



C3-ALPS

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 Bavaria.

Deliverable of WP4 in the C3-Alps project

**Carolin Scheibel, Felix Hörmann
(Hochschule München)**

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info@c3alps.eu

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Organisation

Munich University of Applied Sciences,
Department of Tourism

**Authors**

Carolin Scheibel
Felix Hörmann

Contact

Carolin Scheibel, Munich University of Applied Sciences, Department of Tourism
carolin.scheibel@hm.edu
0049 89 12652163

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Table of contents

1	Executive Summary.....	5
2	Goals and methods	6
3	Description of the situation (status quo)	7
4	Characteristics of the Bavarian Climate Adaptation Strategy (BayKLAS)	9
4.1	Structure and Content.....	9
4.2	Objectives of the BayKLAS and strategic approach	10
4.3	Principles	10
4.4	Fields of action	11
4.5	Knowledge base	13
4.6	Responsibilities.....	13
4.7	Instruments	14
5	Characteristics of the external factors	15
5.1	Facilitating factors	15
5.2	Hindering factors.....	16
6	Policy development process	17
6.1	Organisation of the process	17
6.2	Characteristics of the process	18
6.3	Conflicts.....	19
7	Science-policy interface	20
7.1	Science base of the BayKLAS.....	20
7.2	New studies and research projects	21
8	Impacts.....	22
9	Strengths and weaknesses	23
9.1	Elaboration process and policy field	23
9.2	The policy document BayKLAS	24
10	Conclusions, recommendations, policy options	25

11	References	27
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Listing of Figures

Figure 1: Description of the fields of action in the BayKLAS.....	12
Figure 2: Participants of the IMA Klima	18

1 Executive Summary

Climate change (CC) and its impacts have been playing an important role in Bavarian state policy for more than ten years. Whereas in the beginning of the 21st century the focus was on CC mitigation, in the last couple of years also CC adaptation (CCA) gained attention.

Following activities on the national level, the Bavarian State Government (Bayerische Staatsregierung) as first State Government in Germany decided in June 2008 to develop its own adaptation strategy. The overall objective was “to adapt all climate-sensitive and vulnerable areas in Bavaria in the best possible manner to the consequences of climate change by 2020” (StMUG 2009, p. 5).

Thereupon the respective document was elaborated by a consortium consisting of members of all ministries dealing with CC issues and of the Bavarian Climate Council (Bayerischer Klimarat). Under the leadership of the Bavarian State Ministry of Environment and Public Health (Bayerisches Staatsministerium für Umwelt und Gesundheit, StMUG) the elaboration process was carried out within a short period of time. The result of this process was the Bavarian Climate Adaptation Strategy (Bayerische Klima-Anpassungsstrategie, BayKLAS), which was finalised by the end of 2008 and published in 2009. The BayKLAS provides information on CC and its potential impacts in Bavaria on 15 fields of action and gives possible adaptation measures from the state as well as on the non-state level down to the local level. It is a strategic document that does not have a legally binding character and which shall complement the existing adaptation activities and serve as guidance for actors from different levels and sectors to take action.

However, recently the whole field of CCA has lost significance in Bavarian state politics due to other topics, especially the transformation of the energy systems (Energiewende), which are currently dominating the political agenda. Thus, CCA in general and the BayKLAS in particular have not been promoted as expected and lack awareness and acceptance. Given this situation, the recommendations and proposed adaptation measures provided in the BayKLAS have not been considered in practice yet and it is difficult to evaluate direct impacts of the BayKLAS. Many of the ongoing adaptation activities had already started when the BayKLAS was published. They were also often not labelled as “adaptation measures”. Nevertheless they contributed and still contribute to the objectives of CCA. Yet, considering that CC impacts will increase in the future, one of the major challenges is to revive the topic of CCA in Bavaria and raise awareness for CC and the need for adaptation.

2 Goals and methods

The Work Package (WP) 4 of the C3-Alps project aims at assessing the performance of existing CCA policies and governance systems in the Alpine Space and at identifying good examples. In this context seven national reports are to be elaborated by the respective project partners.

The applied methodology follows the proposal of the WP 4 team, which is basically the same for all partners. It consists, first, of a document analysis of the adaptation strategies, i.e. in Bavaria the BayKLAS. Second, key individuals that participated in the policy drafting process and in the implementation process of the adaptation strategy were asked to fill out an online questionnaire. Afterwards, those persons were to be interviewed personally following an interview guideline.

The StMUG adapted this methodology to the Bavarian requirements and conditions, i.e. the online questionnaire was not spread as the Bavarian project partner assessed its content and structure as very complex. The online completion of this questionnaire by the key persons was considered as improper by the authors of this report on Bavaria for gathering of the required information. Instead, three key individuals for the BayKLAS development and implementation were invited to a round table discussion that roughly followed the topics of the interview guide.

Following this modified two-step approach the document analysis was performed for the BayKLAS according to the scheme provided by the WP 4 team. The findings were an essential input for the small focus-group discussion on the policy field of CCA in Bavaria and on the process of the elaboration and implementation of the BayKLAS. The focus-group discussion took place in August 2012 in the premises of the StMUG. The three discussants were:

- **Mr Dr. Joneck**, head of the Special Units “Climate Change / Technology Transfer Water” of the Bavarian Environment Agency

The Bavarian Environment Agency is a subordinate agency of the StMUG. The Special Unit was entrusted by the StMUG with the leadership of the elaboration process of the BayKLAS.

- **Mr Dr. Frede**, assistant head of the section 76 “Climate Protection” of the department 7 “Technical Protection of the Environment, Work Safety” within the StMUG
- **Mr Dr. Theiler**, head of the section 76 “Climate Protection” of the department 7 “Technical Protection of the Environment, Work Safety” within the StMUG

The report builds on the findings of the document analysis and the information gathered at the round table discussion. It is complemented by information gained through desktop research. The structure of this report follows closely the proposed structure of the WP 4 team. By describing in detail the situation of CCA policy in Bavaria this report contributes to the goals of C3-Alps WP 4.



3 Description of the situation (status quo)

CC and its impacts have been on the political agenda in Bavaria since the end of the 1990ies. At the beginning the emphasis was put on CC mitigation that has become a widely recognized topic. In the last couple of years the perception gained ground that CC will have irreversible impacts in Bavaria. Thus, also CCA was put on the political agenda. The table below shows this development on the basis of the relevant political documents.

Name of the document	Date of completion	Characteristics
Bavarian Climate Protection Programme (Bayerisches Klimaschutzkonzept)	October 2000 + amendment in 2003	<ul style="list-style-type: none"> • Elaboration of the Bavarian Climate Protection Programme under the leadership of the StMUG • CCA is not a topic
Bavarian Climate Programme 2020 (Klimaprogramm Bayern 2020)	November 2007	<ul style="list-style-type: none"> • Updating of the Bavarian Climate Protection Programme (decision of the Bavarian Council of Ministers in April 2007) • Convocation of a cabinet committee under the leadership of the StMUG • Participation of the Bavarian State Ministries of Inner Affairs, Economy, Finances, Sciences and Agriculture / Forestry • Intense consultation of the cabinet committee by the Bavarian Climate Council • Separate section on CCA
Bavarian Climate Adaptation Strategy (Bayerische Klima-Anpassungsstrategie)	December 2008 (published in 2009)	<ul style="list-style-type: none"> • Elaboration of an adaptation strategy (resolution of the Bavarian Council of Ministers in June 2008) • Convocation of an inter-ministerial working group under the leadership of the StMUG • Intense consultation of the inter-ministerial working group by the Bavarian climate council • Fields of action, measures and actors for CCA

In the year 2000 the Bavarian Climate Protection Programme (StMUG 2000) was launched and an amendment was done in 2003. Its goal is the reduction of CO₂ gases, i.e. CCA is not mentioned.

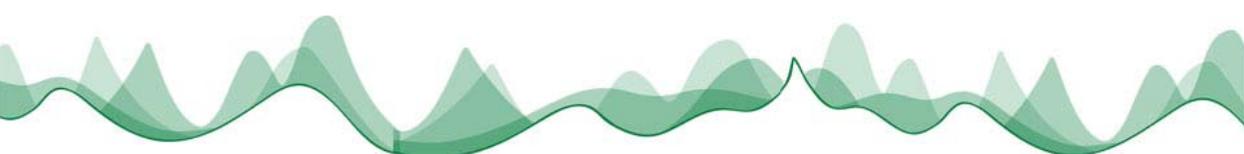
In 2007 the Bavarian Council of Ministers (Bayerischer Ministerrat) decided to update and extend the Bavarian Climate Protection Programme. The new programme is called the Bavarian Climate Programme 2020 and shall reinforce the Bavarian efforts regarding CC issues. It contains a comprehensive chapter on the reduction of greenhouse-gas emissions, but it also, for the first time, deals with CCA in a separate chapter. There, the overall objective of CCA in Bavaria is stated: “To adapt all climate-sensitive and vulnerable areas in Bavaria in the best possible manner to the consequences of climate change by 2020” (StMUG 2007, p. 5). The Bavarian Climate Programme identifies several sectors affected by CC (e.g. flood protection, forestry, settlement and infrastructure, health) and a set of measures and technical programmes serving the adaptation of these sectors is provided. The implementation of adaptation measures is within the responsibility of the respective ministries.

In June 2008 the Bavarian Council of Ministers decided to entrust an inter-ministerial working group (Interministerielle Arbeitsgruppe) with the elaboration of the BayKLAS. The task was to base it on and to complement the Bavarian Climate Programme 2020. It was also expected that it contained a comprehensive description of the sectors affected by CC and requiring adaptation. In the BayKLAS 15 sectors are identified. For each sector a set of adaptation measures is assigned; the policy document also contains a list of the responsible actors on the state and non-state level. Research projects on national / state level (e.g. KLIWA, www.kliwa.de) or transnational level (e.g. AdaptAlp, www.adaptalp.org) dealing with CCA are given a high priority in order to close existing knowledge gaps. The BayKLAS identifies the Alpine Space as a particular vulnerable area in Bavaria and emphasizes the special challenges of CCA there.

However, in comparison to CC mitigation CCA has less relevance for politicians at the state to local level; also the general public cares little about CCA. There is still a huge lack of awareness of the need for CCA in Bavaria especially as lately other topics like the transformation of the energy systems have pushed CCA aside.

The BayKLAS was elaborated by an inter-ministerial working group reflecting the various responsibilities for CCA, i.e., the responsibility of spatial planning is with the Bavarian Ministry of Economic Affairs, the one for environmental protection with the StMUG and so on. A single budget designated for CCA in Bavaria can therefore not be determined as the budgets depend on the responsible authorities. Likewise, it is not possible to make a ranking of the most important actors in this policy field.

Formally, according to the definition of WP 4 of C3-Alps (cf. interview guide) the policy field of CCA in Bavaria is in its implementing phase (phase IV). All outputs of the phase I – III are completed and it is now up to the responsible ministries to implement CCA measures according to the BayKLAS. Measures for CCA that have been started before the publication of the BayKLAS are continued.



4 Characteristics of the Bavarian Climate Adaptation Strategy (BayKLAS)

4.1 Structure and Content

Following a clear structure, the BayKLAS consists of the following sections:

1. **Preamble:** motivation for the publication of the BayKLAS and its general objectives
2. **Strategic Approach:** examples of running adaptation measures; recommendations for ways of dealing with CCA issues
3. **Climate change in Bavaria:** information on the potential impacts of CC in Bavaria
4. **Fields of action:** presentation of 15 fields of action affected by CC impacts (cf. Figure 1)
5. **Particular challenges in/for the Alpine Space and possibilities of coping with them:** description of the expected CC impacts and specific challenges concerning the Alpine regions; listing of adaptation measures, particularly promoted for the period from 2008 to 2011
6. **Framework conditions and competencies on national level:** information on existing strategies and recommendations of CCA on National and European level
7. **Information and participation:** existing information services and platforms; identification of actors that play an important role in providing information and raising awareness concerning CC issues
8. **Need for further research:** identification of topics for further research and study within the different fields of action
9. **Implementation of the BayKLAS and monitoring:** recommendations for ways of implementing BayKLAS; methods for evaluating the implementation of the proposed measures
10. **Literature:** overview of the literature the document is based on
11. **Annex:** listing of adaptation measures and research projects defined in the Bavarian Climate Programme 2020

The contents of the BayKLAS are presented in greater detail in the following. However, the structure of this presentation does not correspond to the sections of the BayKLAS. It is rather taken from the report structure provided by the WP 4 team and goes from general topics to more specific ones.



4.2 Objectives of the BayKLAS and strategic approach

The overarching goal of CCA policy in Bavaria is to enable all climate sensitive and vulnerable sectors and areas in Bavaria to adapt in the best possible manner to the consequences of climate change by 2020 (StMUG 2009, p. 3, p. 5). This goal was already set in the Bavarian Climate Programme (StMUG 2007, p. 10). In order to meet the overarching goal of CCA policy in Bavaria the BayKLAS sets some general objectives. These objectives are the same for all fields of action:

- Step by step information of affected regions and actors on impacts and risks
- Awareness raising, sensitising actors
- Providing transparency concerning uncertainties (climatic changes, its potential consequences and the proper adaptation measures to it)
- Providing action measures (on the state and non-state level)
- Providing a decision base and support

These objectives focus on building adaptive capacity, reducing sensitivity and increasing coping capacity within the fields of action. The encouragement of different actors to take action on CCA is a central element of the policy document BayKLAS.

In this context, it has to be acknowledged that the BayKLAS is considered a “political strategic document without legally binding character” (StMUG 2009, p. 5). It provides a framework with recommendations for CCA in Bavaria and serves as guiding vision for potential actors. Specific regional determinations for CCA measures are not given, as the scale (whole Bavaria) the BayKLAS is designed for does not allow such statements. Rather, the BayKLAS encourages local actors to develop appropriate CCA measures fitting their region-specific context (climate, topography, settlement, ...).

4.3 Principles

The BayKLAS provides six universal principles that should be followed when taking action in the field of CCA (StMUG 2009, p. 14f.).

The first principle is **sustainability**, i.e., all CCA measures shall facilitate the sustainable development of the society and economy. In this context, the sustainable and ecologically compatible use of land and renewable resources are identified as key elements of CCA. Due to the impacts of CC on biological diversity, special focus shall also be set on the preservation and strengthening of biological diversity.

Secondly, **environmental compatibility** shall be guaranteed with all measures. In order to avoid negative impacts of CCA measures on the environment, instruments like the environmental impact assessment (Umweltverträglichkeitsprüfung) shall be applied. The consideration of CC impacts on the planned project as well as the impact of the project on CC shall be given considerable attention.

The third principle is about **potential interactions (synergies and conflicts) between CC mitigation and adaptation**. Conflicts like the cultivation of renewable resources vs. keeping land free for flood protection but also synergies shall be especially considered in the frame of the implementation of the BayKLAS.

The fourth principle relates to following an **integrated approach**, i.e., through cooperation and solidarity the emergence of conflicts between mitigation and adaptation should be recognized and tackled in an early stage. In the same way, synergies like the restoration of water bodies serving environmental protection as well as the adaptation to increasing flood risks shall be prioritized.

The fifth principle about dealing with **uncertainties** is closely linked to this. Uncertainties shall be considered in the selection of adaptation measures. Following the idea of no-regret-policies adaptation measures shall be reasonable for the various and uncertain effects of CC.

The last principle is about the special position of the **water sector**. The sufficient supply of water is the basis for all living beings. Water conservation is thus a cross-sectional task touching various fields of action like agriculture, spatial planning and economy. Therefore, changes in the water supply are to be taken especially into account when designing adaptation measures concerning different sectors.

4.4 Fields of action

The central and most comprehensive part of the BayKLAS is section four, where the 15 fields of action are presented in detail. The action fields are depicted in the following way (StMUG 2009, p. 14):

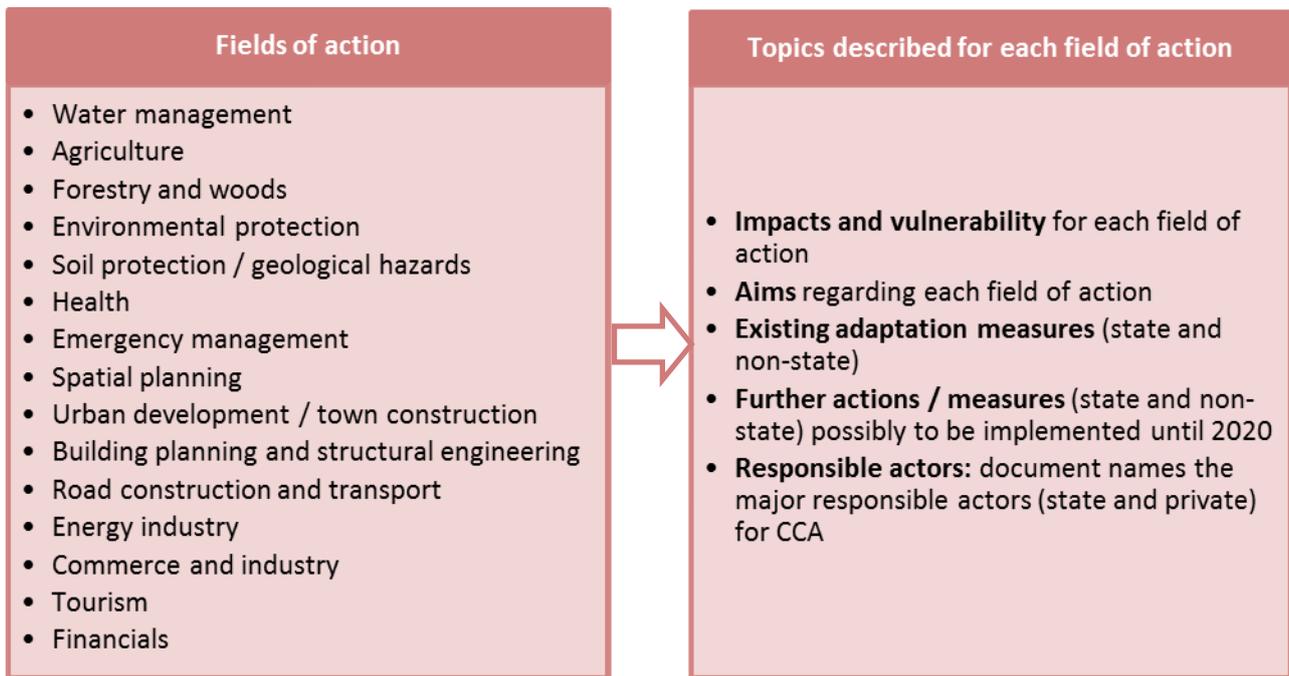


Figure 1: Description of the fields of action in the BayKLAS

As shown in the figure, for each field of action objectives as well as adaptation measures are identified. BayKLAS also lists already running adaptation measures. Additionally, it suggests further adaptation measures that could be implemented in the medium term until 2020. Moreover, measures are distinguished in state and non-state adaptation measures. Likewise, the document distinguishes between state and non-state actors responsible for CCA. Furthermore, advice for intersectoral networking is given, i.e., sectors are listed the most responsible sector should cooperate with.

As described above, the BayKLAS is considered a political strategic document. However, according to the WP 4 team definition it can to some degree also be characterised as action-oriented, because it provides for the fields of action sets of measures and recommendations for actions.

4.5 Knowledge base

The knowledge base of the BayKLAS rests on different pillars.

- The BayKLAS emerged from the **Bavarian Climate Programme 2020** that acknowledges the need for CCA in Bavaria. Thus, it builds on the knowledge gathered there (for more information cf. StMUG 2007).
- The Bavarian ministries joining the inter-ministerial working group sent high-ranking staff members, i.e., in most cases the **heads of the departments responsible for CCA**, to the group meetings. As the heads of department are comprehensively informed about the activities within their sector on ministerial level, a good starting point in terms of a knowledge base was set.
- The **Bavarian Climate Council** consisting of three high-ranking experts formed an integral part in the elaboration of the BayKLAS.
- Regarding CC and its impacts **the results of several research projects** (e.g., KLIWA – “Climate change and consequences for water management) were used as a basis for the description of the expected changes.
- Likewise, various **scientific studies** were used to describe and justify (e.g., in economic terms by the DIW – Deutsches Institut für Wirtschaftsforschung) the need for adaptation.

For a comprehensive list of all results, studies and literature used as knowledge base for the elaboration of the BayKLAS please refer to StMUG 2009, p. 63.

4.6 Responsibilities

The StMUG has the responsibility for various fields of action as regards CCA. But it is not the only Bavarian ministry dealing with CC and its impacts as the competencies and responsibilities for the fields of action are split between the technical authorities. This split of responsibilities makes CCA an intersectoral topic calling for an interdisciplinary approach for the implementation of CCA measures. Therefore, the implementation of CCA measures for each field of action lies in the hands of the responsible State Ministry.

However, the BayKLAS points out that CCA requires the collaboration of different sectors and levels of governance. Adaptation is considered a common challenge of state and society needing the participation of all parties. In this context the local level (municipalities, stakeholder associations, citizens) is considered as playing an important role. Therefore, the BayKLAS explicitly names actors (state and non-state) responsible for the implementation of adaptation measures within each field of action. As in many cases, measures cannot be allocated to just one single field of action and thus great emphasis is put on cross-sectoral coherence and the need for networking.



4.7 Instruments

The BayKLAS provides for each field of action instruments for the implementation of CCA measures. Under the topic “existing adaptation measures” proposals are made for already existing instruments of each field of action on how to use them for CCA, e.g., with regard to spatial planning the use of flooding areas or regional green strips (Regionale Grünzüge) are mentioned. Under the topic “further actions / measures” options for the development of new instruments and the adaptation of existing instruments to the needs of CCA are spelled out, e.g., for spatial planning it is suggested to include aims explicitly addressing CCA. These options address all levels (from local to state) as well as the private and public sector; also a special emphasis is put on the cross-references and interdependencies between the different sectors and levels. The list below gives a non-exhaustive overview on some fields of action and selected instruments:

- **Water management** → flood protection action programme 2020 (already running programme before the elaboration of the BayKLAS explicitly addressing CC)
- **Spatial planning** → spatial planning instruments (suggestions are made on how to use the existing instruments for CCA as well as how to adapt the instruments to the requirements of CCA)
- **Agriculture, forestry, water management** → monitoring systems (for several fields of action the installation of monitoring systems for monitoring soil erosion, forest infests or water scarcity is suggested)

A complete overview on all instruments is given in the description of the fields of action in section 4 of the BayKLAS.

5 Characteristics of the external factors

The whole policy field of CCA in Bavaria, i.e., from the beginning of the elaboration process of the BayKLAS to its implementation, is influenced by several external factors.

5.1 Facilitating factors

One factor promoting CCA are extreme weather events affecting many people personally. Events like the hot and dry summer of 2003 or the floods in 1999 and 2005 reached unexpected magnitudes in Bavaria and caused extensive damages to persons and settlement infrastructure. In this context, especially the Alpine region of Bavaria is considered to have a greater need for CCA than other regions. Those events, backed up by scientific prognoses, caused a broad public debate on CC impacts and the need for adaptation. The discussants agreed, that this cleared the way for sector specific CCA programmes (e.g. Bergwaldoffensive, Hochwasserschutz-Aktionsprogramm 2020) unlocking financial and personal resources within the responsible ministries. Yet, politicians and the administrations have to be rather quick with setting up CCA programmes as the memory of the public about the impacts of extreme events and thus the acceptance for subsequent/related measures decreases strongly within a few months after the event.

Another facilitating factor for the elaboration of the BayKLAS itself were the activities on EU level and especially on the federal level in Germany. The German Strategy for Adaptation to Climate Change (Deutsche Anpassungsstrategie an den Klimawandel) was elaborated under the lead of the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit). Basically, all further federal ministries were included in the elaboration of the strategy as well as all state governments (Landesregierungen). The German Strategy for Adaptation to Climate Change is the federal framework paper serving the states as guidance for their own adaptation strategies. This approach reflects Germany's federal structure as the 16 self-governing states have the majority of responsibilities regarding CCA. The strategy was adopted by the Federal Cabinet (Bundeskabineett) on the 17th of December 2008. Activities were pushed in Bavaria as soon as the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety decided to develop the German Strategy for Adaptation to Climate Change. It was an explicitly political goal to maintain Bavaria's leading role in Germany in the topics of CC mitigation and CCA. Bavaria wanted to be pro-active and thus well positioned to avoid any obligations from the national level.



5.2 Hindering factors

Hindering factors of the policy field of CCA are the uncertainties about the future development of CC and related impacts. In other policy fields such as demography comparatively exact projections about possible developments can be made for a certain area and affected people; subsequent consequences, e.g., a lack of retirement homes can be predicted and the need for action can easily be communicated. In contrast, a long period without any weather-related extreme event slows down CCA-related activities. On all levels, political opportunities for setting up adaptation programmes requiring financial and personal resources decrease as soon as the general public has not been affected by extreme weather events for a while and starts doubting CC. To overcome this dilemma, consequent pushing of the subject by state level actors would be essential.

Also, in the daily business CCA competes with other more “obvious” issues that are treated with higher priority. For example, after the nuclear accident in Fukushima in March 2011 and the resulting public pressure the transformation of the energy systems became the number one priority topic on the political agendas on the national level in Germany as well as in Bavaria. Politicians from the national to the local level, the administrations and the planning authorities are now focusing their resources on this topic. Likewise, the funding programmes are now re-designed for making the energy production CO₂ free. In some cases this even counteracts CCA, e.g., growing energy crops has negative effects on the biodiversity and the quality of the soil. Due to limited time and financial resources CCA has to take a back seat/has been eclipsed.

Summing up, it can be said that in the first decade of the 21st century the topic of CCA has been facilitated by several external events heating up the debate and leading to a high level of commitment in the policy field. Consequently, the Bavarian Climate Programme 2020 and the BayKLAS were elaborated. However, the topic has recently lost its significance and the BayKLAS has not been promoted as much as could be expected due to events beyond the influence of Bavaria. As CC will continue, the discussants expressed that the major challenge for the future is to revive and boost the subject with special focus on awareness raising.



6 Policy development process

The beginning of the development process of CCA policy in Bavaria dates back to the middle of the last decade with the topic of CCA being picked up for the first time in the Bavarian Climate Programme 2020. Therefore, the elaboration phase of the Bavarian Climate Programme can be seen as the starting point of dealing with CCA issues in Bavaria with all subsequent activities being part of the CCA policy development process that finally led to the BayKLAS. In this section, nevertheless, we only focus on the direct elaboration process of the BayKLAS.

6.1 Organisation of the process

In June 2008 the Bavarian Council of Ministers commissioned a cabinet committee to elaborate a CCA strategy for Bavaria under the leadership of the StMUG. This newly formed work group was named “Inter-ministerial working group Climate Protection” (Interministerielle Arbeitsgruppe Klimaschutz, IMA Klima) (cf. Figure 2). It was aimed at a quick procedure with the draft of the BayKLAS to be presented to the Council of Ministers at the end of the year 2008. Thus, no time was left for a comprehensive bottom-up process. Instead, the procedure followed a top-down approach with the Council of Ministers having a clear idea of who should participate in the elaboration. The IMA Klima should consist of representatives from all ministries and their respective departments (Ressorts) potentially affected by CC. It was to be supported by the Bavarian Climate Council, a group of high-ranking experts, which has been advising the Bavarian State Government on its climate policy and contributing its scientific experience since April 2007.



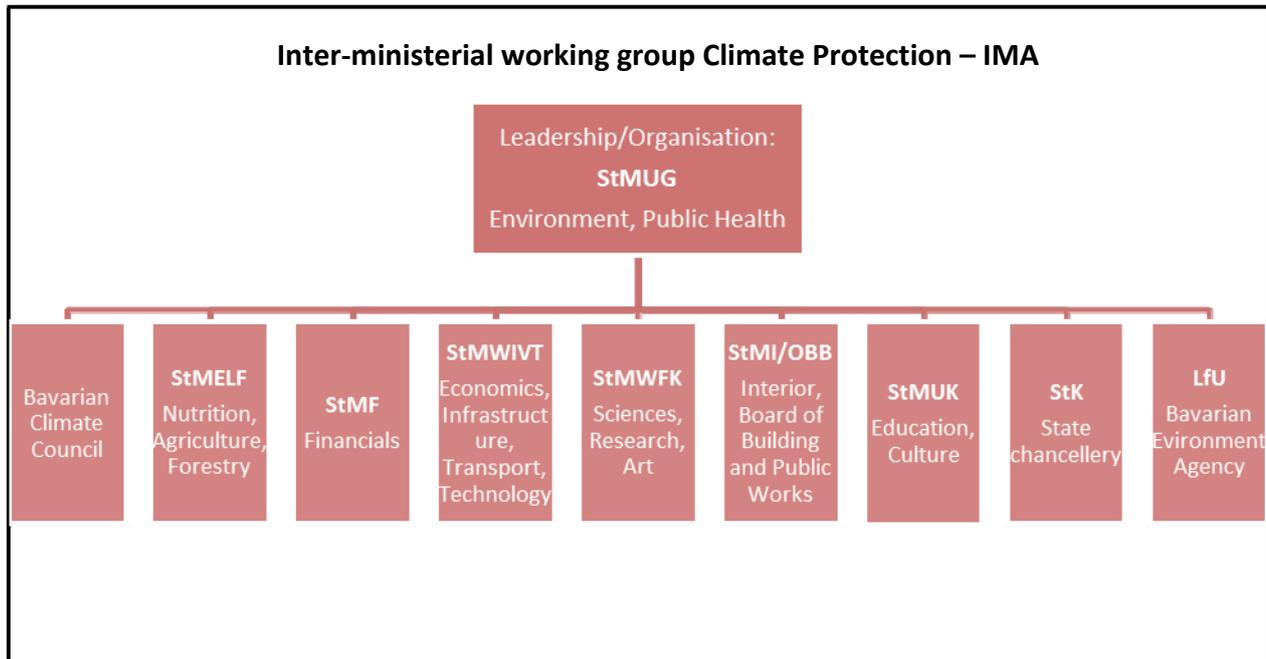


Figure 2: Participants of the IMA Klima

6.2 Characteristics of the process

According to the interviewees the whole process of the development of the BayKLAS was highly professional, well organized, efficient and successful. This was facilitated by several factors that are described below.

One crucial point for the smooth elaboration process was the composition of the members of the IMA Klima. It was of high importance that all ministries and departments dealing with the subject of CCA participated and, furthermore, were represented by their chief administrators (Amtschefs) and heads of the departments (Ressortleiter). As they are all top-class experts of their sectors, they possess all the required expertise. This enabled fruitful high quality discussions and outputs as well as quick decision-making. Moreover the involvement of the Bavarian Climate Council was considered as enormously important, as it provided additional expert knowledge.

Another factor that turned out to be essential for an efficient workflow was the fact that one ministry (StMUG) was in charge of leading the whole process. Through the strict and professional leadership and organisation of the StMUG, focusing on clear and concise agendas and minutes and stringently leading the negotiations, the meetings of the IMA Klima provided high quality output. For leading the content related and editing work, the StMUG had assigned the Bavarian Environment Agency (Landesamt für Umwelt, LfU) as technical authority. The collaboration between the LfU and the StMUG-department Climate Protection was characterized as open, objective and trustful and proved to be the “engine of the BayKLAS”. In this context it was seen as

extremely important and supportive for the elaboration process that the leading department was supported by its technical authority.

Furthermore the good relationship and high level of mutual trust between the involved parties and participants is seen as another crucial factor facilitating the elaboration process of the BayKLAS. Since most of the members of the IMA Klima had known each other before, there were often personal communications after the meetings; also, a certain level of mutual understanding and confidence in each other already existed. Additionally, discussions were led transparently. Subsequently, serious conflicts could be avoided and even though there were controversial topics peaceful agreements were achieved in the sense of “consensus within the dissent” (“Konsens im Dissens”). Therefore the way of decision-making can be described as consensus-oriented and transparent.

Finally also the organisation of the workflow facilitated the process. Under the leadership of the StMUG the different departments prepared the contents concerning “their” sectors, which were then discussed within regular personal meetings of the IMA Klima. The whole editing process was organised electronically, leaving room for only content related topics during the meetings.

6.3 Conflicts

Despite all professionalism, the whole process wasn't completely free from conflicts. Traditional conflicts (having already emerged in the development of the Bavarian Climate Programme 2020) mainly concerned different interests in land use like economic interests versus environment and nature protection (e.g. StMWIVT vs. StMUG). However, based on the positive and trustful atmosphere within the consortium, solutions were found without sustainably straining the process.

7 Science-policy interface

7.1 Science base of the BayKLAS

The knowledge base of the BayKLAS is can also be considered as the science base. The interplay of the different pillars will be described in the following.

The scientific foundation of the BayKLAS is set by several research projects and scientific studies (cf. StMUG 2009, p. 63). In this context significant scientific knowledge was contributed by the University of Bayreuth, which was assigned by the LfU with a study on CC impacts in Bavaria and adaptation. The respective study was published by the LfU in 2008 and includes an investigation of the consequences of CC, an identification of fields of action and options for adaptation. Furthermore, knowledge gaps and issues requiring further research are depicted. The results were included in the BayKLAS, e.g. the selection and description of fields of action (section 4 of the BayKLAS) is based on the study of the scientists from the University of Bayreuth. Likewise, results of the research project KLIWA - “Climate change and consequences for water management” were used as basis to describe the potential impacts of CC in Bavaria.

Moreover, scientific knowledge was provided by the members of the IMA Klima:

- Representatives from the different Bavarian ministries dealing with CC issues were chief administrators and heads of the departments responsible for CCA. So they are all experts of their subjects and possess the relevant knowledge about all activities within their sector.
- Additional scientific expertise was brought in by the Bavarian Climate Council, which consists of the following high-ranking experts:
 - **Prof. Dr. Hartmut Graßl:** Chairman of the Bavarian Climate Council, former Director of the Max Planck Institute for Meteorology (Hamburg) and former Director of the World Climate Research Programme.
 - **Prof. Dr. Dr. Peter Hoppe:** Head of the Geo Risks Research Division of the Munich Re Group.
 - **Prof. Dr.-Ing. Ulrich Wagner:** Holder of the Chair of Energy Economics and Applications Technology of the Technical University of Munich and Head of the Coordinating Office of the Hydrogen Initiative in Bavaria.

Due to this mixture of CCA experts from ministerial side and supporting experts from economic and scientific institutions the IMA Klima constituted a high-level scientific consortium.

The need for integrating external competences has already been recognised at an earlier point of time. The experts of the Bavarian Climate Council have been advising the Bavarian State



Government since April 2007 and also played a crucial role in the elaboration of the Bavarian Climate Programme 2020.

7.2 New studies and research projects

Likewise, there is a general understanding that for dealing with CC and for the conception of adaptation strategies and their updating continuous research and development is indispensable and shall be explicitly promoted, also financially. Respective research projects were already defined in the Bavarian Climate Programme 2020 and are listed again in the BayKLAS (StMUG 2009, p.66f.). As networking and pooling expertise available at universities, non-university institutions, state agencies and relevant companies are considered important, special emphasis shall be put on interdisciplinary approaches (StMUG 2007, p. 15). Therefore, three interdisciplinary research networks with experts from science and industry have been established already out of the Bavarian Climate Programme. One project evolving from this context is the Bavarian Research Cooperation “Impacts of Climate on Ecosystems and Climatic Adaptation Strategies”(BayFORCAST). In this research cooperation, funded by the Bavarian Ministry of Science, Research and Art (StMWFK) in the frame of the Bavarian Climate Programme 2020, several Bavarian universities (Bayreuth, Erlangen-Nuremberg, Munich (Technical University), Regensburg, Weihenstephan-Troisdorf, Würzburg), the Bavarian State Institute of Forestry (LWF), the Bavarian Office of Forest Seeding and Planting (ASP), the Helmholtz Zentrum München and the Institute for Atmospheric Environmental Research Garmisch-Partenkirchen, Karlsruhe Institute of Technology (KIT) collaborate.

Furthermore, several transnational research projects (e.g. ASP projects) dealing with CC impacts and CCA have continuously been carried out for the last couple of years. In many of these projects Bavarian State Ministries, other state institutions, regional administrations or private research institutes participate. Thus, an intensive exchange of expertise and cooperation between policy makers, state institutions, science and industry is guaranteed. Besides, through constant research the knowledge base concerning CC impacts and adaptation options is constantly updated and expanded.

In order to make use of new scientific findings and knowledge it is aimed at integrating these findings in a future update of the BayKLAS.

8 Impacts

Speaking of impacts it is necessary to consider that CCA activities were already initiated due to the Bavarian Climate Programme 2020. When the BayKLAS was published in September 2009 those running activities were included in the BayKLAS. Therefore, it is difficult to distinguish between impacts of the Bavarian Climate Programme and the BayKLAS.

The most responsive sectors are water management (Hochwasserschutz-Aktionsprogramm 2020), agriculture / forestry (Waldumbau Hochwasserschutz-Aktionsprogramm 2020), agriculture / forestry (Waldumbau and Bergwaldoffensive) and environmental protection / biodiversity (Sonderprogramm zur Stabilisierung der biologischen Vielfalt und von Ökosystemen Sonderprogramm zur Stabilisierung der biologischen Vielfalt und von Ökosystemen) with activities having already started in the context of the Bavarian Climate Programme 2020. The spatial focus of activities was put on the Alpine Space as it is considered to be the area affected the most by CC. Yet, this list is not comprehensive as other sectors also started different activities (e.g. financial sector, tourism).

The BayKLAS is a strategic document trying to activate responsible actors from all sectors and administrative levels to take action in the field of CCA. The implementation of measures depends very much on resources provided by the responsible decision makers and society. As described above the topic of CCA has been replaced on the political agenda by other issues. Due to low promotion the knowledge about the existence of the BayKLAS is lacking especially on local level (majors, citizens, private actors). The involvement and commitment of stakeholders on all levels that could be achieved by the BayKLAS was less than hoped for by StMUG. Thus, there is great need for awareness raising, especially among municipalities and citizens since actors on local level are considered to play a crucial role in the implementation of adaptation measures.



9 Strengths and weaknesses

9.1 Elaboration process and policy field

Due to the short timeframe that was granted by the Council of Ministers for the elaboration of the BayKLAS, the elaboration was organised in a top-down process. This type of organisation brought some advantages (cooperation, contents) but also some disadvantages (popularity).

One of the advantages of the chosen approach was that it enabled a professional and efficient elaboration process of the document, especially as regards the way of cooperation, content and duration of the process. As a result all ministries share now the commonly agreed contents of the BayKLAS, which are now precise and straight to the point.

The main deficiency of the top-down approach on the inter-ministerial level is that it negatively influenced the popularity of the BayKLAS. A broad involvement of the population, political representatives of all administrative levels or NGOs – as in a bottom-up process – would have created more awareness among the actors who are expected to implement CCA measures later on. Following the discussants, the problems regarding acceptance and popularity that the policy field of CCA in Bavaria is currently facing could be fewer than they are now.

On the contrary, a bottom-up approach, i.e. from the local to the ministerial level, would have required a lot more time and resources. The whole process would have been slowed down due to enduring discussions and conflicts between stakeholders. Again according to the discussants, this would have weakened the content as many topics might have been kicked out or shortened. The responsible actors are aware of the disadvantages of the chosen top-down elaboration of the BayKLAS and admit that to a certain extent a bottom-up approach would likely have proved to be more reasonable. However, the prevailing opinion is that in this special case given the time pressure the chosen way was the best one for Bavaria.

Corresponding, due to the need for further research several scientific activities were already initiated. Likewise, programmes (e.g., Flood Protection Programme 2020) were established. However, no evaluation of the effects of these activities was carried out nor is planned to be carried out.

9.2 The policy document BayKLAS

The BayKLAS offers a strategic approach, i.e., it rather provides a framework for CCA in Bavaria than listing concrete adaptation measures for specific regions together with the required resources. This is a limitation, which is due to the fact that the BayKLAS was elaborated for the whole state of Bavaria. This scale does not allow the determination of region-specific measures as the regional contexts (e.g. climate, topography, settlement) vary too much.

Apart from the general description of the expected changes of the climate (temperature and precipitation) no region-specific description of the impacts of CC is provided by the BayKLAS. Likewise, statements about the vulnerability of the different regions in Bavaria are missing as no detailed vulnerability analysis was performed. The only explicit statement about vulnerability is that the Alpine Space is considered to have the greatest need for CCA in Bavaria. However, it is believed that a vulnerability analysis would create more concern (Betroffenheit) among the population and give more possibilities in awareness raising.

Besides the medium-term adaptation measures, the BayKLAS does not suggest any long-term adaptation options. Also, no concrete timetable for the updating of the BayKLAS and the integration of new scientific knowledge is given.

However, the fields of action depicted in the BayKLAS cover the full range of sectors affected by the impacts of CC; also the list of potential actors that are addressed in the document is very comprehensive. This broad approach in terms of addressed sectors is a strength of the document as it promises higher likelihood of successfully practicing CCA.

10 Conclusions, recommendations, policy options

As described in this report, CCA has been on the political agenda in Bavaria for some time now. Following Germany's activities of elaborating a national adaptation strategy and aiming at maintaining its leading position in CC policy in Germany, Bavaria was the first state that published its own strategy after a well organised, highly professional and efficient elaboration process. This process was facilitated by several factors that, according to the interviewees, should be considered when preparing an adaptation strategy for CC:

- Explicit mandate from the State Ministry with clearly determined framework conditions
- Comprehensive involvement of all ministries and department potentially affected by CC
- Involvement of high-ranking representatives from the different ministries and departments → chief administrators, heads of departments
- Strong leadership: assignation of one leading partner / ministry, who constantly pushes the process
- Establishment of an inter-ministerial working group
- Participation of an environmental agency (Umweltfachbehörde)
- Good relationship and mutual trust between the involved parties

It was especially the participation of high-ranking ministerial representatives and the good relationship and mutual trust within the working group that enabled high level discussions and quick decision making. Due to the combination of all of these factors a sound and neutral technical elaboration of the BayKLAS was possible without political conflicts.

Regarding the steps undertaken so far, CCA policy in Bavaria actually is in a well developed stage with elaborated foundations for the implementation. However, especially in the past two years the topic of CCA was pushed back behind other topics and not promoted as intensely as in the past. The objectives to raise awareness and sensitise potential actors have not been achieved to the aspired degree. As a result, the commitment and activation of actors and the implementation of the recommendations of the fields of action was lower than was wished for. As mentioned in section 8, it is difficult to speak of impacts or changes in CCA in Bavaria that are direct results of the BayKLAS. Within the small focus-group discussion that is the main source for the assessments presented in this report it became clear that the discussants themselves are not satisfied with the status of the implementation and promotion of the BayKLAS on the one hand and the decrease in significance of the policy field on the other hand. Since CC continues and impacts will certainly increase in Bavaria, taking respective action is indispensable. Therefore the major challenge in Bavaria is to revive the whole topic of CCA, i.e., to promote it intensively from state level down to the local level and to raise awareness.



Several research projects are currently running, constantly expanding the knowledge base of CC and adaptation. They will likely provide additional information as basis for possible future activities in the field of CCA. To make use of the results from these projects it would be important to constantly update and enhance the BayKLAS and CCA policy accordingly. Therefore, a respective steering mechanism that guarantees the constant integration of new scientific knowledge in daily business would be needed.

11 References

BAVARIAN STATE MINISTRY OF THE ENVIRONMENT AND PUBLIC HEALTH (STMUG) (ed.) (2000): Klimaschutzkonzept der bayerischen Staatsregierung. Munich.

BAVARIAN STATE MINISTRY OF THE ENVIRONMENT AND PUBLIC HEALTH (STMUG) (ed.) (2003): Klimaschutzkonzept der bayerischen Staatsregierung - Fortschreibung 2003. Munich.

BAVARIAN STATE MINISTRY OF THE ENVIRONMENT AND PUBLIC HEALTH (STMUG) (ed.) (2007): Bavarian Climate Programme 2020. Munich.

BAVARIAN STATE MINISTRY OF THE ENVIRONMENT AND PUBLIC HEALTH (STMUG) (ed.) (2009): Bavarian Climate Adaptation Strategy (BayKLAS). Munich.

