



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 Baden-Württemberg**

Deliverable of WP4 in the C3-Alps project

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## Abbreviations

CC	Climate Change
CCA	Climate Change Adaptation
DAS	German Adaptation Strategy
FVA	Forest Research Institute of Baden-Württemberg
LUBW	Federal Institute of Environment, Measurement and Nature Protection, Baden-Württemberg
IPCC	Intergovernmental Panel on Climate Change
MLR	Ministry for Rural Areas
UM	Ministry of Environment, Climate and Energy, Baden-Württemberg



## 1 Executive summary

The current status of climate change adaptation policy for Baden-Württemberg was assessed based on two Interviews with experts from political ministry, e.g. Ministry of Environment, Climate and Energy, Baden-Württemberg (UM) and the from the executive institute, e.g. Federal Institute of Environment, Measurement and Nature Protection, Baden-Württemberg (LUBW) as well as internal meetings with expert from the Forest Research Institute of Baden-Württemberg (FVA) who is responsible for the forestry sector strategy drafting. A CCA policy document is aimed at for the end of 2013. The ministerial departments in charge, e.g. UM, guide this process with support from external experts from different sectors. These sectors are in charge of drafting CCA strategies for their sector. All these sub-strategies are to be gathered by the LUBW.



## 2 Goals and Methods

Two telephone interviews were conducted with experts working on climate change issues to get an overview of the current status of climate adaptation policies and their implementation in Baden-Württemberg. They are affiliated to the

- Ministry of the Environment, Climate Protection and the Energy Sector for Baden-Württemberg, Department 22 (Climate Protection Issues)
- State Institute for the Environment, Measurements and Nature Conservation of the Federal State of Baden-Württemberg (LUBW), Department 23 (Environmental Monitoring across Media, Climate Change)

They were interviewed in October 2012. This report reflects the answers of these experts concerning the on-going process of CCA policy developing and its updated activities since the interviews were conducted.



### 3 Description of situation (Status quo)

There is a cabinet decision the government of Baden-Württemberg issued on 09.12.2011 charging and asking professionals and external experts of different sectors to develop a state-wide cross sectorial CCA strategy document. This generally refers to phases I or II of the development process scheme. First survey results of single sectors are expected in early 2013 and a comprehensive final document is aimed for the end of 2013. The development process of single sectors is currently ahead of others (e.g. public health and water management) resembling phase III or IV due to necessity and acuteness to form a coherent concept.

Currently several CC research programs are carried out (e.g. KLIMOPASS) in different sectors and also in collaboration with different research partners and other German federal state administrations (e.g. the 7th EU Framework Programme for Research, the EU Alpine Space Programme, federal state financed research programmes). There is funding for fundamental research on regional effects of CC as well as the development of CCA strategies. All CCA activities are coordinated and directed by the Ministry for Rural Areas, the Ministry of the Environment, Climate Protection and the Energy Sector in collaboration with the State Institute for the Environment, Measurements and Nature Conservation of the Federal State of Baden-Württemberg. Research programmes also encompass the following projects KLARA, KLIWA and KlimaMORO (fostering regional mitigation and adaptation strategies by means of application and advancement of spatial planning instruments in 8 model regions including the urban area Stuttgart, the Northern Black Forest and the Middle Upper Rhine region).

The Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) has issued two sub-projects that have started within the new research field "Urban Strategies and Potentials to Tackle Climate Change" that is part of the German Government's Experimental Housing and Urban Development (ExWoSt) research programme aiming at local strategies and potentials to tackle climate change ("StadtKlima") and strategies and potentials of the real estate and housing industry to tackle climate change ("ImmoKlima"). Also the city of Stuttgart has launched its own CCA concept KLIMAKS and is taking part in the German Association of Cities and Towns which has recently published a position paper dealing with recommendations on CCA strategies.



## 4 Characteristics of the external factors

In 2008 the published German Strategy for Adaptation to Climate Change (“DAS”) provided an overview on future challenges in different sectors susceptible to CC and named possible adaptive measures but also legal restrictions. Guidelines and federal laws for land use and development planning as well as regional planning directives in general are not concretely implemented in the zoning plans cities establish for land use, although there are recent legal opinions from the Federal Environmental Agency giving suggestions and naming adequate revisions in terms of CC protection and also analysing whether existing environmental and planning laws are providing for sufficient precautionary action or in how far they ought to be adapted to the impacts of climate change.

Within the last 20 years several exceptional weather incidents have raised public awareness towards the signs of climate change at least on provincial level. Baden-Württemberg was hit by a couple of heavy storms (“Vivian/Wiebke” 1990; “Lothar” 1999), and an exceptional heat and drought wave in 2003 (low water levels and health problems) as well as an increase of hail incidents devastating crop yields in south-western Germany. Further large scale flooding of the river Elbe, in the north-eastern part of the country, in the year 2002 contributed to perception of water management and flood prevention.

Media reports have raised public awareness and triggered discussion and understanding for the subject of climate change, the importance of environmental topics, biodiversity and the management of natural resources. The need for adaptation has been perceived by politicians, scientists and general public.

Anyhow, in contrast to CCA climate protection issues have so far been more in the focus of the public debate as well as the turnaround in energy policy in Baden-Württemberg and Germany as a whole. Facing and dealing with the consequences of the financial and euro crisis are principal themes of even greater significance currently outweighing CCA issues. Other adverse effects can be related to arguments from global warming sceptics finding their way into newspapers and other media but obviously they are given less and less of a voice.

However, due to the lack of accurate and scientifically validated information on the role of the media in this context this is not more than a subjective impression.



## 5 Activities towards a policy development

One of the main motivations to develop a CCA strategy and a policy document for Baden-Württemberg is to generate a comprehensive and firm basis of regionalised climate data and the corresponding sector wise assessment of vulnerabilities. Without sound knowledge of the future effects of climate change the development of adaptation measures is impossible. Currently the achievement of these results is somehow vague and uncertain according to various different scientific approaches of climate change scenario modelling. Besides the process of including all potential experts, stakeholders, decision makers and actors of the relevant sectors the coordination of the outcome is an enormous challenge especially when aiming at predictions on a small scale. This can only be achieved through intensive communication and networking. Thus one of the greatest tasks will be to prioritise potential fields of action against the background of the available time frame.

The development of a CCA strategy bares a potential for conflicts between different sectors that need to be resolved. In Baden-Württemberg experts sense a conflict between nature conservation and forestry as well as agriculture, traditional tensions that might intensify in the context of CCA. Further problems may be presented in urban planning versus public health, urban greening and water management.

The issues of climate change are conveyed and well understood in all relevant sectors except of the power industry, which is mainly dealing with the turnaround in energy policy and the introduction and propagation of renewable energy sources. Federal state transport and road construction authorities of Baden-Württemberg are mainly dependant on guidelines from the Federal Ministry of Transport, Building and Urban Development.

### 5.1 Challenges and barriers

In terms of dealing with CCA the state of Baden-Württemberg has recently focused on research to provide a sound basis for vulnerability assessment and fostered sector dependent projects. Current CC models and scenarios produce a (blurry) wide range of possible effects and development options in various regions of Europe that impede the straightforward preparation of a comprehensive CCA strategy on the regional level. Scientific knowledge on the specific effects of CC has been and is in parts still regarded as insufficient.

Currently there is a lack of manpower predominantly in science and linking the scientific sector to the administrative execution and to deal with this demanding task beside all other responsibilities.

Germany has decided the nuclear power phase out and is restructuring the energy supply network towards implementing the turnaround in energy policy. Promoting renewable energy sources,



developing energy efficient technologies and energy saving are the big issues in terms of climate protection overlapping the awareness towards adaptation processes.

Interviewed experts consider the importance and usefulness of a state-wide sectorial harmonised adaptation strategy crucial due to the complexity of CC effects and the variety of concerned politicians and actors in charge. A single document may substantially contribute to an improved overview, to avoid duplication of work and ensure purpose and goal-oriented coordination. It reduces redundancies and unnecessary overlaps. On the other hand it might be even more useful to develop strategy documents for each of the sectors to preserve and to emphasize their characteristic traits. This could, in contrast to a single, possibly more limited document, probably simplify the implementation through administrative bodies. Currently 'low regret' strategies (e.g. flood water early warning systems or thermal insulation standards for buildings) are developed, put into action but are not explicitly related to the context of CCA. However, potential requirements for adequate and specific CCA actions are not yet developed and many uncertainties remain. Further the question of legal obligation of the public authorities and actors to such a document is also unclear. According to expert opinion there is a discrepancy of necessary and possible workload. Aiming at a comprehensive CCA strategy and considering the currently available staff, forthcoming tasks and complex duties may not be fulfilled.

## 5.2 Impacts of CCA related activities

The water management and services sector has been identified as most active reacting towards the needs of CCA considering potential damages and hazards due to flooding. Forestry management is especially concerned about sustainably ensuring timber supply and the future distribution and growth of economically relevant tree species and is concerned due to the long circulation periods. In the aftermath of the extraordinary heat wave in 2003, causing thousands of death cases all over Europe, the public health sector is also trying to develop suitable strategies to minimise potential human suffering. All other sectors are mostly on a somehow lower more initial level of the adaptation process.

## 5.3 Characteristics of policy development process

The state government is currently preparing a strategy for adaptation to unavoidable impacts of climate change on the state level. Because climate change is a reality and that our current emissions are due to the inertia of the climate system affect far into the future. Through the development of appropriate measures to adapt to the unavoidable consequences of climate change, the vulnerability of the country to climate impact can be reduced.

The creation of the adaptation strategy involves three steps. First, the future climate was estimated by reference to regional climate of around 30 projects. The various climate models were combined in an ensemble. Thus, a range of putative future developments are presented. Based on this "climatic barriers" the country's vulnerability in a next step towards climate change will be examined (vulnerability analysis). Here, the risks and opportunities of climate change impacts are presented. The first two steps then form the basis for the derivation of action goals and adaptation measures and options.

The following fields of action that are based on the German Adaptation Strategy (DAS) are examined in more detail:

- Water Resources
- Agriculture
- Forestry
- Nature protection and biodiversity
- Soil
- Health
- Economy
- Energy
- Tourism
- Disaster Protection
- Spatial and Urban Planning

Since the interviews were carried out in October 2012, LUBW has been coordinating and facilitating the drafting process for each sub-strategy under each single sector in concern. Within each sub-strategy document, it contains normally four parts: summary, extended chapters, scientific background and detailed measure sheets. Up to now, LUBW has collected most of the sectorial sub-strategies except for the water resources and energy sectors. When LUBW has all sector-wide strategies at hand, LUBW is going to draft a synthesized comprehensive CCA strategy document. It is planned to finish this process by end of year 2013. Then the synthesized CCA document is handed over to the UM who will submit it to the federal state government of Baden-Württemberg for political adoption.

## 6 Characteristics of the science-policy interface

Scientists and experts use modelling techniques to assess regional vulnerabilities for different sectors. All environmental subjects have been considered for the development of a CCA strategy (water management, soil protection, agriculture and forestry, public health, tourism, nature conservation and biodiversity). Spatial and regional planning issues will be enforced. Civil protection, economy and power economy aspects have still got to be included. Researchers provide relevant and important scientific information, comparative study analysis and advice as well as consulting of decision making committees. They are building a reliable knowledge base to ensure extensive planning security. Its development will be very helpful in identifying existing gaps and foster a strategy to assess future requirements and to trigger additional scientific research programmes.

Considerable uncertainties resulting from different data modelling methods lead to different scenarios and very often voluminous information. The efforts in vulnerability assessment and the development of sufficient methodologies have to be substantially enhanced. To deal with this problem the available range of best and worst cases is communicated. But still and presumably for a longer period of time the estimation of CC effects and decision making will remain difficult. Using ensemble modelling techniques provides a corridor for a more or less clear picture of possible decisions. Federal state wide results are still hard to achieve, not to mention the same on county or city scale. There is a considerable need for in depth research. So far findings of climate change related projects have been communicated in working groups, workshops, in presentations, reports and publications using the State Institute for the Environment, Measurements and Nature Conservation of the Federal State of Baden-Württemberg as a platform for information distribution to the related Ministry for Rural Areas and the Ministry of the Environment, Climate Protection and the Energy Sector. For the time being, communication and interaction between scientific experts and actors in policy is excellent and has to be continued.

## 7 Strengths and weaknesses

A state wide CCA strategy is crucial to address the complex effects of CC. It is to ensure an overview and provide a guideline for coordination and avoid double work as well as redundancies. Nevertheless first of all the specific characteristics of all different sectors should be taken into account possibly leading to several documents highlighting the necessities for each sector. This would probably simplify the implementation of guidelines through public authorities.

So far the government of the federal state of Baden-Württemberg has focused on the support of CC related research programmes (KLARA, KLIWA, KLIMOPASS, KlimaMORO) in the process of dealing with CCA. Also the regional associations of Middle Upper Rhine and Northern Black Forest are involved in case studies as well as the cities of Karlsruhe and Stuttgart. It would be wise to attribute the future CCA strategy to comprehensive and sound research results. If this thought is ignored, hastily prepared statements might be counterproductive and short-sighted. Generating reliable data is of highest priority from the perspective of our interviewees. On one hand research has delivered many but not yet sufficient results and information that allowed adequate development of adaptation strategies. On the other hand it is presently difficult to turn scientific results into action of public authorities according to the available staff capacities, but the development process of a state and sector wide CCA strategy has begun and has already yielded first results in early 2013. Later on a synthesized and comprehensive CCA policy document will be drafted by LUBW before the end of year 2013. This document shall be adopted by the state government of Baden-Württemberg which lays the foundation to put the policy into action accordingly. Meanwhile existing communication networks have to be improved to ensure the participation of all actors and to enforce cross-sectorial dialogues. It might as well be worthwhile to combine adaptation measures with conservation issues that are related to CC.



## 8 Conclusions, recommendations and policy options

Under the guidance of related departments of the Ministry for Rural Areas (MLR) and the Ministry of the Environment, Climate Protection and Energy (UM) as well as the State Institute for the Environment, Measurements and Nature Conservation (LUBW) a CCA strategy document for the federal state of Baden-Württemberg will be presented at the end of 2013. This will be the outcome of sector wise expert discussions and based on professional opinions. With other federal Ministries there is internal communication and constant active information exchange. So far reliable data is still being generated to assess future vulnerabilities. This process is regarded as most important for the development of a sound strategy. Further, aspects of the regulatory framework are to be included and if necessary adjusted to the goal of CCA. Unfortunately all related duties have to be fulfilled by an insufficient number of staff.

In order to overcome the difficulties and challenges and to facilitate the subsequent implementation of the to-be-approved policy strategy, some recommendations can be suggested.

- It is obviously necessary to put more staff member from the relevant ministries to the CCA policy development workforce. Each administrative departments shall be assigned clear tasks and responsibility to avoid potential double-work and in-efficient communication.
- More localized or downscaled IPCC scenarios and climatic models shall be applied to small regions, like a federal state level, so that more specific effects of CC and the vulnerability assessment can be expected and thus provide more solid basis for policy formulation.
- Cross-sectorial coordination and information sharing shall be strengthened. Although it is necessary to draft at the first step sector-wise policy strategies so as to gain the deep insight into the scientific background and its corresponding countermeasures, the sector-wise knowledge shall be share between each single sectors rather just submitted to one central hub. It is due to the fact that many impacts of CC are per se cross-sectorial issues. Furthermore, when it comes to the implementation phase, this cross-sectorial approach seems to be even more important. The state government of Baden-Württemberg as the overarching public authority has to balance the interests of all related sectors, especially when environmental, economic and societal dimensions are taken into account at the same time to achieve the sustainability goal as a whole.
- Legal obligations and rights of all involved ministries, departments, and institutes, private actors in the process of both policy development and implementation shall be clearly stipulated.