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GoApply - Multidimensional Governance of Climate Change Adaptation in Policy Making and Practice

**WP2 Advancing the mainstreaming of climate adaptation policies and
measures**

Case study reports on the mainstreaming of climate adaptation Country Report Germany “Communal Flood Audits in Bavaria” (WP2)

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1. Introduction

1.1 Background: the GoApply project

This report is a deliverable of the project **GoApply – Multidimensional governance of climate change adaptation in policy making and practice**¹ (11/2016 – 04/2019). The project is co-funded by the Interreg V B Alpine Space Programme 2014-2020, runs under programme priority 4 “Well-governed Alpine Space” and addresses the programme objective “Increase the application of multilevel and transnational governance in the Alpine Space”.

GoApply responds to challenges, barriers and gaps related to governance that currently all Alpine countries are facing in their efforts to implement their national adaptation strategies in practice. The project aims to strengthen capacities for the governance and implementation of climate adaptation across multiple levels and sectors. In doing so, it pursues the following specific objectives in interlinked work packages:

- (1) Improving understanding of adaptation governance systems and promoting vertical coordination and cooperation for the implementation of adaptation policies across levels [WP1]
- (2) Supporting effective horizontal integration of climate change adaptation into relevant sector policies (mainstreaming) [WP2]
- (3) Strengthening more active involvement of public and non-public stakeholders in regions and municipalities and stimulating adaptation coordination structures on sub-national levels [WP3]
- (4) Sustaining, deepening and leveraging transnational cooperation, knowledge transfer and learning in the context of the EU Strategy for the Alpine Region (EUSALP) and the Alpine Convention [WP4]

GoApply tackles these objectives in a transnational approach. The project builds on the network of the national public adaptation coordinators responsible for climate adaptation policy-making in the Alpine countries. These institutions are carrying out the project as project partners and in observer roles.

WP2 – “Advancing the mainstreaming of climate adaptation policies and measures” of the GoApply project is centered around two main lines of activities:

- Analysing horizontal coordination and governance interfaces of climate adaptation and selected sector policies by means of national case studies
- Transnational lesson-drawing on mainstreaming of climate adaptation in the Alpine macro-region

The results are delivered in case study reports on country level and in a transnational synthesis product with joint lessons learnt and transferable policy recommendations for advancing the mainstreaming of climate adaptation into sector policies. The report at hand contributes to the transnational synthesis.

1.2 Goals of the report

Following the general objectives of WP2, this report seeks to improve the understanding of horizontal aspects of climate change adaptation governance through case study analysis. The analysis

¹ <http://www.alpine-space.eu/projects/goapply/en/home>

focuses on communal flood audits in Bavaria, an instrument applied on the local level in Germany to support flood risk precaution activities in municipalities. The report follows the structure laid out in the guideline for case study analysis provided by project partner 5 (FLA). Emphasis is put on describing the audit procedure, its contribution to mainstreaming on the local level, the most important success factors and barriers for implementation as well as lessons learned and recommendations for transferability.

1.3 Methods

The methodological approach is based on the concept and guidelines provided by project partner 5 (FLA). The case study was chosen based on expert assessment and deliberation within UBA-DE and the GoApply project consortium. The analysis is based on:

- Document analysis: In order to gain insight into the case studies' setup, to build upon previous analyses and to prepare the subsequent steps of the analysis, a qualitative document analysis was conducted.
- Expert interviews, which were designed and conducted as qualitative, semi-structured expert interviews (Bogner et al. 2005). The interviews were conducted as telephone interviews. The interview material, based on audio transcripts and additional field notes was examined via qualitative content analysis (Patton 2002).

1.4 Technical terms and concepts

Regarding the analytical dimensions of the work package approach, we follow the definitions the lead partner (UBA AT) and project partner 5 (FLA) have laid out for core concepts of the analysis:

Entry points refer to the most important triggers that put adaptation governance on a sectoral policy agenda or initiate adaptation governance processes across sectors.

Saliency: The relevance of climate change adaptation and its priority relative to other policy issues; usually displayed by explicit mentioning of adaptation as a goal in respective framework documents. In a broader sense, saliency refers to the level of relevance of adaptation within an administration, government or political arena.

Coherence: The alignment and harmonization of different sectoral policies with each other and with climate adaptation goals in order to minimize conflicts, avoid trade-offs, and foster mutual synergies towards achieving common overarching adaptation outcomes. In this case study, we refer to coherence as the effort to mainstream flood precaution activities into different municipal responsibilities. While it is not possible to evaluate coherence in terms of policy outcomes in our case study, the analysis focuses on the potential of the examined instrument to promote coherence.

Awareness and capacity: Awareness of adaptation as a (cross-)sectoral policy issue is closely related to saliency and always connected to actors. Capacity refers to the availability of resources needed to successfully engage in adaptation and its mainstreaming. It comprises material and immaterial resources; most important are budget, time, workforce, expertise, and skills.

Horizontal governance: Horizontal governance of adaptation relates to the ways that actors from different sectors, either within the same organization or from different organizations, exchange information, cooperate, and coordinate their adaptation activities.

2. Summary of the case study

The Communal Flood Audit (German: "Hochwasseraudit"; henceforth: audit) seeks to improve flood risk preparedness of municipalities in Germany and to support municipal administrations in their effort to develop comprehensive, strategic approaches to flood risk management. The audit provides municipalities with a stock-taking of the status of preparedness towards flood risks, analysis of existing gaps concerning prevention and precaution as well as possible options for measures to be taken. Core element of the instrument is an indicator-based analysis conducted during a two-day on-site procedure facilitated by licensed auditors. The audit primarily addresses municipal administration officials but aims at raising awareness about flood risk and precaution options among citizens, local businesses and civil society organizations alike. Focus points are existing knowledge and expertise within the municipal administration as well as non-technical measures such as improvements in coordination, cooperation and risk communication.

Success factors

- Concise, indicator-based concept which emphasizes benefits for target groups;
- Auditors as external facilitators;
- Focus on communication and information regarding flood precaution;
- Dedicated facilitators from within the municipality.

Barriers

- Lack of awareness;
- Lack of resources and coordination;
- Reluctance to engage due to silo mentality / fear of additional tasks;
- Limited take-up of follow-up audits.

Lessons learned and recommendations for transferability

- Build on existing experiences and achievements, communicate successful efforts;
- Strengthen positions for coordination; check synergies with climate management positions;
- Emphasize communication about benefits and scope;
- Strengthen horizontal ties and co-learning between municipalities;
- strengthen the coordination with state and federal level administrations;
- Ensure financial support for the municipalities.

3. Characterization of the Case Study and its context

This case study examines an instrument which municipalities can use to strengthen their capacity for governance of adaptation to climate change, with regard to flood risks from fluvial floods and heavy rain events. The study focuses on the instrument – the communal flood audit – itself, rather than on a specific case study area. The thematic focus of the instrument, as well as the fact that the audit has been conducted in more than 30 municipalities in Bavaria, point to the relevance of the case study for the scope of the GoApply project.

The communal flood audit seeks to encourage municipalities to develop strategic approaches to flood risk management, beyond structural or technical measures. Special emphasis is put on awareness-raising, communication and cooperation between relevant actors in municipal administrations.

The official title of the audit in external communications is “Flood Audit – How well are we prepared?” (German: “Audit Hochwasser – wie gut sind wir vorbereitet”). The instrument is developed and implemented by the German Association for Water, Wastewater and Waste (DWA; German: “Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall”). The DWA is an association promoting sustainable water and waste management, mainly through research, advisory services, industry standard development, communication and information work.

The overarching objective of the instrument is to protect people, property and cultural assets against flood events on the local level. The audit offers municipal administrations a stock-taking of the status of preparedness within the territory of the municipality. It focuses on information and data available within the various parts of the administration, analysis of existing knowledge gaps as well as possible options for improving flood preparedness.

The instrument emphasis awareness-raising about flood risks and means of communication, addressing all relevant municipal administrations concerned with flood precaution and civil protection. Typically, the target groups include representatives from

- the land use planning authority,
- building and civil engineering (“Bau-/Tiefbauamt”)
- water management (“Be- und Entwässerung”),
- civil protection agency (“Katastrophenschutz”),
- office of public order (“Ordnungsamt”),
- fire brigade and police,
- civil protection organizations such as the Red Cross or local volunteer groups of the Federal Agency for Technical Relief (“Technisches Hilfswerk”, THW),
- municipal maintenance enterprise (“Kommunale Bauhöfe”) and similar businesses which carry out municipal duties

In addition, the audit aims to raise awareness for self-precaution activities among building authorities, developers, business association etc.

3.1 The case on a timeline

The concept for the audit instrument was developed between 2007 and 2010 by the DWA working group “indicator system for the assessment of flood prevention” (“Indikatoren-System zur Bewertung der Hochwasservorsorge”).

The audit’s framework was published in 2010 in the guideline “DWA-M 551”. During a two-year pilot phase, approx. 20 audits were conducted nationwide, starting in 2011. Audit implementation was

financially supported by the German Federal Environmental Foundation (Deutsche Bundesstiftung Umwelt, DBU), which enabled the implementation of audits with reduced co-finance contributions by municipalities. Since 2016, the audits are subject to financial support granted by the Bavarian State Ministry for the Environment and Consumer Protection (StMUV) through co-financing up to 75% of the total cost. As of early 2019, 33 audits have been conducted in municipalities in Bavaria.

3.2 Description of the procedure

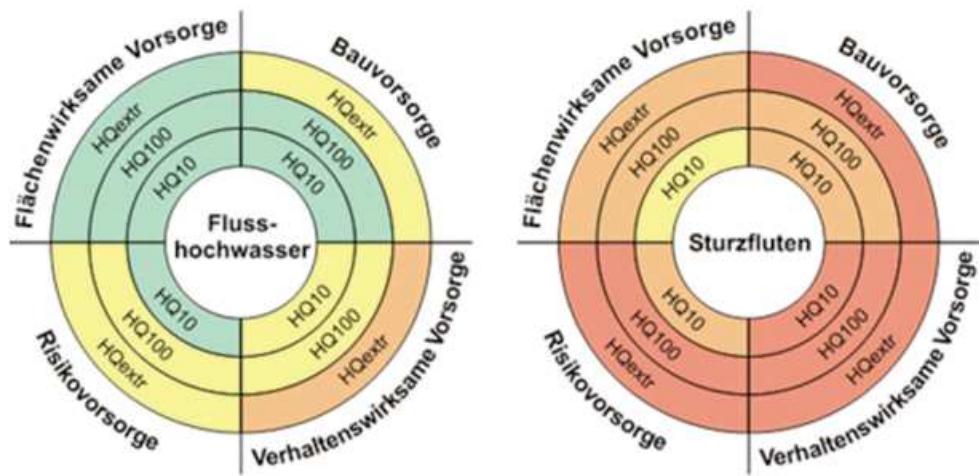
The communal flood audit is a comprehensive auditing tool which, at its center, has a dialogue-oriented survey procedure, which is conducted on-site in the municipalities over the course of two days by licensed auditors with representatives of the target group. The auditors are commissioned by the DWA at the request of the municipalities. In a preparatory phase, auditors establish contact with relevant stakeholders in the administration.

The audit procedure focuses on information on flood risks as well as options for risk reduction measures accessible in the municipality. In a first step, the auditors conduct a stock-taking of existing floods prevention efforts via document analysis. The main part of the audit is an extensive group discussion with the expert participants. Availability and quality of the information are evaluated, as are non-technical measures such as risk communication, information provision to the public, advisory service provision, e.g. to land developers and home-owners and civil protection measures regarding flood risk. Technical/structural measures may be discussed as part of taking stock, but are not subject to the assessment itself.

Core output of the process is a detailed audit trail (“Audit-Protokoll”) which provides a detailed account of facts and findings gathered as well as the auditors’ assessment through 35 indicators and characteristics. These indicators are structured along the main fields of action addressed:

- Land-related precaution („Flächenwirksame Vorsorge“)
- Building precaution (“Bauvorsorge”)
- Behavioral precaution (“Verhaltenswirksame Vorsorge”)
- Risk prevention (“Risikovorsorge”)

Results are presented separately for both thematic areas – river flooding and flash floods - and summarized in so called “flood precaution traffic lights” which provide a quick overview of the status of preparedness (see figure 1). The results are given for three types of flooding scenarios: frequent flood occurrences (“HQnorm”), floods with average probability (“HQ100”), and extreme flood events (“HQextr”).



- green areas: "all homework done", no additional precaution needed
- yellow areas: "good level of precaution, but still work to do"
- orange areas: "promising approaches, but still a lot of work to do"
- red areas: "precaution desert", no significant approaches yet

Figure 1: Example flood precaution traffic light. Source: modified after DWA/Barion 2015

The audit trail itself does not provide specific recommendation for measures to be taken; the audit emphasizes the decision-making authority and autonomy of the municipalities. The documents provide a detailed status quo of the flood risk preparedness in the municipality. However, as part of the audit process, the auditors provide municipalities with a collection of best practice measures and initiatives taken by other municipalities in similar situations as a means of awareness-raising and support of further local precaution work. Municipalities can use the list to prioritize and allocate responsibilities and establish a time-line for measure implementation.

Furthermore, DWA encourages audited municipalities to enter into an informal network in order to foster exchange and learning on local precaution work. Exchange and learning processes are supported by input from the auditors. Follow-up audits, to be conducted within approx. 6 years after the initial procedure, are recommended by the DWA in order to monitor, document and communicate progress being made by municipalities.

4. Case study analysis

4.1 Entry points

The audit instrument can be described as an informal, indicator-based check tool which municipalities can implement on a voluntary basis in order to take stock of how well they are prepared against river floods and storm flood events.

Triggers for the development of application can be found in the political framework regarding flood risk management and adaptation to climate change. Based on the EC flood risk management directive (HWRM-RL) adopted in 2010, flood risk maps were developed, detailing flood risk areas and assets under flood risk. These provided the basis for the development of flood risk management plans, which elaborated measures for reducing flood-related impacts on human health, the environment, cultural and economic assets. Beside structural and technical measures, the

management plans emphasize the role of precaution and risk reduction activities, risk awareness and communication as well as civil protection.

The German Federal Water Act (“Wasserhaushaltsgesetz”, WHG) of 2010 translates the HWRM-RL into national law. The HRRM-RL as well as the WHG include references to changing flood risks as a result of climate change as well as the necessity to include new information about climate change impacts in the design and further development of current and future flood risk management measures.

The German National Adaptation Strategy (DAS), adopted in 2008, shows a high level of concordance with the HWRM-RL regarding the area of flood protection. The Adaptation Action Plan (APA I) of 2011 elaborates concrete measures for the federal level; emphasis is put on precaution measures which are robust, flexible and adaptive, i.e. can take future climate developments into account and be supplemented accordingly.

Moreover, there is an increased awareness that purely technical measures for flood protection have their limits as a complete and exhaustive protection against any possible flood event is technically and economically not feasible. Therefore, precaution and prevention measures have garnered more attention along with a shift towards “soft” measures which focus more on risk reduction through information gathering and sharing, communication and new modes of cooperation.

Municipal administrations are key actors in flood risk management, given their statutory obligations and their interlinking role between different actors concerned with precaution activities. Therefore, the DWA has tailored the audit to meet the information requirements of municipalities and support them in their work towards adaptive flood precaution.

4.2 Saliency

Saliency, in the scope of this analysis, is interpreted as tracking the relevance of climate change adaptation through explicit mentioning in framework documents of the case study. In a broader sense, we also considered possible starting points, where incentives for mainstreaming of adaptation and horizontal integration of activities (from agenda setting to implementation of measures) could occur.

Following documents with direct connection to the audit have been screened for direct reference to climate change adaptation as well as for climate change adaptation topics:

- Reports of two audits conducted in municipalities in Bavaria
- DWA framework guideline on the audit (DWA-M 551)
- Project report DBU project No. 28659-23
- Various material of the DWA promoting or presenting the audit to its target groups (flyers, PowerPoint presentations, journal articles)

As flood risk management and civil protection are the central focus of the audit, references to these fields of action of climate change adaptation are ubiquitous throughout all related documents. Due to its cross-sectional character focusing on multiple sectors (see description of procedure), points of reference to these sectors are made as well.

As the communal flood audit is tied to the larger framework of flood risk management, we screened the political and legal framework documents as well, i.e.

- EC flood risk management directive (“Hochwasserriskiomanagement-Richtlinie HWRM-RL”, Directive 2007/60/EC)
- German Federal Water Act (Wasserhaushaltsgesetz, WHG, 2010)

- LAWA (“Bund-Länder-Arbeitsgemeinschaft Wasser” -Working group of the German federal states on water issues) - Recommendations for flood risk management plans (2010)
- For the State of Bavaria: Recommendations for flood risk management plans in Bavaria by the State Ministry for Environmental Protection (2014)

All of these documents make explicit reference to climate change, its impact on future flood risk development and the necessities to take climate change impacts into account when tackling flood risks, with particular reference to updating flood risk management plans in order to account for future climate change developments. On a strategic level, there is a high level of concordance between the HWRM-RL and the German National Adaptation Strategy (DAS); in fact, the DAS refers explicitly to the HWRM-RL regarding flood protection.

Interestingly enough, the documents on the audit itself make no explicit reference to climate change adaptation. The information is largely focused on flood risk prevention itself. Interview feedback provided two reasons for this: Firstly, the timeline and path dependency of the audit's development. The concept was developed starting in 2007 in close relation to the flood risk management framework development; a strategic approach towards implementing climate change adaptation on a local level was not yet advanced at the time. Secondly, the focus on core issues for target groups: presenting municipal administration actors with extreme events and their impact on the municipality does not necessarily require future climate change impacts, according to the interview partner, as these extreme events occur within “normal” variability. The audit does not focus on a single event, but rather emphasizes the total portfolio of available information, knowledge gaps and options for development in the municipality.

The work of the DWA working group coincided with the adoption of the HWRM-RL. In consequence, the indicator system was developed in order to support HWRM-RL implementation in municipalities and to improve operational usability of the goals of the HWRM-RL. (Pfluegner 2013). Moreover, the indicator system development was closely coordinated with the relevant LAWA committees to take into account their policy recommendations for flood risk management.

4.3 Coherence

Promoting coherence between different municipal activities with regard to flood risk management is the core of the audit's objectives. The integration of different sector activities is achieved through the audit process itself, by involving stakeholders from all relevant administrative units as well as the analysis and presentation of results for the four core areas (see procedure description). The indicator system of the audit itself ties flood risk management to further municipal fields of action such as land use planning, public health, environmental issues, protection of cultural heritage and critical infrastructures.

The degree of actual integration depends not only on previous experience with inter-sectoral flood precaution, but also on institutional setup and resources available in the municipalities. Experiences of the DWA show that especially in smaller communities without previous strategic approaches, the audit often is the first opportunity for representatives from different authorities to come together and enter an exchange on available information, sector-specific activities, and requirements for resources and action.

In order to ensure coherence, the auditors are key figures within the process. Their responsibility is not only to introduce, implement and analyze the audit procedure. They also contribute to laying the groundwork for improving cooperation within the administration. In some cases, auditors need to alleviate concerns among administration experts, that the audit is an assessment of their performance or demands justification for steps not yet taken. They emphasize that the audit is a

chance for the administration to showcase, which measures are already in place and which information is already available.

Auditors facilitate co-learning and networking activities between participants, especially in municipalities where administration officials come together to deal with flood preparedness in a cross-sectoral manner for the first time. Based on the informal character of the audit, the instrument itself has no “coherence enforcing” aspects. Responsibility for achieving coherence through actual implementation of measures lies with the municipalities themselves. Through recommendations for good-practice measures by the auditors and formulation of specific goals, the municipalities can prioritize areas for improving coherence. The recommended follow-up audit six years after the original procedure presents an additional check on achieved coherence and need for further efforts and can thus be applied as a tool for monitoring progress.

Broadening the perspective of coherence beyond the single municipality, administrations can benefit from participating in the network of audited municipalities promoted by the DWA through sharing experiences and learning on coherence efforts undertaken.

Finally, neighboring communities, e.g. along rivers can use lessons learned from the audit to work together more closely in order to solve common challenges regarding flood prevention. The DWA emphasizes that each municipality should first clarify their own priorities and approaches through the audit; in a second step the identification of common problems e.g. related to upstream-downstream issues as well as possible interfaces and areas for cooperation is recommended. Lessons from the audit can help to foster these partnerships.

4.4 Awareness / Capacity

Just as coherence, awareness-raising is one of the core objectives of the communal flood audit. The audit is in essence an instrument to tackle the topic of flood risk management in a more strategic way through increasing awareness and cooperation between different entities within the municipal administration. The dialogue-based nature of the audit itself contributes to awareness-raising among municipal stakeholders. The audit raises awareness about the specific risks for the municipality posed by fluvial floods and flash floods e.g. by simulating a virtual extreme event in order to highlight where preparedness is already high and in which areas there is room for improvement. The audit also specifically raises awareness about the importance of non-structural/ non-technical measures such as risk communication and information of the public. Therefore, even though administration officials are the primary target group, the audit also promotes awareness about flood risks and adaptation needs among further stakeholders, such as land use developers, business associations and the larger public.

Naturally, the initial level of awareness differs from municipality to municipality and is dependent on a number of factors, including previous experiences with extreme events, public interest, media coverage, role of facilitators and key persons, and political priorities. Experiences show that in general, awareness of flood risk issues has increased over time.

Perception of requirements and awareness of actual needs has also shifted over time, according to DWA experts. In the early days of the audits (starting in 2011), information availability about flood risks on the internet, e.g. through flood risk maps was not comprehensive and not as widely known as today. Thus, municipal actors appreciated the insight gathered through the audit, that they could find websites such as the flood control centers (“Hochwasserzentralen”) that provide easily accessible information which could also be easily communicated to the citizens.

Today, information availability remains crucial. However, administration officials and citizens alike are generally much more aware and sensitized about flood risks. Increased networking and cooperation between state and municipalities has led to improved provision of information. Current

challenges include awareness-raising regarding the need for self-precaution (“Eigenvorsorge”) measures e.g. for businesses and home-owners. Within the administration, connecting agencies and activities with regard to information exchange, risk prevention and response planning have come to the fore.

Awareness-raising through the audit requires awareness-raising about the audit, of course. Here, the auditors themselves are crucial, but so are the initiators/facilitators of the audit in the municipality themselves. They need to bring all relevant institutions and experts to the table, act as contact persons for questions raised in advance and create and promote entry points for the audit procedure.

4.5 Horizontal Governance

The challenges for horizontal governance improvement are, in part dependent on how and by whom the audit is facilitated and supported in a municipality. Typically, there are two approaches:

Firstly, the audit procedure can be driven by the mayor of the municipality. This is often the case in smaller municipalities with a less differentiated public administration structure. Oftentimes, the motivation for conducting the audit includes political aspects, such as responding to citizens demands to tackle the issue of flood prevention and to demonstrate and communicate the actions taken by the administration, usually against the backdrop of previously experienced extreme events in the municipality.

The mayor can use his or her authority to ensure audit implementation and sufficient participation of relevant experts by virtue of the office. This top-down approach also ensures political support for the audit. On the other hand, top-down approaches can come along with reservations or reluctance to actively and fully participate, which need to be alleviated. Moreover, a top-down approach needs to emphasize the open and unbiased nature of the process and promote open exchange and discussion among all experts.

Secondly, experts for environmental or water management issues in the respective agencies are the drivers of the audit procedure. This is often the case in larger municipalities with a more differentiated administrative structure and more resources available. In this instance, facilitators are often motivated by problem pressure and expert knowledge about the necessity for e.g. increased cooperation, information exchange, resource pooling etc. In this more bottom-up approach, initiators need to raise the issue and gather political support within the municipality, i.e. convince mayor and city council to fund the audit and also ensure participation from all relevant offices within the administration – which is again dependent on political support. In essence, top-down or bottom-up approaches both work for promoting the audit, but they come with different sets of challenges.

In general, since the explicit objective of the audit is to increase cooperation within and between administrative offices, the aspiration for intra- and inter-institutional governance is high (for involved sectors, see description of the case study above). The audit also seeks broader involvement of municipal stakeholders such as public land developers and business associations. Civil society organizations such as environmental stakeholders may be involved, but with a focus on their role as experts with knowledge of relevant issues and procedures in the municipality.

4.6 Success factors regarding mainstreaming and horizontal governance

Concise, indicator-based concept which emphasizes benefits for target groups: The audit concept with its 35 indicators collected through a dialogue with experts is concise, easy to understand, covers all relevant sector activities and lays the groundwork for development of measures, implementation

and monitoring. It provides municipalities with an overview about available information as well as gaps regarding precaution while at the same time promoting existing expertise and experience. The auditing process provides municipalities with options while emphasizing that prioritization, actual development and implementation of measures is the responsibility of the municipality itself.

Auditors as external facilitators: The licensed auditors do not only bring their expertise on flood risk management and their experience from previous audits to the table. They also act as external, neutral facilitators and use the audit procedure to create a forum where stakeholders come together - often for the first time in this particular context - to exchange and learn about sectoral activities, information and data available, requirements for further action and resources.

Moreover, the **focus on communication and information regarding flood precaution** in itself is a strength of the concept, since it emphasizes existing knowledge, resources and experiences and thus supports synergies and more efficient use of resources between different units of the administration. In addition, using the audit and its results as a means to inform and communicate about flood risk management is also seen as important in order to motivate citizens and private companies to implement self-precaution measures and thus promote long-term pursuit of the issue.

Successful audit procedures are impossible without **dedicated facilitators from within the municipality**. Their responsibility is to gather political support for conducting the audit, motivate relevant stakeholders to participate, coordinate information gathering and exchange and ensure that audit results are translated into actionable measures after completion of the procedure.

4.7 Barriers regarding mainstreaming and horizontal governance

Lack of awareness within the administration as well as among local decision-makers can impede initialization and implementation of the audit. Likewise, a lack of urgency or low political prioritization presents an obstacle towards engaging in the audit process.

Lack of resources and coordination within the administration can prevent the initialization of the audit and / or hinder the implementation itself. In the early phase of the audit, lack of available municipal funding was stated as a barrier, even though the cost-benefit-relation was seen as beneficial. The funding support program of the state of Bavaria has remedied this issue to a large extent, although municipalities still have to shoulder a co-financing share of the audit's costs. In addition, the audit itself does require some preparation of data and information by administration officials as well as input during the audit procedure itself. The audit is a condensed two-day procedure which requires commitment among municipal actors and accommodation of schedules (Pfluegner 2013). This additional workload can lead to reluctance to participate.

Reluctance to engage due to silo mentality / fear of additional tasks: Exchange and new information available through the audit can create additional tasks and responsibilities – which might lead to some stakeholders being reluctant to participate, especially given resources constraints. Experience shows, that sometimes administration officials do not see the necessity for an audit as they view the execution of their regular municipal duties as sufficient. Moreover, since the audit focuses on stock-taking and gap analysis, administration officials might perceive the audit as a means of performance assessment. Part of the responsibilities of the auditors is to convey the benefits which result from increased cooperation and information exchange.

Limited take-up of follow-up audits: In the past, the option to conduct a follow-up audit after six years has only been reluctantly picked up upon by municipalities. Follow-up audits can provide important insights on progress made, existing gaps and needs for re-prioritization. They are also intended to increase commitment to measures decided upon based on the initial audit. The DWA has reacted by proposing a smaller, less complex audit after three years as a step in between.

4.8 Lessons learned and recommendations for transferability

Build on existing experiences and achievements, communicate successful efforts: The stock-taking during the audit in municipalities can be used to demonstrate which efforts have already been undertaken as well as showcase the knowledge and experience that local experts have regarding flood risk management. Building on existing activities helps gaining momentum for new measures, ensures that resources are used more efficiently instead of “re-inventing the wheel” and can also motivate actors to actively participate in the audit and its aftermath.

Strengthen positions for coordination; check synergies with climate management positions: Coordination of flood risk management activities within the administration is essential, especially in larger municipalities with a more complex administrative structure. The position of a “caretaker” (“Kümmerer”), tasked with coordination of precaution activities can greatly promote cooperation and advancement of flood preparedness. If applicable, administrations should examine the benefits of linking this coordinative role with climate management offices which fulfill similar responsibilities regarding climate change mitigation and adaptation. Closer links can create synergies and further strengthen mainstreaming efforts. Obviously, increased responsibilities would have to go along with political backing and increased resources for such offices / positions.

Emphasize communication about benefits and scope auf the audit. Communication activities ahead of, throughout, and after the audit procedure are essential to ensure success. Facilitators need to ensure that target groups understand the scope of the instrument and see benefits for their own work. This includes *expectation management*, i.e. communicating that the audit does not implement specific measures, is not focused on technical or infrastructure measures and should rather be seen as an elementary instrument for municipalities which can lay the foundation for a more comprehensive approach of flood risk management.

Strengthen horizontal ties and co-learning between municipalities: The audit provides two promising approaches to foster knowledge exchange and cooperation between municipalities. Firstly, the German network of audited municipalities aims to foster exchange of experiences and learning from good practices. Secondly, audit results and recommendations can lay the groundwork for neighboring municipalities to establish or increase cooperation. There are examples for increased inter-municipal cooperation along rivers, such as the flood partnerships (“Hochwasserpartnerschaften”) between municipalities in the federal state of Rheinland-Palatinate which are supported by the state government. Strengthening learning opportunities and cooperation through horizontal networks is highly recommended.

Municipalities should also use these ties to **strengthen the coordination with state and federal level administrations**. This relates to issues such as provision of adequate information and data about risks and impacts from state level to municipalities, e.g.: do local fire brigades know what to prepare for if river levels rise at a certain pace? It also concerns the way the information is communicated in the case of extreme events as well as the coordination of state and municipal response forces in cases of emergency. Improved coordination means that municipalities can increase their level of preparedness, while state and federal administrations can better communicate priority topics to the municipalities. Moreover, closer cooperation between municipalities can help to form and communicate joint policy positions to the state and federal level, e.g. regarding funding schemes better tailored to local needs. (For more information on aspects of vertical governance see also analysis conducted in GoApply work package 1.)

Ensure financial support for municipalities. Funding schemes like the state of Bavaria provides for the audit are essential to support application of voluntary instruments such as the audit on the local level. Not only do they support municipalities in the fulfillment of their statutory duties; supporting

voluntary, “soft” instruments can provide entry points for more comprehensive approaches to mainstream adaptation issues and thus increase climate resilience on the local level.

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