



capitalising climate change knowledge for adaptation in the alpine space



**Climate Adaptation Policies, Governance and the  
Science-Policy Interface in Alpine Countries and Regions  
Country Report South Tyrol.**

Deliverable of WP4 in the C3-Alps project

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## 1 Executive Summary

The objective of the present study was to draw a picture of the status of climate change adaptation (CCA) governance and policies in South Tyrol. It is part of the C3-Alps workpackage that assesses the CCA policy-making processes of different alpine countries and regions. The aim of the study was to understand the importance and the process of CCA in South Tyrol looking at existing adaptation activities, trying to identify possible barriers and strengths and analyzing the science-policy interface. For the analysis we conducted expert interviews using the standardized questionnaire developed in the frame of the project for regions without policy documents. This report presents the results for the Province of Bolzano- South Tyrol as one of the ten country or regional reports of the project.

The results presented in this report are based on six interviews conducted with experts from different stakeholder groups (politicians, public administration, environmental associations, NGOs and research institutions). The picture of the situation in South Tyrol that emerged is that there are no or a few measures and activities that directly address CCA but that nevertheless the topic of climate change is present with a lot of activities and strategies in place that contribute and support CCA, for example the hazard zone plans or the strategy KLIMAPLAN Energie-Südtirol-2050. The topic of CC is implicitly part when thinking and working on new strategies and has been indirectly integrated, especially in sectoral strategies. Half of the interviewees stated explicitly that the focus of climate change governance in South Tyrol is on mitigation. Regarding the actors for CCA, all experts agreed that the provincial government and the provincial administration play a fundamental role and should also be the main actors in the future.

The rationales for not having an official policy document are multifaceted and reflect an interaction between different reasons and circumstances. According to the answers of the interviewees, an important rationale is linked to the missing or low perception of the need to develop a policy document for CCA. Reasons for this are competing priorities on the political agenda such as the financial crisis and the fact that climate change will not bring something totally new for the region, something that did not already exist or happened in the past or that is already an issue in the present. Therefore South Tyrol has already implemented measures to react to these changes. The low turnover in politics was also mentioned by one expert as a reason for not having such a document. This continuity makes it more difficult to introduce new topics and themes or to change existing behaviors.

According to the experts the main advantage in having a CCA policy document is to set a signpost by expressing a political consensus and guidance for handling the topic of adaptation. Furthermore they expressed that such a document would improve the present system (independent from climate change) because it would be an important step further in terms of coordination,

coherence and linkages of different sectors, departments and activities. The advantages of having a CCA policy document was not linked to the level of CCA in the region because according to the experts a policy document does not automatically lead to the implementation of CCA measures.

The major strengths that could support CCA present in the region are, according to the experts, the high awareness towards environmental issues in the civil society and the good existing networks where the different actors and stakeholders know each other well. Another strength are the good and already existing monitoring systems that allow to be prepared for and to act upon changes. Finally, several existing and implemented measures and initiatives such as the hazard zone plans, the strategy KLIMAPLAN Energie-Südtirol-2050, the KlimaHaus Agentur Bozen, the water management plan or infrastructures of hydraulic engineering are seen as strengths that could facilitate CCA policymaking and activities in the region.

All interviewed experts seem to be in favor of including CCA goals in other existing policy documents rather than elaborating a new and additional policy document. They stated that in South Tyrol there are already a lot of existing plans and strategies. Therefore an important starting point would be to get all responsible and involved persons together “around a table”. This process would be crucial to overcome sectoral thinking and acting. An important point that emerged is that CCA policy in South Tyrol should not invent or introduce new things due to climate change but consider climate change as part of a general strategy and integrate it in it. It seems that there is no desire for something totally new but for the implementation of existing measures and the rethinking of behaviour and existing policies under the perspective of climate change.

With relation to the science policy interface, according to the experts, the integration and improvement of knowledge could be achieved through intra-disciplinary research, e.g. common projects between experts from science and administration. Important first step should be the analysis of information needs from the administration bodies in order to find out together where research and science could contribute and provide missing knowledge. This would help to produce knowledge and products that will then be applied by the administration bodies, knowledge that they do not possess or cannot achieve. At the moment the science-policy interface is perceived as a weak point and all interviewees agreed that there is still potential for improvement in the communication and interaction between administration and science. One important step towards this objective would be the finding of a common language. According to one interviewee, what is still missing in South Tyrol and is needed for the integration of knowledge is an overview about who is doing what in which field. There are a lot of projects and activities carried out by different institutions and departments that should be integrated and coordinated through an organised information exchange about who is already acting in which field and for which topics.



## 2 Goals and methods

The objective of the present study was to draw a picture of the status of climate change adaption governance and policies in South Tyrol. The aim was to understand the importance and the process of climate change adaptation (CCA) in the region looking at existing adaptation activities, trying to identify possible barriers and strengths and analyzing the science-policy interface.

For the analysis we conducted expert interviews using the questionnaire developed for regions without policy documents in the frame of WP4. The selection of the interviewees was guided by the goal to cover different domains, disciplines and angles of visions in order to get the greatest insight and understanding possible considering the limited number of interviewees. Therefore we used two criteria for the selection of interviewees:

- Experts with not only sector-specific knowledge but also a broader cross-sectoral expertise and experience.
- Experts from different identified stakeholder groups (politicians, public administration, NGOs and environmental associations, research institutions)

The following table shows the experts we selected for the interviews and the stakeholder group they belong to.

Stakeholder group	Interviewed expert
Politicians	Member of the Provincial Parliament (Landtagsabgeordneter) <sup>1</sup> ; former responsible for environment in the provincial government of South Tyrol (Landesrat für Umwelt)
Public Administration	Director of the Provincial Agency for Environment (Landesagentur für Umwelt)
Public Administration	Director of the Provincial Department for Spatial Planning (Amt für Landesplanung)
Environmental associations	Director of the Ökoinstitut Südtirol
NGOs	Director of the Dachverband für Natur- und Umweltschutz/ CIPRA Südtirol
Research institutions	Eurac research, Scientific director of the Institute for Applied remote sensing

<sup>1</sup> The interview took place in September 2012. At the time of the interview the interviewee was part of the provincial parliament (Landtag der Autonomen Provinz Bozen Südtirol). Some weeks later he resigned from his office so at the time of editing this report he has no more role in the policy making process of the region.

The response rate of the contacted experts was very high, all experts were willing to be interviewed. Between September and November 2012 we carried out six expert interviews lasting between 1 and 1.5 hours each. Five of the six interview partners consented to tape the interviews that were transcribed afterwards and analysed using a qualitative content analysis following Mayring (2010).

The interviews and their evaluation illustrated in this report do not intend to be representative or exhaustive but represent the opinion and assessment of regional experts who work directly or indirectly with climate change adaptation related issues.



### 3 Description of the situation (status quo)

All experts agree that the topic of climate change (CC) has been generally recognized and became an issue in the region. The topic of CC is implicitly part when thinking and working on new strategies and has been indirectly integrated, especially in sectoral strategies through the monitoring of and reaction to changes and by following the principle of sustainability in strategies and activities.

Half of the interviewees stated explicitly that the focus of climate change governance in South Tyrol is on mitigation. There are some activities and initiatives in place that address CCA directly but they are not coordinated among each other and not part of an overall strategy. CCA is not yet an explicit topic of the political agenda and no official policy document for CCA exists.

Nevertheless all experts agreed that a lot of already existing activities and measures contribute to CCA. Four out of six interviewees mentioned the hazard zone plans<sup>2</sup> as an important instrument for CCA. Three of the interviewees named the policy document KLIMAPLAN Energie-Südtirol-2050. This strategy has been developed and approved recently by the Province of Bolzano and deals explicitly with climate change. The focus of the document is on climate change mitigation, in particular in the energy sector. Furthermore, the experts named different examples such as the initiative 'Klimaland Südtirol', the different sectoral plans (Fachpläne) and activities of the province in the field of Hydraulic Engineering (Wildbachverbauung).

Finally, one interviewee stated that there are several initiatives such as the initiative 'Green Jobs' or the 'Innovation Festival' where the link to climate change is not clearly identifiable meaning that it is difficult to identify what is the major motivation behind these initiatives. Nevertheless through the contribution to a sustainable development of the region they can indirectly also support climate change mitigation and adaptation.

Regarding the actors that support these activities that do not explicitly relate to CCA and that will yet contribute to CCA goals, all experts agreed that the provincial government and the provincial administration play a fundamental role. All experts stated, when speaking about the local level, that municipalities have a very important role, in particular when it comes to the implementation

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<sup>2</sup> The Hazard Zone Plan as a sectoral spatial planning instrument is anchored in Article 22bis of the Landesgesetz (LP) no. 13, 1997 (provincial law). Its implementation was adopted by the Provincial Governor's Decree (PGD) no. 42, 2008. The guidelines for drawing up HZP contain provisions to prevent or reduce natural hazards. The Plan should be installed in all South Tyrolean municipalities. At the moment some municipalities already adopted the HZP while others are still in the phase of elaboration and approval. To elaborate the HZP and the map of the specific risks, all hydro-geological hazards in South Tyrol need to be analysed. The HZP doesn't address the issue of climate change (CC) in a specific and explicit way. Like other spatial planning instruments, the HZP is vague on CC issues. The only reference to CC appears in the guidelines, more precisely in the section devoted to the "Map of phenomena" which contains a requirement to consider processes in connection with the thawing of permafrost, a direct effect of CC.



of CCA measures. However when asked about existing strategies and activities at municipality level the opinions of the interviewees differed significantly. Some stated that not much actually happens at this level. Others admitted that activities on the local level might exist, but that they are ignorant of such activities. Again others emphasized that there are a lot of activities in place that implicitly contribute to CCA. This confirms the point also explicitly named by one expert that what is really missing is an institution or actor that is informed of all ongoing activities in the field of climate change mitigation and adaptation in the region, that tries to coordinate them and supports the information flows between these activities and involved actors.

Concerning non-governmental actors or associations engaged in CCA the responses given by the interviewed persons were limited and consisted in associations in the field of environment protection without specific information about CCA activities, research institutions or international initiatives such as the 'Klimabündnis'. None of the interviewees has knowledge of any strategic document by non-governmental organizations that address issues of CCA in the region.

From the questions about the status quo of CCA in South Tyrol emerged that some activities and measures are perceived as CCA activities even if they do not explicitly address climate change. The hazard plans for example were mentioned several times when we were asking about the status of CCA in the region. Only half of the interviewees explicitly distinguishes between the topic climate change in general, mitigation and adaptation. When asked to give an overview about CCA activities in the region half of the interviewees pointed to activities that do not explicitly address climate change issues. The picture of the situation in South Tyrol that emerged is that there are no or a few measures and activities that directly address CCA but that nevertheless the topic of climate change is present with a lot of activities and strategies in place that contribute and support CCA. Finally, the general setting regarding environmental issues and the awareness towards them is high.



## 4 Rationales for not having a policy document

According to the answers of the interviewees, an important rationale is linked to the missing or low perception of the need to develop a policy document for CCA. One expert explicitly stated that there is no need for such a document. According to the other interviewees the topic of CCA is not perceived as urgent or does not obtain priority compared to other issues such as the financial crises. Furthermore the topic sometimes seems to be underestimated.

In addition, one expert stated that another important reason for not having a policy document is that climate change will not bring something totally new for the region, something that did not already exist or happened in the past or that is already an issue in the present. The region has always been weather and climate dependent and therefore it was in the past and is today sensitive towards changes and has already implemented measures to react to these changes. Representatives of public administration do not identify major demand because they already react to changes and therefore feel that they are active and adapted.

The awareness that in addition to sectoral activities already in place, additional cross-sectoral action and measures might be needed is often missing. This is also due to the fact that at sectoral level a lot of measures are already implemented (without the use of the label of CCA). Finally CCA is not a popular topic for politicians since the need for adaptation is often associated with the admission that something already happened. Therefore addressing mitigation has a more positive connotation than adaptation. In addition the topic of CCA is often associated with additional costs and therefore unpopular and difficult to communicate. Another point that explains the perception that there is no need for a CCA policy document is that, according to some of the experts, the precautionary principle (associated to mitigation) is better because it is better to prevent and to act in a sustainable way in order to avoid certain impacts than to be obliged to adapt afterwards to impacts that have already happened.<sup>3</sup> Finally most of the interviewees pointed out that it is better and more important to implement already existing strategies and measures than to elaborate a new strategy, that is an additional policy document.

Finally one expert mentioned the conservative society and the low turnover in politics as a reason for not having such a document. This continuity causes difficulties in changing traditions, existing structures or behaviors and in coming up and introducing new topics and themes.

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<sup>3</sup> During the interviews the general impression was that for most of the experts mitigation is associated to the precautionary principle (meaning to act in a way or to implement measures to prevent certain CC impacts). In contrast CCA is associated to something that happens “afterwards”, a reaction to already existing CC impacts.

Regarding possible advantages of having a policy document for CCA one expert stated that there would be no advantage in having one. The others see the main advantage in setting a signpost by expressing a political consensus and guidance for handling the topic of adaptation. Furthermore they expressed that this would contribute to principles of good governance and optimization of the system (independent from climate change) because it would be an important step further in terms of coordination, coherence and linkages of different sectors and departments. One expert also underlined that the elaboration of such a document would bring together mitigation and adaptation; to do so the already existing document that focuses on mitigation could be complemented with the topic of adaptation.

When coming to the disadvantages of not having a policy document for CCA the opinions diverged significantly. Some statements revealed that respondents do not see disadvantages in not having such a document. These respondents do not see threats due to climate change as they perceive South Tyrol as having a lot of beneficiary/advantageous assets that allows the region to be prepared and to adapt when necessary. However, some respondents had the contrary opinion and see the fact of not having an official strategy for adaptation could be a risk of being caught unprepared. Furthermore there are a lot of existing individual measures in different fields that contribute to CCA but without an official strategy these measures are neither coordinated nor linked.

When reflecting about rationales for not having a policy document for CCA different opinions among the experts emerged and different aspects were named. Some of them are directly related to the situation and the context in South Tyrol for example the important role of traditions and the continuity of politics. Others are reasons that are present also in other contexts or regions for example competing priorities on the political agenda such as the financial crisis. This shows, that there is - according to the experts - not one clear and particular reason on which to work on. The rationales for not having an official policy document are multifaceted and reflect an interaction between different reasons and circumstances. Advantages of having a policy document are more perceived in the field of good governance, coordination of sectoral measures and collaboration and communication between the different actors and departments. Not even one interviewee linked the existence of a policy document for adaptation to the level of adaptation. Equally, none of experts suggested that through such a document the region would be better adapted, because all of them underlined the general framework character and the limits of such a policy document for “real” adaptation. They emphasized that having such a document does not automatically lead to the implementation of measures.

## 5 Characteristics of the external factors

The aim of interviews and this report is to draw a picture of the situation of CCA in the region. In order to reach this it is important to look to external factors present in the region that facilitate or hinder CCA policy making or activities.

As most important facilitating factors the experts mentioned:

- high awareness towards environmental issues in the civil society;
- high dependency on weather already in the past (natural hazards, agriculture, tourism...); due to this factor the region is very sensitive to weather and climate aspects and has developed good monitoring systems to be prepared for and to act upon changes;
- good existing networks where the actors know each other well;
- high awareness towards the energy topic with a lot of activities in the field of energy efficiency, renewable energies and “climate friendly” buildings (e.g. KlimaHaus Agentur Bozen);
- strategy *KLIMAPLAN Energie-Südtirol-2050*;
- hazard zone plans;
- several existing measures, mostly sectoral measures such as infrastructures of hydraulic engineering or the provincial plan for air quality but also strategies involving different sectors such as the water management plan<sup>4</sup> or environmental impact assessments (Umweltverträglichkeitsprüfung).

As most important hindering factors or barriers the experts mentioned the following factors:

- the important role of tradition that makes it difficult to change old habits;
- the missing willingness or engagement among politicians to put the topic on the political agenda because other topics (e.g. the financial crisis) preoccupy the politicians more than CCA;
- the omnipotence of the South Tyrolean government and a missing or very limited turnover of political parties and politicians;
- the economic interests (in particular regarding the tourism sector);
- the limited space for settlements and possible conflicts regarding land use;
- difficulty to communicate adaptation and its potentially positive impacts.

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<sup>4</sup> The Autonomous Province of South Tyrol elaborated a revised version of the at the moment effective water management plan (approved in 1986). The draft has been approved by the provincial government in 2010 (Beschluss der Landesregierung Nr. 704 vom 26.04.2010) and is now under examination and in attendance of the approval by the Presidency of the Italian Republic. The draft version of the new water management plan is available in German and Italian and can be downloaded using the following link: <http://www.provinz.bz.it/umweltagentur/wasser/entwurf-wassernutzungsplan.asp>

An external factor that could influence and push the topic of CCA is extreme weather events in the region. All experts agreed that there have always been events in the region also recently but none of them stated that these events had an influence on CCA policy making. The events that were mentioned more often, by half of the interviewees, were the extreme events in Pfitsch in the Wipptal in 2012<sup>5</sup>. The experts named a range of events such as the very dry years between 2000 and 2006 that caused damages in agriculture or the floods in 1962, 1966 and 1988 and stated more in general that in the past there have always been repeating events. One important reason, according to some of the experts, why these events did not push towards a policy document for CCA is that it is very difficult if not impossible to establish a relation of cause and effect between these local extreme events and climate change.

Factors of the external context that could potentially have a supportive but also a detrimental influence on climate change policy are the public debate and the media. All experts agreed that the public debate and the media could have an important role and that the public debate about climate change is generally supportive but that *de facto* in South Tyrol they had no influence on CCA policy making. Always detrimental are “disaster scenarios” and when extreme events are automatically linked to climate change. Another important point that is unfavorable is the fact that in the media extreme events are sometimes communicated as something normal or positive, e.g., abnormal high temperature already in spring. When speaking about the handling of the media the answers of all experts headed to the message that for the media the “tragedy” is important and that they normally report about it only if something happened, for example, an extreme event with damages or deaths. Most of the time there is little space and time for investigations and background reports and media tend to focus and report about short-term measures rather than long-term strategies.

Concluding we can state that when looking at the answers about external factors that support CCA in South Tyrol there are both, more general not directly CC related factors such as the high awareness about environmental issues, and specific aspects such as the already existing ‘Klimaplan South Tyrol’. Other supporting factors are existing instruments that can be applied to CCA, such as the natural hazard plans. The very strong role of tradition in the region seems to be both, a supporting factor for some aspects hindering factor for others. There is a general agreement that in the past extreme events happened several times but they did not have an influence on CCA policy and did not lead to the assessment that a CCA policy document is needed. One reason for this is that in general the memory of persons is short. When extreme events happen many people are interested in them and talk about them. But after a while the attention fades and such events do not seem to enter in something like a long-term memory.

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<sup>5</sup> Between 4th and 5th August 2012 an extreme weather event with heavy rainfalls and hail happened in Wipptal (a valley at the Austrian-Italian border). The event caused two deaths and damages in several municipalities, the most affected was the municipality of Pfitsch.

## 6 Activities towards a policy document or policy commitment

The development of a CCA policy document in South Tyrol would face different challenges. Mostly all answers from the experts regarding possible challenges refer to general challenges. One important challenge seems to be encouraging people to rethink and to motivate people towards an engagement for CCA. The next crucial challenge is linked to the definition of competences and responsibilities for CCA policy. As the topic is very complex as well as cross-sectoral and since it involves different levels of governance, the coordination, involvement and communication between authorities and stakeholders acting in different sectors and at different levels of governance represent challenges recognized by nearly all experts. Another important point when thinking about the development of a policy document in South Tyrol is the discussion and collaboration with the economic sector (in particular with the tourism sector) in order to develop new alternatives and new strategies. In the drafting phase of such a strategy a good collaboration with research institutions and the inclusion of information and recommendation coming from science was mentioned as an important point to be considered. Last but not least the combination of strategies for climate change mitigation with those regarding CCA and the implementation of a possible strategy would be an important challenge.

All interviewed experts seem to be in favor of including CCA goals in other existing policy documents rather than elaborating a new and additional policy document. They stated that in South Tyrol there are already a lot of existing plans and strategies (for example the LEROP<sup>6</sup> or the water management plan). Therefore an important starting point towards a CCA policy would be to get all responsible and involved persons together and find out if according to them it is necessary to integrate the topic of CCA explicitly in these already existing plans, regulations or strategies. Bringing all involved persons to a table to discuss together advantages and disadvantages would allow to assess if there is the need of a specific CCA policy document. This process would be crucial to overcome sectoral thinking and acting and to convince involved actors to change and rethink the familiar. Furthermore it would enhance the communication between actors engaged in different sectors and the coordination of already existing sectoral measures. Besides this challenge of bringing together the different actors for including CCA in the existing strategies the most important challenge is linked to the complexity of the topic of climate change and the implementation of strategies or policy documents through “real measures on the ground”.

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<sup>6</sup> Spatial planning in South Tyrol happens on two administrative levels: the provincial and the municipal level. The principal planning instrument on provincial level is the spatial development and spatial regulation plan (LEROP – Landesentwicklungs- und Raumordnungsplan) with the therein intended 14 topic plans (Fachpläne). The LEROP is elaborated by the provincial spatial planning authority. The approval is done with provincial law (Landesgesetz) by the Provincial Parliament. The first LEROP has been approved in 1995 with the provincial law n° 3/95.

One question of the interview was referred to possible conflicts or tensions if CCA should become a policy issue in South Tyrol. The answers to this question differed between the interviewees. One expert stated that there would be no conflicts, according to another there are no new conflicts due to climate change but already existing conflicts would come to light. A third opinion raised missing acceptance and awareness as sources for possible tensions or conflicts. The remaining interviewees see possible conflicts with the tourism sector, the agriculture and in spatial planning due to different interest in land use between different users. Also regarding the probably most reluctant sectors the answers were quite heterogeneous. According to one expert no sector is particularly active in the field of CCA and therefore no sector is particularly reluctant. Another statement pointed to the difficulty to answer this question for different sectors because activities and reluctance depends on the persons working in a sector. In all sectors and departments you can find persons that are more engaged and active and others that are not. Nevertheless the remaining interviewed persons named the tourism, the agriculture and the health sector as the probably most reluctant.

## 7 Characteristics of the science-policy interface

This part of the interview about the science-policy interface addressed as main point the role of science for CCA policy, the interaction and communication between scientist and practitioners looking to the present situation and possible improvements for it.

All experts agreed that research and scientist should have and partly already have an important role. This role contains being a sort of icebreaker, to bring the topic up, to study it and to prove and show what happens and what will happen in the future. One expert also stated that the results and recommendations of scientist should have a more binding value and that at the present the value and the implications of scientific results is not institutionalised and therefore political decisions are not forced to consider them. Furthermore the scientist should create knowledge and confute incorrect information and communicate their results not only trough graphs and tables but in a clear language and through tools understandable also for non-scientists. Scientists have also a very important role in awareness raising and for providing the knowledge base for political decisions. Last but not least science should contribute to the integration of available knowledge and do research with the aim to provide local specific solutions.

One and perhaps the most important requisite for the fulfilment of this role is an appropriate communication. In particular communication between scientists, representatives from the administration and politicians seems to be a crucial point. More than one interviewee stated that the communication should not take place between scientists and politicians because politicians change after finishing the mandate and therefore it is difficult to establish a long-term communication and collaboration process. Furthermore politicians often are not the experts in the field because their legitimation is based on election results and not on their theoretical background. The communication should therefore happen between scientists and representatives of the public administration because they are experts in the field they are working in. They consult the politicians in the field of their thematic responsibility and provide them with information and technical knowledge they need for decision-making. All experts agreed that the communication between scientists and people in administration should be improved and that this could be achieved by changing and adapting the languages used by scientists. But one interviewed person from the public administration admitted that in order to change the communication also people from the administration had to learn to formulate their needs and the knowledge they are looking for better trough specific research questions and demands for science. According to this expert there is still potential for improvement within the administration. On the other hand the expert from research also admitted that in the past scientist did not communicate in the best way, in particular regarding uncertainties about climate change partly also due to the fact that science thought to be able to improve their results and come up with more precise data about climate change also at local level. But even with more available data and models there is still a high



uncertainty regarding climate change scenarios and scientists should be aware about this and communicate it also to the outside world. Furthermore scientists have to reflect in a self-critical way which additional, not yet available information, they could provide and in which way their work can improve the state-of-the-art of knowledge. Another important point mentioned is the acceptance of persons from public administration and practitioners as experts, especially for local knowledge. Scientists should downscale the information and knowledge available at and for international scale to the local scale and make it useable for local practitioners that often are the real experts when it comes to knowledge about the territory.

In order to improve the communication and interaction between science and policy the most cited measure is the realisation of common projects that involve persons from the administration and stakeholders from the beginning with the aim to produce together with scientists new knowledge instead of research through assignment (where the role of public administration is mainly the financing of research carried out by scientists). Four out of six interviewees argued explicitly for an intra-disciplinary approach (between scientists and persons from the public administration). This would be helpful for a better understanding and be an important step for finding a common language.

Regarding the available information only two interviewees stated that there is not enough information available while all others agreed that there is enough information available; in any case there seems to be enough knowledge available to start the process of adaptation and to undertake adaptation measures. There is still some detailed or specific information or data missing and there are still some aspects that could be investigated in a more detailed or a location specific way, but generally the notion is there is enough information available.

When asking about available information and studies about climate change in South Tyrol one interviewee was not aware of existing studies, the others cited different studies such as the *Klimareport South Tyrol*, the *KLIMAPLAN Energie-Südtirol-2050*, studies elaborated in the preparation phase of the hazard zone plans, reports and studies about sustainable mobility or energy balance. A lot of the cited studies focused on climate change mitigation and none of them explicitly on adaptation.

## 8 Impacts of CCA related activities

According to the interviewees there is no sector that is particularly responsive to CCA in the sense that it distinguishes itself because it undertook specific measures with the explicit aim of CCA. Nevertheless all experts agree that there are a lot of measures in South Tyrol that contribute to CCA and have an impact in the sense that thanks to the already existing measures and settings South Tyrol will be better prepared and partly already adapted to climate change impacts.

Five out of the six interviewees cited the field of natural hazards and in particular the hazard zone plans (four named them as a contribution to CCA) as activities related to CCA. This is due to the fact that natural hazards were always an issue in the region and that the persons working in this field are particularly aware and engaged. The second most cited field of activities were measures and infrastructures of hydraulic engineering and the water management plan.

Other activities mentioned to have an impact on CCA are activities in the energy sector because according to the experts there is a high potential for innovation and investments and, also, the awareness of energy saving and the use of renewable energies field is high.

One expert stated that the agricultural sector is one of the less active sectors in terms of CCA. In contrast, according to another expert, also agriculture could partly have an impact on CCA, not at provincial level but at local level and as the result of activities by single farmers. Motivations for activities in this field, however, are not climate change or the consideration of being prepared to future climatic changes but as a reaction to water scarcity and other changes. The agriculture has always been used to adapt to external changes (due to changing weather conditions but also to economic changes such as changes of the demand or certain products or changing prices) and this capacity to adapt to external changes could be helpful also for CCA. Furthermore several sectoral examples like the environmental impact assessments (Umweltverträglichkeitsprüfung) and the provincial plan for air quality were named as activities with a possible impact on CCA. One expert stated that also in the field of mobility there are some initiatives but he also recognized that they are more linked to climate mitigation (for example projects for sustainable mobility) than to CCA.

Beside these concrete measures and strategies, the answers pointed also to some general settings in South Tyrol that have an impact on CCA. These include the good organization of the public administration, the existing networks and the engagement and commitment of some practitioners, especially in the field of natural hazards.

From above mentioned activities with impacts or possible impacts on CCA emerged that for some activities is very difficult to evaluate how strong the link to CCA is also because they do not explicitly address the topic. But at the same time it became evident that even without a direct reference to climate change adaption and without having a policy document for CCA a lot of activities and measures are associated to CCA or considered to have an impact on CCA.

## 9 Strengths and weaknesses

Considering the answers given by the experts and some points that were already described in the previous sections of this report some strengths for dealing with climate change in South Tyrol emerge. One aspect named as strength is the strong network of research institutions in the alpine countries. Another important strength is a good network of actors working in the environment sector and collaboration between them both in horizontal and vertical way. In addition also the collaboration of scientists and representatives from administration within common projects or during workshops with participants from both areas was mentioned as strength. Some experts also admitted that they perceive few strengths and a lot of space for improvement.

Several factors that were mentioned to be a weakness are linked to missing or low awareness regarding CCA. According to one expert some persons still seem to deny CC or doubt its existence. Even if they recognize it as a topic it is often underestimated and not considered a topic of priority compared to others such as the financial crisis. For politicians CCA is not a popular topic because often it seems to come along with costs. Furthermore often in politics and administration the awareness is missing that in addition to already existing sectoral measures cross sectoral acting is needed to deal with such a complex topic as climate change.

One representative from the public administration named under weaknesses that in the field of spatial planning, when designing residential and industrial areas/estates, new criteria such as the increase of green areas, seems sometimes still to be an exception or something particular and not the norm as it should be.

As mentioned in the previous chapters of this report, in South Tyrol there are already a lot of measures implemented at sectoral level, even if not under the topic of CCA or without explicitly addressing it. The dependency from weather has always been high and also the interviewed scientist confirm that climate change will not bring anything that did not exist in the past or at present in South Tyrol. So surprisingly the fact of already implemented measures and high awareness towards weather seems to be a weakness when it comes to developing a CCA policy document. Representatives of public administration do not see a clear need for such a document because the region already reacts to changes; good working monitoring systems are already installed and detect and inform about changes. This perception seems also due to the fact that the distinction between mitigation and adaptation is not always clearly defined and perceived, so there seems to be a huge number of activities for adaptation in place (when asking the experts about CCA activities they named a lot of measures, initiatives and existing strategies) but most of them focus on CC mitigation and not adaptation. One reason could be that for some measures as, for example, green urban spaces the distinction is difficult because they address both, mitigation and adaptation aspects. Another reason could be that that in the general discussion about CC

there is no clear distinction between mitigation and adaptation and that mitigation prevails on adaptation because it is linked to the idea of prevention, of action in order to avoid certain future impacts and also of benefits (e.g. monetary benefits linked to energy saving initiatives). On the contrary, adaptation is often associated to already happened impacts, the unavoidable need to react to them and therefore also linked to additional costs. The focus on mitigation can be a weakness when it comes to CCA because this focus expresses the widespread opinion that the precautionary principle is better, that it is better to prevent and to act in a sustainable way than to be obliged to adapt afterwards. In the same direction leads the perception that it is better and more important to improve the implementation of existing measures and strategies than to elaborate a new strategy or an additional policy document. Finally a weakness in South Tyrol in the perspective of a possible elaboration of a CCA policy document is the conservative character of society and politics in South Tyrol because this causes difficulties in changing existing measures and behaviors and come up and introduce new things.

In sum, it emerged that concerning the strengths all answers referred to more general aspects and little concrete examples. A reason for this might be the agreed upon notion that the general situation and settings in South Tyrol are very good; South Tyrol is a prosperous region. Considering the weaknesses all interviewees agreed that there is still potential for improvement in the communication and interaction between administration and science. The implementation of a strategy through concrete measures is considered to be often the weak point of policy documents and would represents therefore also one of the main challenges when thinking about a CCA policy document for South Tyrol.

## 10 Conclusions, current issues, recommendations, policy options

The result of the expert interviews allowed us to develop a clear picture about the situation of CCA governance and policies in South Tyrol. In addition to information about the current situation, we asked the experts what are their recommendations and wishes for the future and what would be important in order to improve CCA governance in South Tyrol. These are the main key messages and recommendations that emerged from their answers:

- Awareness raising is a key element for CCA. The process of awareness raising and changing of behaviour in society should be integrated in school programs and supported by the media.
- CCA needs the engagement of actors in the public administration by rethinking existing sectoral plans under the perspective of climate change and taking it in consideration when planning new activities.
- In the field of spatial planning, when designing residential and industrial areas new criteria should be adopted and certain measures such as the increase of green areas should not be an exception or something particular but become the norm. A particular focus needs to be put on the implementation of measures because the most important part and success criteria for adaptation is not the development of new documents or policies but the implementation of concrete measures.
- With relation to the science policy interface the integration and improvement of knowledge could be achieved through intra-disciplinary research, e.g. common projects between experts from science and administration. Important first step should be the analysis of information needs from the administration bodies in order to find out together where research and science could contribute and provide missing knowledge. This would help to produce knowledge and products that will then be used and applied by the administration bodies, knowledge that they do not already have or cannot achieve. What is still missing in South Tyrol and is needed for the integration of knowledge is an overview about who is doing what in which field. There are a lot of projects and activities carried out by different institutions and departments that should be integrated and coordinated through an organised information exchange about who is already acting in which field and for which topics.

- The existing water rights should be modified by changing the current system based on traditional water rights towards a demand responsive system. The first step in this direction should be an assessment to identify who needs how much water at what time.

According to the experts CCA has to involve a whole range of institutions and actors. They all agree on the important role of the provincial government in CCA policy making because it is their task to take the initiative, to commission studies, to take the decision in favour of a policy document for CCA and to let prepare and draft it. In the drafting phase of a policy document research institutions should have an important role, they should provide recommendations and knowledge as a basis for decision-making in CCA. Two experts also cited the administration and the municipalities as important actors for CCA policies and their implementation. Besides them associations, companies and the civil society should also be part of the process as one main point for successful adaptation is a change in thinking and behaviour. This is the base for the successful implementation of adaptation measures.

The fact that all groups and levels of the regional society are named as potential actors of CCA shows that tackling the issue of CCA is seen as a task of all different actors and levels, as a common approach and as joint action that needs changes in thinking of everybody.

The interviews with the experts revealed that actors from different fields as politics, administration, NGOs and research, show differences in the focus and the level of detail of the answers. Politicians, for example, seem to put the topic in a broader frame, they consider climate change as an important topic and as one of the challenges for the future that needs to be considered and that calls for action and engagement. The distinction between mitigation and adaptation is made when they speak on the conceptual level, but when it comes to concrete examples no clear distinctions are made and a lot of initiatives that are cited deal in fact more generally with climate change and even more with mitigation than with adaptation (for example the Klimahaus or the initiative Klimaland Südtirol). Interviewees from the public administration and politics associate existing documents also with CCA while the interviewed persons from research, NGOs and environmental associations distinguish more clearly between mitigation and adaptation; the latter underlines therefore the lack of explicit adaptation policies.

Another crucial issue that emerged is the need of improvement in the interaction and communication between science and policy (particular the administration) for the integration of knowledge. At present it seems that the communication and collaboration between scientist and practitioners is still a weak point and that there is the need for improvement and rethinking from both sides, administration and research. One important requisite and a first steps towards this improvement is the finding of a common language.

The interviews and their analysis showed that the existence of an official policy document for CCA or the clear mentioning in existing documents alone is not a meaningful indicator to assess the

status of CCA in South Tyrol. Furthermore it emerged that the advantage of having a policy document for CCA would be to show and valorise already existing measures and activities and to coordinate the different sectors, actors and activities. According to the interviewees the existence of a policy document for adaptation would not have a direct impact on adaptation in South Tyrol or increase the number of implemented adaptation measures. The advantage of having such a document is not seen in the fact that South Tyrol would be better adapted but that all already existing and planned measures could be better coordinated thanks to the assignment and the definition of responsibilities that allow the coordination of different sectors and actors involved. It seems that CCA is linked to the general need of being prepared to future changes, where CC is one of the future challenges. CCA activities are therefore seen in a broader context together with activities and strategies for an efficient resource management and sustainable development.

Finally, an important point that emerged is that CCA policy in South Tyrol should not invent or introduce new things due to climate change but consider climate change as part of a general strategy and integrate it in it. It seems that there is no desire for something totally new but for the implementation of existing measures and the rethinking of behaviour and existing policies under the perspective of climate change.

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