutions were sought for the large number of guests who bring their dogs to motivate them to be considerate of nature. Due to the state pandemic lockdown regulations no further meetings could be held in 2020.

The last event was a small expert workshop with local authorities using the Forest Assessment Tool in autumn 2020. Communication and some short meetings with local actors and authorities was done throughout the whole duration of the project.

#### 2.1.4 Parc des Baronnies, France

This PAR initiated the policy of setting up an Alpine integrated natural risk management territory with a specific strand dedicated to forest-based solutions. Due to the lack of renewed funding to implement this policy, the post of the head of this mission was not renewed in June 2020. According to the lockdown due to the COVID-19 crisis, the latest version of the maps has not been yet presented to the advisory board of this nature park.

In parallel a general socio-economic diagnosis has been produced for this PAR using the information system dedicated to the development of the territories (SIDDT) which was formerly developed by INRAE over 30 years.

There was an annual meeting in the first two years of the project, 2018 and 2019, and none in 2020. A meeting was scheduled for June 2021 in the office of the park, the FAT test with local experts was held in March 2021.

#### 2.1.5 Southern Wipptal, Italy

In the PAR Southern Wipptal numerous events were held during the project.

In the beginning, 2018, the project was presented and discussed (i.e., round table) with local authorities from the PAR (major Vipiteno, city councillor Vipiteno), representatives of the local forest inspectorate (i.e., director, deputy) and the PAR municipality technician and also with neighbouring smaller municipalities and relevant representatives of the province of Autonome Provinz Bozen-Alto Adige. In terms of sectoral agencies, environmental agencies, such as the forest inspectorate of Vipiteno/Sterzing, the Civil Protection Agency of South Tyrol and the Agency for Torrent and Avalanche Control were informed about the project and its development (i.e., status of the project, presentation of developed workflow including a feedback round). In 2019 two large round table-events accompanied by several personal meetings with the head of the provincial Geological office of South Tyrol to discuss the landslide analysis results were conducted. The Rapid Risk Appraisal workshop with local authorities and experts was held at the end of 2020.

In addition to the larger events, there were many different face-to-face conversations or phone calls and smaller meetings with local stakeholders throughout the project.

#### 2.1.6 Vals/Gries am Brenner, Austria

Six main events were held in the PAR Vals/Gries am Brenner through the project duration. They started in January 2019 with a meeting (interview and questionnaire) with the two mayors of the involved municipalities, followed by a round table meeting with several stakeholders of the communes and the region and a day with a site inspection and excursion in the forests of the PAR with stakeholders and responsible from the communes and the forest authority. In Autumn 2019 a round table meeting was held with the hunting association and hunting experts focusing on the specific topic of hunting and protective forest management.

The Forest Assessment Tool (FAT) was used in April 2020 during an expert workshop with several stakeholders of the municipalities and the region. Drone flights during a site inspection with the forest warden were used to document current conditions.

## 2.2 Content

Even if the basic project content and project goal that unites the PARs were the same in all PARs, it was interesting to see whether there were regional focal points. The PAR-specific contents are presented below:

### 2.2.1 Val Ferret, Italy

In the PAR Val Ferret the project responsible were highly focused on the GreenRisk4Alps project aim. The goals of involving the actors are as follows:

- to assess the existing information deficits
- to make an inventory of existing/old projects
- to assess the perception regarding risk mitigation measures in Val Ferret (technical measures, protective forests, land use limitations)
- to assess the stakeholders' interests and conflicts, influences and mutual dependencies
- to analyse areas and hotspots in Val Ferret and existing solutions
- to learn and carry out Rapid Risk Appraisal and the Forest Assessment Tool

### 2.2.2 Kranjska Gora, Slovenia

In the PAR Kranjska Gora the project responsible were highly focused on the GreenRisk4Alps project aim. The goals of involving the actors are as follows:

- to determinate jointly the major hazards and their local hotspots with municipal leaders
- to identify the key problems faced by public services and residents in reducing risks from natural hazards
- to evaluate interest of main actors
- to discuss and implement risk management
- to learn and carry out Rapid Risk Appraisal methodology
- to determinate existing best practice examples in PAR
- to identify possibilities for knowledge transfer in PAR

### 2.2.3 Oberammergau/Ettal, Germany

In the PAR Oberammergau/Ettal the aim was to link the GreenRisk4Alps project approach to existing participation processes (mountain forest initiative, nature park engagement and torrent control) and to make the added value of an integrated approach and intermunicipal cooperation tangible for the actors. For this reason, they combined the following discussion lines:

- to discuss the challenges of the growing number of visitors for forest und land use management
- to develop strategies for visitor management
- to find resolution strategies for hunting and grazing conflicts between hunters / farmers and dog owners
- to advance the implementation of the BWO (rebuilding and strengthening protective forests)
- to evaluate and mediate conflict of interests in protective forest management and nature hazard management
- to learn and carry out Rapid Risk Appraisal and the Forest Assessment Tool

### 2.2.4 Parc des Baronnies, France

In the PAR Parc des Baronnies, the project was highly focused on the GreenRisk4Alps project aim. The goals of involving the actors are as follows:

- to present the methodology, data, and tools for mapping:
  - the protective forests
  - the accessibility to the forest resources
  - the evolution of the weather and forest indicators for evaluating the trends of forest fire risk evolution

- the accessibility of forest stands to fire service engines
- the crossing of protective forest against rockfalls and forest fire risks maps
- the identification of protective forest against rockfalls accessibility to fire service engines
- to identify possible local, regional, and national barriers
- to develop a socio-economic territorial diagnosis
- to reflect critically on the results
- to develop an action prioritizing to be used by the fire service
- to reconsider the current fire risk prevention strategy
- to strengthen the public awareness that currently the regional forest stands are unable to a protection role against rockfalls risks and so they are not the main actor of the risk prevention strategy in the territory

### 2.2.5 Southern Wipptal, Italy

In the PAR Southern Wipptal the project responsible were focused on the GreenRisk4Alps project aim. The goals of involving the actors are as follows:

- to discuss local challenges and needs in the context of natural hazard risk and pending issues in the context of the protection forest situation
- to learn about the current situation on site
- to discuss the scientific results (e.g., landslides modelling)
- to discuss the most relevant natural hazards and risks
- to present risk management practices in place

### 2.2.6 Vals/Gries am Brenner, Austria

In the PAR Vals/Gries am Brenner the project responsible combined the GreenRisk4Alps project aim with the current and future challenges in local forest management like hunting and climate change impacts. The goals of involving the actors are as follows:

- to evaluate and discuss the history and expected future in terms of natural hazards, as well as the former and potential damages especially with the local majors
- to survey the status quo about the condition of the local (protection) forest and future challenges because of climate change impacts
- to discuss local challenges and projects, about the red deer over population and the resulting browsing damages in the forest
- to discuss different risk adaptation strategies (road layout: bridge or tunnel route) in the sensible rockfall area of "Lueg"
- to gain a better understanding about the hunting situation in a particular hunting area of Gries am Brenner (Niedererberg, Frader Wald), including the inspection of strongly influenced protection forest sites with considerable damages through game browsing
- to discussion on what the hunting can contribute to the project, including what project outputs could be helpful for the hunters / Hunting Association
- to carry out the Rapid Risk Appraisal methodology

## 2.3 Results

Those responsible for the GreenRisk4Alps project implementation in the PARs describe the results of actors' involvement as follows:

### 2.3.1 Val Ferret, Italy

The involvement of local stakeholders made the systematic stocktaking of all relevant actors and identifying possible conflicts. The GreenRisk4Alps project partners experienced the awareness of issues and the acceptance of alternative actions, existing solutions and projects in the region. It has made the analysis areas and hotspots in the PAR Val Ferret easier and it was the requirement for getting Rapid Risk Appraisal results.

### 2.3.2 Kranjska Gora, Slovenia

Besides informing public and individual actors about project activities, to determinate maps of natural hazard hotspots, locations of existing and necessary additional measures against natural hazard consequences jointly, it was also possible to develop an awareness for the different interests in ecosystem services in the PAR Kranjska Gora.

On the other hand, it was possible to collect and give information on best practice examples and to develop a plan for knowledge transfer.

### 2.3.3 Oberammergau/Ettal, Germany

In Oberammergau and Ettal two round table events on recreational aspects took place in each community. The events were meant as initial meetings, to be followed by additional meetings focussing on natural hazards and mountain forests. Due to the pandemic, only the topic recreation could be discussed with the invited stakeholders.

The main result of the round table discussion was a map for visitor management in the PAR containing a zoning concept as a central control element. The concept has been discussed intensively in small groups taking into consideration the perspectives of Hunting, Forestry, Tourism (especially dog owners), Climbing, Nature conservation and Agriculture.

Based on the available data for the PAR Oberammergau the first results of the risk modelling for avalanches, rockfall, and landslides (Forest Assessment Tool) have been presented and discussed during a stakeholder workshop in November 2020. In this workshop the Rapid Risk Appraisal (RRA) has been conducted, which led to a common understanding of the available data in the respective institutions and might lead to an improved information exchange and communication between the authorities in the future.

### 2.3.4 Parc des Baronnies, France

Due to the recurring actors' involvement, it was possible to raise the awareness of the reality of the importance of forest areas having a protective function against rockfalls risks, which is much lower than the current perception of the various stakeholders. In addition, awareness of the importance of the risk of forest fires was also increased. This is ultimately the major risk in this area.

Another result is a heightened consciousness for the importance of communication routes in a landlocked area with a centripetal dynamic.

### 2.3.5 Southern Wipptal, Italy

The PAR project responsible summarized the results as follows: "The first meetings managed to establish the further collaborations within the context of the project. We received positive feedback for the Rapid Risk Appraisal and for the results on the landslide analyses for South Tyrol. In terms of implementation, we saw that the stakeholders are rather cautious to directly use the results in their daily work".

### 2.3.6 Vals/Gries am Brenner, Austria

From the perspective of the project manager the actors' involvement at the project start was an important phase to come to results at the end. In the beginning they get an overview of the most



important topics in the PAR related to natural hazards, forest, climate change and civil protection management. As a further result, the project group (BFW) could highlight several hotspots in the pilot region (devastated forest sites, active rockfall sites, sites with conflict potential, etc.).

The meeting in Autumn 2019 with the Tyrolean Hunting Association resulted in a sensitive approach to the Hunter´s society and aroused the interest to the “GreenRisk4ALPs” project also for the hunters. Now, results about where object protective forests are located and where they are not, are of interest for the hunters.

However, the desired results of the Rapid Risk Appraisal were not achieved due to the low number of participants. The survey procedure developed by Eurac Research could not be carried out. In spite of this, during this meeting it was achieved that a leading person in charge from the Tyrolean Forestry Directorate could be interested for further project-relevant inputs (e.g., "GreenRisk4Alps"-movie & Forest Assessment Tool test phase). Another accidentally but important output was, that the forest authorities could not fully agree with the terms in the “protection forest definition matrix” which was elaborated within GreenRisk4ALPs. Above all, the term "indirect object protection forest" is not optimally chosen from the point of view of the forestry bodies, because it could lead to discrepancies regarding the disbursement of subsidies. This has resulted in a discussion and open discourse between the PAR project managers and the stakeholders is ongoing and was not finished when this report was generated.

### 3 Actors’ involvement in the light of ecosystem-based risk management

As mentioned in Chapter 2.2.2 the GreenRisk4Alps approach follows the recommendation that for an integrative risk governance, “science, politics, economic actors and representatives of civil society are invited to play a role in both assessment and management” (Renn 2008, p.11). Because it does not only apply to the governance perspective, the involvement of both knowledge carriers and actors is also decisive for successful risk management. To meet this expectation, first of all, the actors from the various stakeholder groups must be brought together.

In all six Pilot Action Region (PAR) the involvement of actors plays an import part during the whole project. It is very unfortunate that since Spring 2020, in every project member state, the restrictions due to the COVID-19 protection measures slowed down the efforts. It should also be pointed out, that due to the limited project duration, the main focus had to be on the risk assessment and to a lesser degree in the development of management plans and implementation of adaptation or mitigation strategies.

#### 3.1 Participants

At the beginning of every project there is a comprehensive stakeholder analysis, at the same time experience shows that the "discovery of the relevant stakeholders" is an iterative process during the entire duration (e.g., Arzberger 2019, Colvin et al 2016, Freeman 2010). The question "Who are my stakeholders or who are the actor to be involved?", can in principle only be answered in the respective specific context; nevertheless, comparable stakeholder groups can be found in comparable projects. An overview of the specific actors or groups of actors addressed and involved in the PARs during the entire project GreenRisk4Alps can be found in chapter 2.1.

In Table 7 we give an overview of groups of actors (stakeholders) to be included in process at the local or regional project level:

Table 7: Overview of groups of actors

Political and “overall-responsible” actors	Administrations (local, regional and/or supraordinate level)	Local/Regional Services	more or less Private
- Municipality	- Agriculture	- Avalanche Commission	- Forest owner
- Region	- Avalanche & Torrent control	- Emergency Services	- Land owner
- State	- Civil protection	- Forest Services	- Foresters, Forest owners & their Associations
	- Economy	- Forest warden	
	- Environment	- Hydraulic Works	- Farmers & and their Associations
<b>Research &amp; Education</b>	- Farming	- Nature / national park officials	
- Universities	- Forest	- Police	- Hunters & their Associations
- Research institutes	- Hunting	- Torrent control	

- (Vocationally) schools	- Hydrogeological	- Tourist Operators	- Touristic associations
	- Infrastructure	- Water agencies	- People in touristic business
	- Construction		- Locals with specific knowledge
	- Maintenance		
	- Spatial planning		
	- Nature conservation		

It should be mentioned that only in the PAR Kranjska Gora, were residents involved in the identification process of the key problems to reduce risks from natural hazards. Beside this, all actors' involvement focused on a more or less expert or authority participation.

This is surprising, because it is usually the residents who are most affected by natural hazards or risk management measures. In addition, they regularly evaluate the actions of the responsible bodies in democratic elections. It should once again referred to Secco (2014, p. 62), who emphasizes the challenge especially for projects with a small, local spatial scale: "Local governance performance typically and mainly refers to outputs or results achieved by local governments in service delivery, income and efficacy of public expenditure, also including measures of the institutional, financial and human resource capacities to develop, implement and monitor/evaluate their policies and programs." The public need to be involved in risk management process at certain times can be derived from this.

The connecting perspective between risk governance and risk management seems to be missing here. A broad understanding of communication and participation could fill this gap. Due to the short duration of the project, it cannot be assessed whether this "theoretical" deficit would be confirmed in the course of the implementation of the risk management strategies.

### 3.2 Conclusions of those responsible in the PARs

The added value and necessity of participation not only in the field of risk management and the management of protective forests has already been presented in Chapter 2. The practical experiences and scientific reflections on this have been gathered for many years. Nevertheless, it can be stated again and again that solution strategies in natural areas are initially and often only seen from an engineering perspective. The fact that the inclusion of non-specialist disciplines and laypeople can provide important information and provide impetus for implementation has led to some "aha-experiences" in the PARs. In detail, the following conclusions were drawn from the involvement of actors in the PARs by the project managers.

#### 3.2.1 Val Ferret, Italy

"Through stakeholder involvement in risk assessment, qualitative information and knowledge on local particularities can be rapidly made available. This information needs to be linked and integrated with quantitative data obtained from existing databases. The participatory process can serve as a starting point for a more in-depth analysis, providing also a more specific direction in which to focus research. The results obtained from these analyses from GreenRisk4ALPs project must therefore be returned to the stakeholders so that the results can be applied to the individual PARs."

### 3.2.2 Kranjska Gora, Slovenia

Participation of different actors in project activities is essential for obtaining crucial information that is needed to conduct all the project activities. Through this, trust and understanding were established and interest for further participation also in other common questions arises. A communication platform has evolved which works in both ways - between national & local authorities and the private sector. On the one hand to avoid or to resolve conflicts and on the other hand, and more importantly to improve the transfer of knowledge between science and practice efficiently.

### 3.2.3 Oberammergau/Ettal, Germany

The involvement of different stakeholders is the basic principle of the mountain forest initiative (BWO) in Bavaria and was well introduced in many round tables in the past in the PAR Oberammergau. It serves the mutual information and understanding of the local and regional stakeholders and led in many cases to a common agreement on and understanding of the required measures to maintain the important protective function of the surrounding mountain forest in the PAR. However, the involvement of stakeholders must follow a clear and target-oriented concept. Otherwise the engagement and interest will decrease, and it will be difficult to obtain a voluntary participation in the future.

### 3.2.4 Parc des Baronnies, France

At the beginning of the project it was underestimated how important it is to carry out a territorial diagnosis of socio-economic development, an analysis of forest dynamics, including a qualification and quantification of the ecosystem service of protection and its effectiveness, constraints and risks incurred by this service. This comprehensive data pool contributes significantly to develop an integrated risk management system including the definition of strategies and priorities for action.

In the end the development of clear and easy to understand explanations of results and recommendations was very helpful for communicating the results to the stakeholders and the public. This increases the acceptance of natural hazard risk management and decreases the preconceptions between researchers and actors on site.

For the further success it will be necessary to define an “updating period” and to clarify the responsibility for its execution. Two things deserve special attention. First, a lack of communication between local stakeholders and national decision or policy makers must be avoided or even closed. Second, the contradictions and antinomies between certain legal texts and regulatory codes must be clarified.

### 3.2.5 Southern Wipptal, Italy

The project and its topics were considered relevant by the stakeholders. Some deep discussions arose during and after the different risk assessment workshops. In terms of implementation, the presented preliminary results could not be judged in detail yet. It turned out that for the special situation in the PAR “a stakeholder agency as a partner (not ‘only’ observer) would be useful to push the results to the potential end-users”.

### 3.2.6 Val/Gries am Brenner, Austria

The project and its contents met with great interest from local stakeholders. The cooperation and elaboration of the relevant topics was very lively in the first half in the beginning, which was also shown by the number of participants. Perhaps due to discussions on the long-standing forestry-game-hunting conflict some actors turned away and took no further part in the discussions.

The low number of participants in the Rapid Risk Appraisal meeting can be explained by the fact that certain actors, in particular employees from the avalanche and torrent control, the forest

inspectorate, and the state geology, had little time to spare and so they focused on topics that were more important to them in their working context.

Towards the end of the project, the cooperation with the State Forestry directorate could be intensified, so that promising project outputs can be expected. The modelled "object protection forest areas" as well as the "efficient green mitigation areas" aroused interest by them. It was therefore possible to include forestry actors in the testing of the "Forest Assessment Tool".

### 3.3 Six different PARs – six shared lessons learned

Six lessons learned can be derived from the comparative analysis of the experiences in the six GreenRisk4Alps Pilot Action Regions. All experiences relate in particular to the phase of 'risk identification' and the phase of 'risk assessment', and thus explicitly only to 2 of 5 phases described in Chapter 2.4. The connecting phase of risk communication was "only" implemented to a limited extent in the sense of an internal project stakeholder management, the aspect of communication with the public or public participation was not dealt with primarily.

#### LESSON 1:

In all six Pilot Action Regions, the added value of the actor's involvement is emphasized. As mentioned in Chapter 4.1 the actors are mostly experts in their field. A forest ranger must also be perceived as an expert for his/her task, even if he/she may not speak the technical language of the scientific experts. It turned out that there were also difficulties in understanding between the experts in the various disciplines. Through new forms of communication and collaboration, e.g., round tables, that could be overcome.

#### LESSON 2:

One of the findings shared by all was that the collation and evaluation of experiences, challenges, and dangers in the management of protective forests and in dealing with natural hazards in a heterogeneous group of experts in the above-mentioned sense leads to a greater gain in knowledge production. Therefore, the appreciation of local knowledge is particularly important too.

#### LESSON 3:

Another insight is that every communication and explanation whether between researchers and authorities or researchers and practitioner on site or researchers, practitioner and public must be clear, unambiguous, and understandable for the target person or group. This increases the acceptance of natural hazard risk management and decreases the preconceptions between the groups.

#### LESSON 4:

It was experienced that in particular, the joint assessment of risks promotes also forms of alternative conflict resolution between the involved participants, even between national and local authorities and the private sector and supports the transfer and acceptance of scientific knowledge. This helps to build mutual trust.

#### LESSON 5:

Clearly defined framework conditions and rules help those involved in the integrative risk management to estimate the effort, help to deal effectively with limited time resources and ensure communication between everyone to be involved. If necessary, the support of a stakeholder agency can be helpful, especially from the governance perspective.

#### LESSON 6:

Not every challenge can be clarified by the involved participants for contradictions and antinomies between certain legal texts and regulatory codes must be find a solution between the competent bodies.

## 4 Conclusions

The analysis of the implementation strategies and experiences in the six GreenRisk4Alps Pilot Action Regions confirm the findings that were also made in the CapHaz-Net 2010 project. “Even though models of risk management may acknowledge the importance of stakeholder involvement and the like, government and expert bodies may still in reality be the primary” (Walker et al. 2010, 26). All events, round table meetings and workshops were dominated by experts from state or scientific authorities. But those responsible for the project also tried to involve local actors in the communication process too. Therefore the added value of the inclusion of local and practical knowledge on site in risk identification and assessment could be experienced by the scientists. At this stage the potential of risk management equalizing knowledge claims and giving recognition to a greater diversity of voices was successfully used.

If one compares the involvement of the local actors in the risk governance process with the level of participation in Fig. 1, it must be established that it was primarily a consultation process. Which is not surprising, since the project focused primarily on risk identification and assessment. It is currently not possible to predict whether a higher level of participation will be reached when risk management is continued and the phase of developing and implementing measures of risk mitigation and risk adaptation is entered. In terms of the increase in acceptance and confidence-building discussed above - and finally, to improve the quality of the results - it would be desirable for all involved.

During the project, the question arises as to whether it has been possible to bring the alpine forest management into affordable and long-term-oriented ecosystem-based risk management on the local/regional/municipality level. Unfortunately, the research period is still too short to answer this question. But the first positive experiences in all six PARs give hope that the procedures will be sustainably established on site.

Like the experience in terms of the forestry-game-hunting conflict in the PAR Vals/Brenner shows, it is important to be aware that the phase of assessment (appraisal) and risk characterization/evaluation is strongly connected to the personal knowledge and values of the involved persons, regardless of whether these are personal or organization values. The influence of different worlds of meaning, which are naturally linked to different rationalities, should not be underestimated. Rather, it must be recognized and consciously processed in the communication processes between the various actors. In all PARs this was done intuitively and described as a positive experience. Since this cannot be taken for granted, this must be seen as a success of the project GreenRisk4Alps in the Pilot Action Regions, even if there are still a few hurdles to overcome in PAR Vals/Gries am Brenner. The fact is that professional groups have specialist knowledge that is linked to symbolic worlds of meaning. If these different groups meet, the worlds of meaning are in competition with one another (Kühne 2018, p. 23f; Berger & Luckmann 2013). Because these are also overprinted with the personal experience of the individual person, it is so important to have enough time for dialogue and ensuring understanding.

Natural hazards and the resulting risks are difficult to grasp in terms of communication and therefore difficult to regulate in political negotiation processes. The background is different patterns of interpretation or rationalities, which are applied by different actors or groups in the population to the respective situation. In this way, those responsible in the PARs were able to hear very different stories about local and regional alpine natural hazard management. These “stories” are based on different interpretive patterns or rationalities, each of which is based on its own criteria of meaning and ideas of success (see above). The logics of action that result from these different rationalities can sometimes be very contradictory. There are five archetypes described by Diesing, 1962. Every archetype has his typical assessment strategy of issues which are not transferable. Persons who look with a technical rationality on an issue will use a means-ends-orientation for the assessment, persons with a social rationality will focus on integrating actors into

social systems, person with a legal rationality will use a system of rights and obligations, and so on (Arzberger et. al 2015, p. 10) Actions that are viewed as rational by one group are assessed as irrational by another community of meaning. A certain risk management measure, which is viewed as rational by one group, evaluates another community of meaning as irrational. An action is therefore not evaluated according to the categories true / false, but rational / irrational.

Like discussed in chapter 2.2.3 the important note of risk governance is not “something that can be applied in a standard way in all locations, political cultures, organizations and risk situations” (Renn 2008, p. 353 in Walker 2010, p. 17). Instead, “the entire risk governance process must be open to adaption in order to reflect the specific context of each risk”. Even if Renn related this statement to the national and supranational level, this can also be transferred to the local or regional level, as the comparison of the experiences in the PARs shows.

This part of the report focuses on mechanisms for actor’s involvement that form the basis for the implementation of the so far as possible harmonized assessment procedures and the monitoring of protection forest and risk management practices. But it is vital to be aware of the wider social and political context in which decisions are being made (Walker 2010, 17). Some of the PAR project managers made already first experiences, that factors beyond the more practical questions on site, like i.e., the organizational capacity to political regulatory culture, also influence the decision-making process. That must be considered as well as the awareness that the implementation of the measures also depends on the involvement of the local actors, as this is the only way to gain acceptance of the recommendations.

Before making recommendations, a final assessment should be made. Protective forest management relates to the idea of nature hazard management for centuries. From this perspective it is logical to connect it with an ecosystem-based risk mitigation approach. But it is also right, that in the past, those responsible in the protective forest and natural hazard management had to find acceptance for their measures. Often even scientific results on site were not recognized. The project GreenRisk4Alps was able to show that early involvement of local actors in the process of surveying and evaluating natural hazards and the resulting risks significantly strengthened acceptance and mutual trust. However, it must be pointed out that it must be avoided at all costs to fall back to a model of conceptualizing the way that risks are handled as a pure ‘technocratic’ model, as used in the past, where ‘objective science’ is seen to directly inform those responsible, who then implement the necessary measures. The added value experienced in the project is the gain in knowledge and understanding between all actors involved – scientists as well as practitioners and politicians. Should this experience be valued in the hopefully subsequent implementation process there is a chance to establish a transparent and inclusive risk advocate model like recommended by environmental risk governance experts like Ortwin Renn. They pointed out that as well science as politics, economic actors and representatives of civil society are invited to play a role in both – risk assessment and risk management.

As previously explained, it is not new, that the management of natural hazards has always involved the activities of multiple actors from the public sector up to private and voluntary actors and their measures. However, with the increase of social actors and the changes that can be observed in general in public engagement, there is also an increase and shift towards a greater diversity of actors being involved in protective forest management (e.g. BWO or Schutzwaldplattform) as well as in natural hazard management. It is therefore not surprising that forms of regional and local cooperation and partnership working can increasingly be observed in the field of natural hazard management in the Alpine region. Nonetheless, they are not standard as the results of these project show. New forms of intergovernmental cooperation between national, regional and local actors and/or institutions seem to play a special role.

From the point of view of sustainability, citizens in our society basically expect that decisions that affect the quality of their living environment and thus their well-being (and the well-being of future

generations) are publicly legitimized. In view of the increasing complexity of ecological, economic, and social contexts, contradicting (expert) opinions, and diverging political objectives, it is necessary that those affected are actively involved in the process.



## 5 Recommendations for experts and decision makers

The various political as well as legally anchored decision-making structures in the PARs of the participating countries must be considered when developing recommendations. Despite all of this, overarching recommendations and strategies that are independent of the local structural features can be derived from the experience in the PARs. All recommendations are therefore project-oriented!

1. Always start with a detailed analysis of the actors on site and don't forget the higher level. At the same time, be aware that the list and evaluation is never complete, but rather subject to iterative analysis proceedings.
2. Be aware that facts can be evaluated very differently, as the perspectives on them can be very diverse. Value everyone at the first step, discuss in the second.
3. Communicate clear, unambiguous, and understandable for the target person or group. This increases the acceptance of natural hazard risk management and decreases the preconceptions between you and your counterpart.
4. Take your time and use interactive meeting and work formats. A joint assessment of risks promotes also forms of alternative conflict resolution between the involved participants and supports the transfer and acceptance of scientific knowledge. This helps to build mutual trust.
5. Consider the limited time resources of the actors on site. There are often several closely resembling projects in the wide field of alpine spatial management and nature hazard or protective forest management. Reduce the number of meetings with similar context/questions for practitioners and politicians / administrations, especially at the local level.
6. There are experts for the design and support of dialogue and governance processes. Take advantage of them.
7. In the end, transparent and integrative risk management processes are the central prerequisite a) for on-site implementation, b) for any necessary political solution strategies and c) for the implementation of transnational management programs.

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