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Methodology for the evaluation of the German adaptation strategy

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Methodology for the evaluation of the German adaptation strategy

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by

Christian Kind, Theresa Kaiser
adelphi, Berlin

Hansjörg Gaus
CEval, Saarbrücken

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Wörlitzer Platz 1


06844 Dessau-Roßlau

Tel: +49 340-2103-0

Fax: +49 340-2103-2285

buergerservice@uba.de

Internet: www.umweltbundesamt.de

 [/umweltbundesamt.de](https://www.facebook.com/umweltbundesamt.de)

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adelphi

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Kurzbeschreibung:

Methodology for the evaluation of the German adaptation strategy

Im UFOPLAN-Projekt „Evaluierung und Weiterentwicklung der DAS“ haben die Auftragnehmer adelphi und CEval eine Methodik zur Evaluation der Deutschen Anpassungsstrategie fachlich vorbereitet, mit relevanten Akteuren abgestimmt und erprobt. Die Methodik wurde von der Interministeriellen Arbeitsgruppe Anpassung IMAA beschlossen. Mit dieser Methodik soll die Fortschreibung der DAS kontinuierlich evaluiert werden. Der erste Evaluierungsbericht ist für 2019 vorgesehen. Langfristig gilt es mittels der Methodik zu überprüfen, ob die Maßnahmen und Instrumente im Rahmen der DAS geeignet sind, das Ziel der DAS „die Verminderung der Verletzlichkeit bzw. der Erhalt und die Steigerung der Anpassungsfähigkeit natürlicher, gesellschaftlicher und ökonomischer Systeme an die unvermeidbaren Auswirkungen des globalen Klimawandels“ zu erreichen. In einem ersten Schritt sollen im Rahmen der Evaluierung Erkenntnisse für die Weiterentwicklung und Optimierung des DAS-Prozesses gewonnen werden. Die entwickelte Methodik basiert auf einem für die Evaluation konzipierten Wirkmodell aus dem fünf zentrale Evaluationsfragen abgeleitet wurden. Für die Erhebung der benötigten Daten kommt ein Multimethodenansatz zur Anwendung, welcher unter anderem aus einer Dokumentenanalyse, mehreren Interviewreihen sowie der Auswertung von Indikatoren besteht. Die Auswertung der Daten erfolgt entlang definierter Haupt- und Teilkriterien. Diese Vorgehensweise erlaubt eine nachvollziehbare und transparente Aufbereitung der Evaluationsergebnisse. Um die Ergebnisse zu validieren ist außerdem eine Delphi-Befragung geplant, bei der für den Politikprozess zentrale Akteure einbezogen werden. Der vorliegende Bericht enthält die entwickelte Evaluationsmethodik, eine Beschreibung der zur Anwendung kommenden Erhebungsinstrumente sowie die Vorstellung der Herangehensweise, mit der die Methodik entwickelt wurde.

Abstract: Methodology for the evaluation of the German adaptation strategy

Within the UFOPLAN-project „Evaluation and further development of the DAS“ adelphi and CEval have prepared a concept for the evaluation of the national German adaptation strategy (DAS). The concept was discussed and tested with relevant actors and will be used for the actual evaluation of the strategy in 2017 and 2018. The final concept was approved by the interministerial working group on adaptation. The concept will be used to continuously review the evaluation process in Germany. The first evaluation report will be presented in 2019. In the long term, the evaluation concept shall be used to check whether the activities and instruments of the adaptation process are suitable to achieve the main goal of the DAS: “to reduce vulnerability and improve the adaptive capacity of ecologic, social and economic systems towards the unavoidable impacts of climate change.” In a first step, the evaluation shall be used to gain insights for the advancement and improvement of the adaptation process in Germany. The concept is based on a logic model designed for the evaluation from which five central evaluation questions were derived. A multi-method approach is used to collect required data and information. Instruments that will be used for data collection are, amongst others, a document analysis, several interview series and the analysis of indicators. Data will be analysed along defined criteria which ensures that the evaluation results are comprehensible and transparent. In order to validate results, a Delphi-survey will be conducted with central actors that are involved in the adaptation policy process. This report presents the evaluation concept, a description of the survey instruments that shall be used and a detailed description on how the concept was developed.

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1 Introduction

1.1 Project background

On 17 December 2008, the Federal Cabinet adopted the German strategy for adaptation to climate change (DAS), thus providing the foundation for adapting to the impacts of climate change in Germany. With the DAS process, the Federal Government seeks to pool all current research on national adaptation that is conducted by the different ministries in a common strategic framework. The overarching long-term objective of the DAS is to “reduce vulnerability and improve the adaptive capacity of ecological, social and economic systems towards the unavoidable impacts of climate change” (Federal Government 2008: 5).

The Federal Government has set up an interministerial working group on adaptation (IMA Anpassung or IMAA) comprising representatives of almost all ministries under the leadership of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) for the purpose of managing the interministerial strategy process. The coordination of adaptation activities between the Federal Government and the federal states is the responsibility of the Standing Committee for the Adaptation to Climate Change Impacts (StA AFK), which is part of the Federal Government/Federal State Working Group on Climate, Energy, Mobility and Sustainability (BLAG KliNA).

The 2008 adaptation strategy provides an overview of the expected opportunities and risks of climate change for 15 fields of action and defines key principles and overriding objectives of adaptation in Germany. In 2012, the Action Plan for the German Climate Change Adaptation Strategy (APA I) was drawn up to define specific activities that are to be implemented by the Federal Government based on the objectives and action options detailed in the DAS. The adaptation process in Germany is subject to continuous improvement. For this purpose, the Federal Government presented a Progress Report at the end of 2015, which detailed specific steps for the further implementation and updating of the DAS. It contains information on the state of implementation of APA I and updates it, thus creating the APA II. The Progress Report also provides an overview of the current knowledge on climate change impacts and vulnerability in Germany based on the content of two reports from the same year.

- ▶ **Monitoring Report:** Based on a defined indicator system, the Monitoring Report describes both observed consequences of climate change and current climate change adaptation activities in Germany. The report and the underlying indicator system were adopted by the IMA working group on adaptation.
- ▶ **Vulnerability Analysis:** The Vulnerability Analysis was carried out by the Vulnerability Network¹ and examines the risks of climate change for Germany and identifies particularly vulnerable regions and fields of action in Germany. As a result, needs for action for the Federal Government were prioritised. The methodology used for the Vulnerability Analysis was developed and approved in close cooperation with the IMAA working group.

¹ The Vulnerability Network is a network consisting of higher federal authorities. The network was set up with the objective of providing an overall picture of Germany's vulnerability to climate change.

The 2015 Progress Report is an update of the DAS. In view of the continuing development and ongoing optimisation of the DAS process, the IMAA recognised in its 2015 Progress Reports that regular evaluation would be a useful instrument and integrated this in the report as follows:

“The IMA will evaluate the activities of the Federal Government regarding the DAS process and the state of implementation of APA II on a regular basis in order to assess the progress made in adaptation to climate change in Germany and in order to make adjustments, if necessary. For this purpose, the IMA will develop an approved methodology, based on which the working group will perform the first evaluation at the latest by 2019.”

On this basis, adelphi and CEval have developed a methodology for the evaluation of the DAS as part of the UFOPLAN project “Evaluation and further development of the DAS” (FKZ 371541 1060) on behalf of the German Environment Agency. This methodology was discussed with the process steering bodies (IMAA, StA AFK) and approved by the IMAA. This report contains a detailed description of the approved evaluation methodology. First, the objectives, functions and limits of the DAS evaluation are discussed in chapter 1, chapter 2 then describes the evaluation methodology. Chapter 3 provides details on the methods of data collection; the following chapters address the approach to analysing the collected data (chapter 4), reporting (5) and how to proceed during subsequent evaluations. Chapter 7 documents how the presented evaluation methodology was developed.

1.2 Objectives and functions of the evaluation

The comprehensive objective of the evaluation is to determine whether the DAS process is well suited to achieve the adaptation objectives, i. e. reducing vulnerability and improving the adaptive capacity of ecological, social and economic systems in Germany.

The evaluation is to fulfil several functions:

1. Knowledge function: Generation of knowledge about the object of evaluation (DAS process);
2. Accountability function: Checking whether planned measures have been implemented;
3. Learning function: Identification of success factors and challenges affecting the implementation of DAS and creating transparency as a basis for a common learning process;
4. Legitimation function: Documentation of achievement of objectives.

In addition, the following framework conditions for evaluation were defined in cooperation with relevant stakeholders:

- ▶ The evaluation is to be carried out on a regular basis in the future. Therefore, the methodology
- ▶ is to be repeatable, transparent and easily understandable.
- ▶ The evaluation is to be carried out in the form of external evaluations.
- ▶ The methodology is to be designed so as to provide simple, easily understandable results.
- ▶ Relevant insights or products (Vulnerability Analysis, Monitoring Report, Interface Report) that are already available from the DAS process should be included in the evaluation to avoid unnecessary work and utilise synergies.
- ▶ The evaluation should be unbiased.
- ▶ The key recipient of the evaluation results is the Federal Government, i. e. the recommendations developed as part of the evaluation should be within the implementation area of the Federal Government.

All of these aspects were taken into account in the development of the evaluation methodology and should be equally considered when performing the evaluation.

1.3 Possibilities and limits of the DAS process evaluation

Numerous challenges relating to the evaluation of climate change adaptation activities are identified in the literature (see for example, Bours et al. 2014, OECD 2015 or Klostermann et al. 2015), many of which were relevant to the development of the DAS evaluation methodology as well. In light of these challenges, most of which are not unique to the topic of adaptation, the possibilities and limits of the DAS process evaluation should be discussed as well:

- ▶ Due to the multitude of factors determining vulnerability, it is hardly possible to identify causal relationships between individual measures and change if vulnerability assessments are aggregated. However, it is possible to assess the impact of measures on the recipient of a particular measure (outcome level, see below) and, in the medium-term, to establish plausible relationships between measures and determinants of vulnerability in subject-related or regional areas.

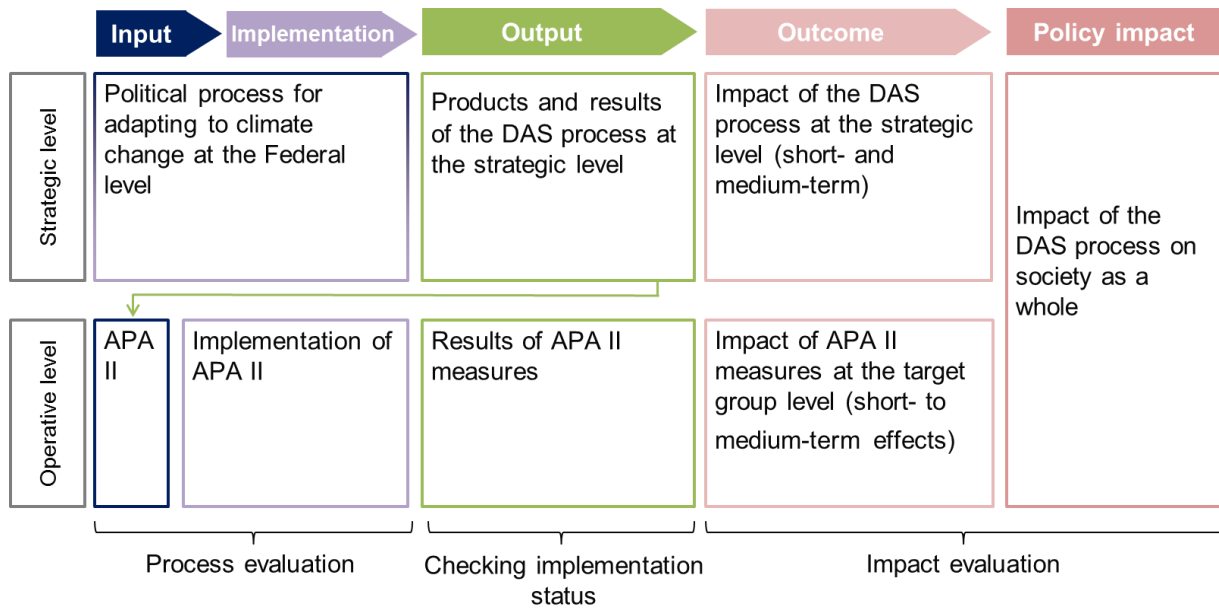
- ▶ There are numerous and varied climate change adaptation activities on different levels in Germany: From the level of the Federal Government to the municipal level, neighbourhoods, individuals and companies. In view of the great number of activities, it will hardly be possible to cover all activities throughout Germany and to determine to what extent they were triggered by the efforts of the Federal Government. Thus, the focus should be on analysing the activities of the Federal Government.
- ▶ Since the wording of the DAS objectives is fairly general, the evaluation will enable us to describe the progress and development with respect to adaptation, but it does not seem feasible to provide detailed information on whether any progress is sufficient or not.
- ▶ Assessments of a change in vulnerability cannot be provided (at least in the next evaluations) since those can only be made over an extended period of time.
- ▶ As the evaluation was to be repeatable and time and resources were to be spent as efficiently as possible when implementing it, the evaluation is based mainly on pre-existing knowledge and data. As a consequence, some fields of action can be explored in more detail than others – since more data is available for some fields of action than for others.

2 Evaluation methodology

2.1 Logic model

Based on the requirements defined with respect to the evaluation and the objects of evaluation that were to be taken into account, a logic model was developed that serves as a conceptual framework for the evaluation and represents all major process steps and their interaction.

Figure 1: Logic model for DAS process evaluation



Source: Illustration by adelphi

The logic model comprises a strategic level and an operative level. The strategic level represents the policy process for developing and improving the DAS. The operative level shows the implementation of the DAS, focussing on the Adaptation Action Plan II: Both levels contain the usual elements of a logical model, from input and implementation to the result (output) to the effect (outcome and impact). At a strategic level, input and implementation are aggregated.

Basically, the logic model deduces the following causal relationships from the DAS process: The key documents of the DAS process, such as DAS or APA I, were compiled using specific human and financial resources (input) and in cooperation with different stakeholders (implementation). These documents are direct results (outputs) of the strategic process. Another result of the strategic process can, for example, be the organisational embedding of climate adaptation in the federal ministries. The short-term and medium-term effects achieved thanks to the strategic process are represented at the outcome level in the logic model. They include, for example, processes initiated in the federal states or the municipalities, providing knowledge or embedding the topic of adaptation into existing sectoral policies (main-streaming).

At the operative level, the focus is on the practical implementation of the adaptation measures defined in APA II. The model examines the implementation process of the measures and controls the implementation status of these measures. In the scope of impact evaluation, the short- and medium-term effects of the measures with respect to the respective target group are monitored while at the impact level, the impact of the entire DAS process (strategic and operative level) is analysed. This relates to the overriding question of the evaluation: Does the DAS process (with its strategic and operative components) contribute to improving the adaptive capacity of ecological, social and economic systems and reducing their vulnerability?

2.2 Key questions

The logic model represents the key elements of the DAS process. To ensure the manageability and clarity of the evaluation, overriding evaluation questions were derived from the logic model. The key questions were derived taking into account the framework conditions for evaluation and the objectives and functions that are to be achieved by the evaluation (see section 1.2). In addition, the conclusions reached during discussions in several workshops with relevant stakeholders (IMAA, BMU, UBA, AFK) were incorporated. The objective in defining the key questions was to compile a manageable number of overriding questions with which all relevant, more specific questions and topics can be addressed. Therefore, the key questions must have a relatively high degree of abstraction.

The questions reflect all five phases of the logic model (input to impact) and take into account both the strategic level and the operative level. Central topics include mainstreaming of adaptation and promoting self-provision; both topics were already laid down as principles in APA I, which is why we deliberately decided to address these aspects in separate questions. Although the following questions differ with respect to their scope and complexity, they all play an essential role in the comprehensive evaluation of the German adaptation process. Answering these questions can be used to evaluate the process and generate input for further developing and updating the process.

The following five key evaluative questions were defined:

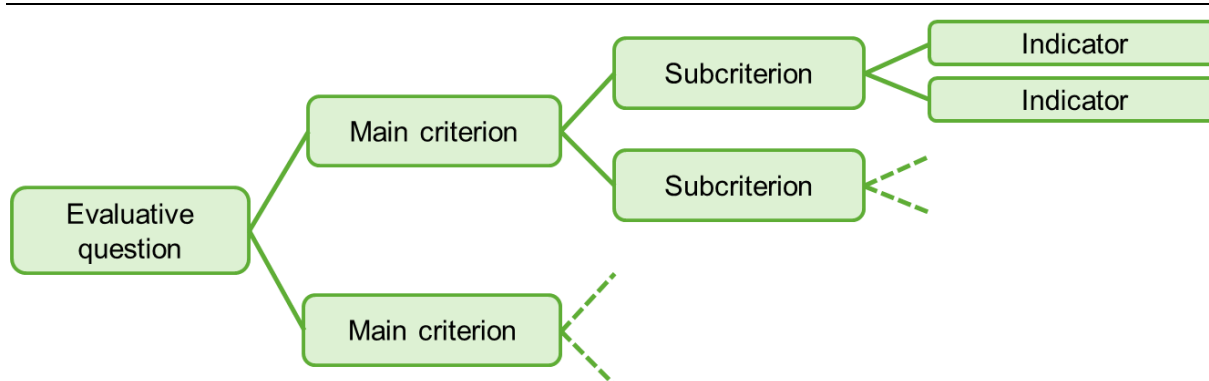
- ▶ To what extent has the DAS process contributed to reducing vulnerability to climate change impacts?
- ▶ Are the framework conditions suitable for working on the DAS process (for example exchange and coordination, structures for horizontal and vertical cooperation, resources etc.)?
- ▶ To what extent has climate change adaptation been suitably embedded (long-term task and mainstreaming)?
- ▶ To what extent has the DAS process led citizens and companies to increasingly assume their responsibility to adapt to climate change (self-provision)?
- ▶ What is the APA II implementation status?

2.3 Evaluation criteria

To render the evaluative questions, some of which were very complex, more specific and manageable, main criteria and subcriteria were defined for each overriding question. Meeting these main criteria and subcriteria can ideally be measured using indicators.

According to Beywl and Niestroj (2009), main criteria are rather abstract and frequently generic criteria that are explicitly referred to during the assessment at the end of the evaluation. Often, the main criteria are already included in the evaluative question. To answer these complex and hard-to-measure main criteria, subcriteria are defined, which constitute the main level for an empirically based evaluation. Although subcriteria are less complex than main criteria, further subdividing into indicators, i. e. specifically measurable indications for the degree of fulfilment of a subcriterion, is required to answer them. As a rule, several indicators are needed to measure one subcriterion. These indicators are generally less complete and complex than main criteria and subcriteria but they can be measured more easily. The relationship between main criteria and subcriteria and indicators is shown in Figure 2.

Figure 2: Subdivision of the evaluative questions in main criteria and subcriteria and indicators



Source: Illustration by adelphi

For the evaluation methodology of the DAS, the main criteria and subcriteria are phrased as questions, i. e. they are subquestions of the evaluative main questions. In the DAS evaluation methodology, the evaluative element of the criteria is only added in a subsequent step (see chapter 4). The following sections provide a detailed explanation of the five evaluative questions. For this purpose, the main criteria, subcriteria and indicators and/or sources are summarised in tables. These tables constitute a rough analytic matrix of the DAS evaluation. Following the explanation of the evaluative questions, chapter 3 provides a detailed description of the survey methods. The survey methods are given in column three (indicator/source) of the following tables.

2.3.1 To what extent has the DAS process contributed to reducing vulnerability to climate change impacts?

This question relates to the overriding objective of the adaptation process of reducing the vulnerability of ecological, social and economic systems with regard to the impacts of climate change and improving their adaptive capacity (determinant of vulnerability).² Chapter 2.4 provides an explanation of the approach used across the six subject-related and geographical key areas covering all fields of action. Alongside the effects of the APA II measures, the second subquestion explicitly addresses the effects of additional activities conducted by the Federal ministries in the DAS process in order to include activities that are relevant for adaptation but were not defined in APA II for various reasons.

Table 1: Evaluative question: To what extent has the DAS process contributed to reducing vulnerability to climate change impacts?

Main criteria	Subcriteria	Indicator/source
How has vulnerability (V) changed over time in Germany?	Comparison of results from vulnerability analyses at the federal level (according to key areas and/or regions)	Changes in indicators and qualitative evaluations from the different vulnerability analyses (2005, 2015, 2021/22)
	What changes in determinants of vulnerability can be seen within the six subject-related and geographical key areas covering all fields of action that were identified in the Vulnerability Analysis of 2015?	Assessments by experts (interview series D)
		Indicators from Monitoring Report (approx. 30)
		Results from scientific studies
What is the role of the DAS process with respect to changes in vulnerability?	What are the effects (regarding determinants of vulnerability in the six key areas) of the APA II measures?	Assessments by implementing actors (APA status tool, interview series C)
		Assessment by experts (interview series D)
	What are the effects of additional activities conducted by the federal ministries in the DAS process (with regard to determinants of V)?	Assessments by consultants and implementing actors (interview series B and C)
		Assessments by experts (interview series D)

² Comparing the results of vulnerability analyses to answer the first subquestion will only be possible in the next-but-one evaluation since no results from the new vulnerability analysis will be available at the time of the upcoming evaluation.

2.3.2 Are the framework conditions suitable for working on the DAS process?

This question examines the organisational and structural framework conditions for the work on the adaptation process by all stakeholders at the federal level and in the federal states, i.e. for example exchange and coordination, structures for horizontal and vertical cooperation and resources.

Table 2: Evaluative question: Are the framework conditions suitable for working on the DAS process?

Main criteria	Subcriteria	Indicator/source
To what extent are the central strategy documents suitable for work on adaptation at the federal level?	How was the process for drawing up the documents?	Assessment by IMAA members (interview series A.1)
	How well-suited are the structure and content of the strategic documents to the challenges encountered in the work on adaptation at the federal level?	Assessment by IMAA members (interview series A.1) Document analysis
Is there an appropriate degree of exchange and coordination in the DAS process?	... between federal ministries (incl. operating procedures in the IMAA)?	Assessment by IMAA members (interview series A.1)
	... between Federal Government and federal states?	Assessment by IMAA members and by AFK (interview series A.1 and A.2)
Is there sufficient political support and are there sufficient resources for work on the adaptation process in the federal ministries?	What priority does the topic of adaptation have in the respective federal ministry?	Assessment by IMAA members (interview series A.1)
	Is there sufficient time and expertise for work on the topic in the respective federal ministry?	Assessment by IMAA members (interview series A.1)
Is the knowledge gained in the DAS process and provided to stakeholders (mainly VA, Monitoring Report) useful and sufficient?	With respect to vulnerability?	Assessment by IMAA members and by AFK (interview series A.1 and A.2)
	With respect to monitoring of previous impacts?	Assessment by IMAA members and by AFK (interview series A.1 and A.2)

2.3.3 To what extent has climate change adaptation been suitably embedded (permanent task, mainstreaming)?

This question is used to analyse mainstreaming of the topic of adaptation. This relates to both establishing new activities as a long-term task and integrating the topic into existing policy instruments and organisational mainstreaming. Although the focus of the evaluation is on the APA II measures, it is of particular importance to take other activities into account as well when analysing the mainstreaming of adaptation. For example, some ministries implement activities that are not specified in APA II but constitute an important contribution to adaptation in Germany (for example in the Federal Office of Civil Protection and Disaster Assistance – BBK). The objective is to provide a comprehensive picture on the mainstreaming of climate adaptation in the federal ministries rather than to list all of these activities. This not

only includes integrating adaptation in activities and measures but also organisational mainstreaming, for example by creating new structures or establishing working committees and meetings on a regular basis. In addition, an analysis of existing and new legal, planning-related, informational and economic instruments at the federal level is to provide an assessment in how far adaptation has been integrated into existing policy instruments and in which new policy instruments adaptation is taken into account (mainstreaming).

Table 3: Evaluative question: To what extent has climate change adaptation been suitably embedded?

Main criteria	Subcriteria	Indicator/source
To what extent has climate change adaptation been suitably embedded?	To what extent are activities that are important for adaptation perceived as ongoing task in the federal ministries?	Assessments by actors implementing APA II measures (interview series C)
	To what extent has adaptation been organisationally embedded in the federal ministries (contact persons, working committees, structures, regular meetings, "procedures")?	Number of measures in APA II that have been designated as long-term task (document analysis)
	To what extent has adaptation been taken into account in legal, planning-related, informational and economic instruments?	Assessment by IMAA members (interview series A.1)
	To what extent has adaptation been taken into account in legal, planning-related, informational and economic instruments?	Assessment by experts (interview series D) Evaluation of existing or new legal, planning-related, informational and economic instruments at the federal level that take adaptation into account using own research and analyses.

2.3.4 To what extent has the DAS process led citizens and companies to increasingly assume their responsibility to adapt to climate change (self-provision)?

Promoting self-provision is a key principle of the DAS process. According to APA I and in line with the principle of self-provision, adaptation to climate change is mainly the responsibility of citizens and companies themselves. Thus, one key objective defined in APA I and the Progress Report was to strengthen the stakeholders' capacity for action at all relevant levels and their ability to provide for themselves.

This evaluative question is aimed at analysing what key activities for strengthening self-provision have already been implemented, but also to what extent relevant stakeholders are already assuming their own responsibility with regard to adaptation and what the DAS process is contributing to this.

Table 4: Evaluative question: To what extent has the DAS process led citizens and companies to increasingly assume their responsibility to adapt to climate change (self-provision)?

Main criteria	Subcriteria	Indicator/source
What key activities for strengthening self-provision have been implemented?	... by providing information and networking	Research of information material and events published or implemented as part of the DAS process (evaluation based on applicable APA II measures)
	... by adapting framework conditions	Screening legal and planning-related instruments launched under the DAS process or integration into existing policy instruments
		Review of the financial incentives developed in the DAS process
To what extent do citizens and companies increasingly assume responsibility for adaptation to climate change?	How do citizens provide for climate change?	Indicators from Monitoring Report (approx. 7–8)
	How do companies provide for climate change?	Indicators from Monitoring Report (approx. 1–3)
What is the role of the key activities in strengthening self-provision?	For which key activities can a plausible causal relationship with a change in the self-provision behaviour of stakeholders be assumed?	Assessment by consultants (interview series B)
		Assessment by implementing actors (APA status tool and interview series C)

2.3.5 What is the implementation status of the adaptation action plan?

This evaluative question only features one main criterion; this is already included in the overriding question. However, the answer to this question is still an important part of the evaluation and covers particularly the operative level of the logic model for the DAS process.

Table 5: Evaluative question: What is the implementation status of the adaptation action plan?

Main criteria	Subcriteria	Indicator/source
State of implementation of APA II measures	How many measures of APA II are already in the implementation phase?	Number and percentage of measures that are currently being implemented (APA II status tool)
	How many measures of APA II have already been completed	Number and percentage of measures that have already been completed (APA II status tool)
	Are there measures that are listed in the APA II but are not being carried out?	Number and percentage of measures the implementation of which has not (yet) been started (APA II status tool)
	What are the obstacles and success factors in the implementation?	Assessments by implementing actors (APA II status tool and interview series C)

2.4 Evaluation approach covering all fields of action

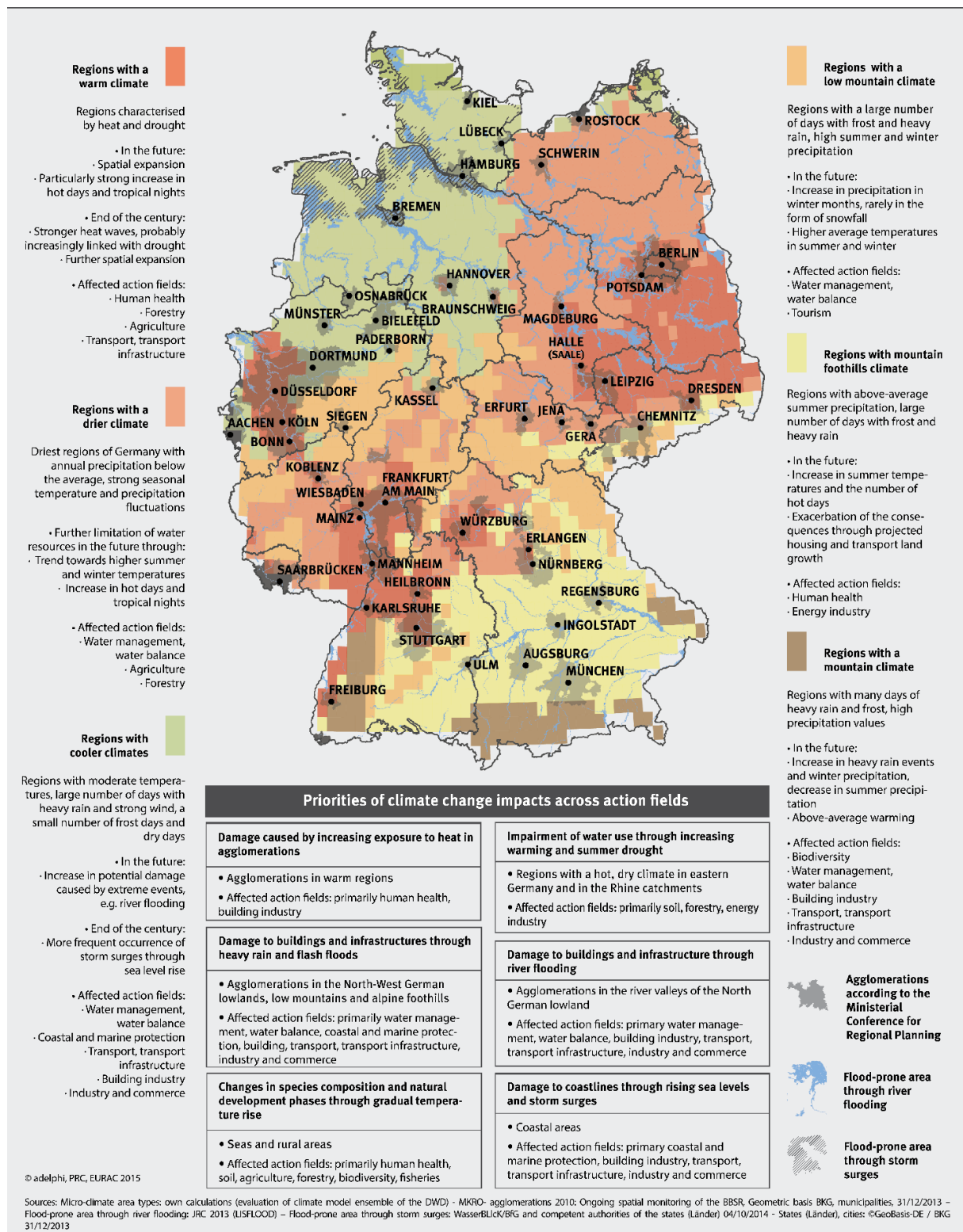
To be able to draw conclusions on the effects of the DAS process, an approach covering all fields of action is used. Rather than analysing all measures and their effect on reducing vulnerability and improving adaptive capacity separately, they are examined using the subject-related and geographical key areas covering all fields of action that were identified in the Vulnerability Analysis.

- ▶ Damage caused by increasing exposure to heat in agglomerations
- ▶ Impairment of water use through increasing warming and summer drought
- ▶ Damage to buildings and infrastructures through heavy rain and flash floods
- ▶ Damage to buildings and infrastructure through river flooding
- ▶ Damage to coastline through rising sea levels and storm surges
- ▶ Changes in species composition and natural development phases through gradual rise in temperature

The Vulnerability Analysis specifies the fields of action and the regions (depicted in Figure 3) that are particularly affected with respect to each key area. In addition, Figure 4 shows the fields of action that were identified as particularly affected in the Vulnerability Analysis and their interconnection to the specified key areas. In preparation for the evaluation, the measures of APA II were allocated to the six key areas based on these connections. For this purpose, not only measures pertaining to the particularly affected fields of action were taken into account but all measures of APA II were, to the extent possible, assigned to a key area.

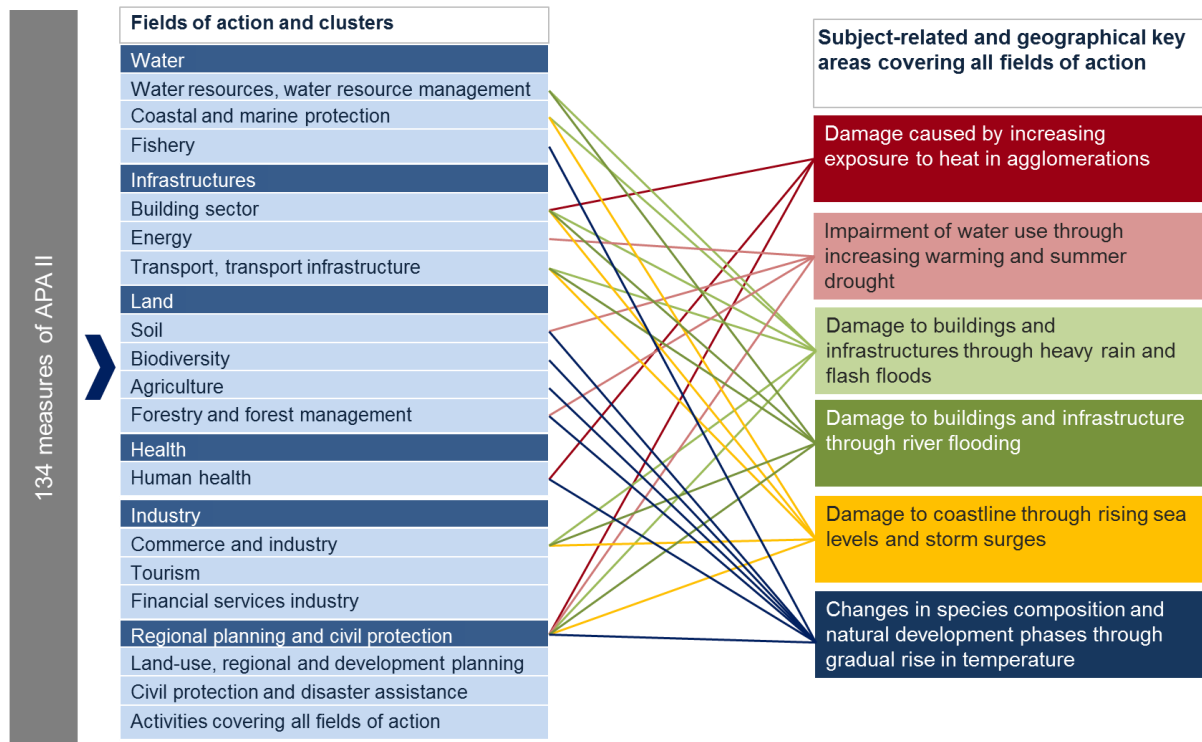
One of the objectives of the DAS evaluation is to examine to what extent progress has been made in addressing the above-mentioned key areas and to what extent the measures from APA II contributed to this progress. Rather than considering individual measures, entire clusters of measures are to be analysed in this regard. Amongst others, this makes it possible to draw conclusions on the coordinating impact of the DAS process: For example, what synergies are created by the fact that numerous measures address one key area under one common strategy. But also: Are there conflicts between the individual measures? In addition, this approach enables a better linking with the indicators of the Monitoring Report. It is easier to establish plausible causal relationships between clusters of measures and specific indicators than between individual measures and indicators. Amongst others, this allows a rough answer to the question: are the measures sufficient to manage the identified challenges?

Figure 3: Key areas of the impact of climate change covering all fields of action



Source: Buth et al. 2015

Figure 4: Allocation of particularly affected fields of action to the subject-related and geographical key areas covering all fields of action



Source: Illustration by adelphi

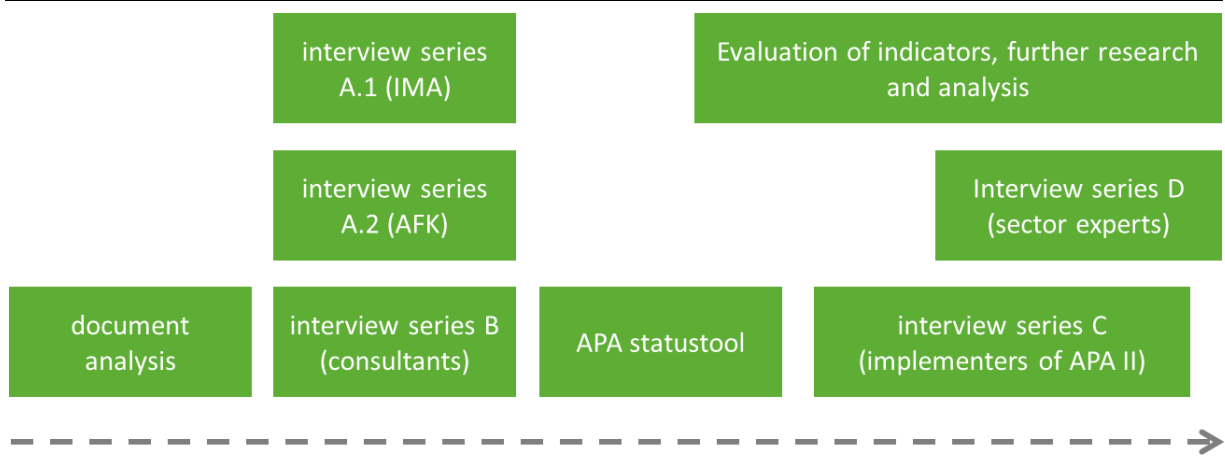
3 Methods and data sources

3.1 Data collection methods

In general, a multi-method approach is used to collect data, i.e. the method or combination of methods that is best suited for answering the evaluation questions is employed. Experimental or quasi-experimental designs are not incorporated since there is no control group or comparison group.

The following Figure 5 shows the methods that are to be applied in chronological order. In section 3.2, the methods are then individually described in short tables for better comparability. In addition, they are linked to the analytic matrix (the main criteria and subcriteria described above). Mainly, there are four different data collection methods: Evaluation of documents, evaluation of data sets, conduction of semi-structured interviews and a written survey.

Figure 5: Data collection methods



Source: Illustration by adelphi

3.2 Description of the individual methods

Table 6: Description of the document analysis procedure

Document analysis	
Structural information	
Data source	DAS and follow-up documents (Monitoring Report, Vulnerability Analysis, Progress Report with APA II); previously conducted analyses and studies concerning the DAS process.
Which subcriteria is this data collection method used for?	
<ul style="list-style-type: none"> ▶ Question 2 <u>Main criterion:</u> Main criterion: To what extent are the central strategy documents suitable for work on adaptation at federal level? <u>Subcriterion:</u> How well-suited are the structure and content of the strategic documents to the challenges encountered in the work on adaptation at the federal level? ▶ Question 3 <u>Main criterion:</u> To what extent has climate change adaptation been suitably embedded? <u>Subcriterion:</u> To what extent are activities that are important for adaptation perceived as ongoing task in the federal ministries? ▶ Question 4 <u>Main criterion:</u> main criterion: What key activities for strengthening self-provision have been implemented? <u>Subcriteria:</u> ... by providing information and networking: ... by adapting framework conditions <p>In addition, the document analysis is used to prepare analyses regarding other questions and criteria. The insights gained thanks to the analysis help the evaluation team to refine questions in the interview guidelines and assess the information collected during the interviews.</p>	
Key issues and questions	
<ul style="list-style-type: none"> ▶ Objectives of DAS ▶ Weighting of APA II measures ▶ Synergies and overlapping with other strategic processes ▶ Document structure 	
Procedure	
The document analysis is conducted by the evaluation team. The analysis is based on a guideline containing key questions.	
Evaluation procedure	
To answer the questions, the documents undergo a qualitative content analysis using the MAXQDA (or a comparable software). Relevant text passages can thus be encoded and then evaluated in a structured manner. The results of the document analysis are presented in the evaluation at various points. For example, they are linked to the results from interview series A.1 regarding the issue of structure and content of the strategic documents.	

Table 7: Description of the procedure for interview series A.1

Interview series A.1	
Structural information	
Data source	All IMAA members (at least one person from each federal ministry; If an interview of several persons is deemed to be useful, a group interview is conducted)
Number of interviews	14
Projected duration of the interview	1.5 to 2 hours
Which subcriteria is this data collection method used for?	
<ul style="list-style-type: none"> ▶ Question 2 <u>Main criterion:</u> To what extent are the central strategy documents suitable for work on adaptation at federal level; <u>Subcriterion:</u> What was the process for drawing up the documents? ▶ Question 2 <u>Main criterion:</u> Is there an appropriate degree of exchange and coordination in the DAS process? <u>Subcriteria:</u> ... between federal ministries (incl. operating procedures in the IMAA)?; ... between the Federal Government and federal states? ▶ Question 2 <u>Main criterion:</u> Is there sufficient political support and are there sufficient resources for work on the adaptation process in the federal ministries? <u>Subcriteria:</u> What priority does the topic of adaptation have in the respective federal ministry? Is there sufficient time and expertise for work on the topic in the respective federal ministry? ▶ Question 2 <u>Main criterion:</u> Is the knowledge gained in the DAS process and provided to stakeholders (mainly Vulnerability Analysis, Monitoring Report) useful and sufficient? <u>Subcriteria:</u> ... with respect to vulnerability?; ... with respect to monitoring of previous impacts? ▶ Question 3 <u>Main criterion:</u> To what extent has climate change adaptation been suitably embedded? <u>Subcriterion:</u> To what extent has adaptation been organisationally embedded in the federal ministries? 	
Key issues and questions	
<ul style="list-style-type: none"> ▶ Role of the ministries in the IMAA and cooperation ▶ Priority of the topic of adaptation with the ministries ▶ Mainstreaming as long-term task ▶ Central documents (creation and application) ▶ Role of Progress Report and DAS strategic document ▶ Document structure (clusters and fields of action) ▶ Cooperation with the federal states ▶ Participatory processes and cooperation with external consultants and scientists, as well as research programmes 	
Procedure	
The qualitative interviews are, if possible, conducted by telephone and digitally recorded. If, under exceptional circumstances, this is not possible or where it is practical, the interviews may also be conducted in person. The content of the interviews is based on a guideline containing the key questions.	
Evaluation procedure	
The recordings of the interview are transcribed, anonymised and undergo a qualitative content analysis using the MAXQDA software (or a comparable software). Relevant text passages can thus be encoded and then evaluated in a structured manner. The results from interview series A.1 are an important source for reflection on cooperation and coordination at the federal level. The findings are linked to the results of the document analysis and interview series A.2 and B.	

Table 8: Description of the procedure for interview series A.2

Interview series A.2	
Structural information	
Data source	The members of AFK (one person from each federal state)
Number of interviews	16
Projected duration of the interview	Approximately 1 to 1.5 hours
Which subcriteria is this data collection method used for?	
<ul style="list-style-type: none"> ▶ Question 2 <u>Main criterion:</u> Is there an appropriate degree of exchange and coordination in the DAS process? <u>Subcriterion:</u> ... between Federal Government and federal states? ▶ Question 2 <u>Main criterion:</u> Is the knowledge gained in the DAS process and provided to stakeholders (mainly Vulnerability Analysis, Monitoring Report) useful and sufficient for the federal states? <u>Subcriteri</u>a: the information provided on vulnerability (Vulnerability Analysis)?; the information provided on monitoring of previous impacts (Monitoring Report)? ▶ Question 3 <u>Main criterion:</u> Main criterion: To what extent has climate change adaptation been suitably embedded? <u>Subcriterion:</u> To what extent has adaptation been organisationally embedded in the federal ministries? 	
Key issues and questions	
<ul style="list-style-type: none"> ▶ Participation of the federal states in the DAS process ▶ Added value of the DAS process and the products developed for the federal states in the process, plus the work of the federal states themselves (such as documents, methods, regional conferences, AFK meetings, expert discussions between the Federal Government and federal states etc.) ▶ Support by the Federal Government with respect to climate change adaptation 	
Procedure	
<p>The qualitative interviews are, if possible, conducted by telephone and digitally recorded. If, under exceptional circumstances, this is not possible or where it is practical, the interviews may also be conducted in person. The content of the interviews is based on a guideline containing the key questions.</p>	
Evaluation procedure	
<p>The recordings of the interview are transcribed, anonymised and undergo a qualitative content analysis using the MAXQDA software (or a comparable software). Relevant text passages can thus be encoded and then evaluated in a structured manner. The results from interview series A.2 are an important source for reflection on the interaction between the Federal Government and the federal states. The findings are linked to the results of the document analysis and interview series A.1 and B.</p>	

Table 9: Description of the procedure for interview series B

Interview series B	
Structural information	
Data source	External consultants and scientists that are accompanying or have accompanied the DAS process
Number of interviews	Approximately 8 to 10
Number of questions and projected duration of the interview	Approximately 1 to 2 hours
Which subcriteria is this data collection method used for?	
<ul style="list-style-type: none"> ▶ Question 1 <u>Main criterion:</u> What is the role of the DAS process with respect to changes in vulnerability? <u>Subcriterion:</u> What are the effects of additional activities conducted by the Federal ministries in the DAS process (with regard to determinants of vulnerability)? ▶ Question 4 <u>Main criterion:</u> What is the role of the key activities in strengthening self-provision? <u>Subcriterion:</u> For which key activities can a plausible causal relationship with a change in the self-provision behaviour of stakeholders be assumed? 	
Key issues and questions	
<ul style="list-style-type: none"> ▶ Challenges addressed in DAS and APA ▶ Self-provision and subsidiarity in the DAS process ▶ Role of Progress Report and DAS strategic document ▶ Document structure (clusters and fields of action) ▶ Involvement of external scientific and consulting experts in the DAS process (added value, type of tasks, potential of optimisation) 	
Procedure	
The qualitative interviews are, if possible, conducted by telephone and digitally recorded. If, under exceptional circumstances, this is not possible or where it is practical, the interviews may also be conducted in person. The content of the interviews is based on a guideline containing the key questions.	
Evaluation procedure	
The recordings of the interview are transcribed, anonymised and undergo a qualitative content analysis using the MAXQDA software (or a comparable software). Relevant text passages can thus be encoded and then evaluated in a structured manner. The results from interview series B are an important source for reflection on and evaluation of the DAS process. The findings are linked to the results of the document analysis and interview series A.1 and A.2 and with indicators and other research and analyses.	

Table 10: Description of the survey procedure using the APA status tool

APA status tool	
Structural information	
Data source	Actors implementing APA II measures
Which subcriteria is this data collection method used for?	
<ul style="list-style-type: none"> ▶ Question 1 <u>Main criterion:</u> Main criterion: What is the role of the DAS process with respect to changes in vulnerability? <u>Subcriterion:</u> What are the effects (regarding determinants of vulnerability in the six key areas) of the APA II measures? ▶ Question 4 <u>Main criterion:</u> Main criterion: What is the role of the key activities in strengthening self-provision? <u>Subcriterion:</u> For which key activities can a plausible causal relationship with a change in the self-provision behaviour of stakeholders be assumed? ▶ Question 5 <u>Main criterion:</u> State of implementation of APA II measures; <u>Subcriteria:</u> How many measures of APA II are already in the implementation phase?; How many measures of APA II have already been completed; Are there measures that are listed in the APA II but are not being carried out?; What are the obstacles and success factors in the implementation? 	
Key issues and questions	
<ul style="list-style-type: none"> ▶ Implementation status of the measure (status, reasons for delays or non-performance, time frame, follow-up activities) ▶ Comprehensive evaluation of the measure's implementation (responsibilities, division of work, milestones, success factors during implementation) ▶ Effects of the measure (intended effect, is a review of effectiveness scheduled or has a review of effectiveness been conducted? Has an effect already been observed?) 	
Procedure	
<p>The persons responsible for a measure enter data into an Excel tool, which was sent to them via e-mail. Two surveys are conducted: a minor survey is conducted at regular intervals (approx. once a year) and enables the on-going monitoring of the state of implementation of the measures under the adaptation action plan. The minor survey only includes questions on the state of implementation of the measure (including reasons for delay, time frame et cetera). The main survey is only conducted once and includes more in-depth questions on the effect of the measure and on success factors of implementation, responsibilities etc. This survey distinguishes between implementation and research measures. The survey on the effect of the measures contributes to answering the overriding question of the evaluation: Does the DAS process (with its strategic and operative components) contribute to improving the adaptive capacity of ecological, social and economic systems and reducing their vulnerability? The main APA status tool survey addresses questions on the operative component, i.e. the effect of the measures.</p>	
Evaluation procedure	
<p>The answers to the closed-ended questions are quantitatively evaluated (in tables and diagrams) with respect to the measures' implementation status. The answers to the open-ended questions are evaluated using a content analysis. They are linked to the results of guideline C, impact level analyses and indicators.</p>	

Table 11: Description of the procedure for interview series C

Interview series C	
Structural information	
Data source	Persons responsible for a measure (one representative for each federal ministry)
Number of interviews	Approximately 5 to 15
Projected duration of the interview	Approximately 1 to 1.5 hours
Which subcriteria is this data collection method used for?	
<ul style="list-style-type: none"> ▶ Question 1 <u>Main criterion:</u> Main criterion: What is the role of the DAS process with respect to changes in vulnerability? <u>Subcriteria:</u> What are the effects (regarding determinants of vulnerability in the six key areas) of the APA II measures?; What are the effects of additional activities conducted by the federal ministries in the DAS process (with regard to determinants of vulnerability)? ▶ Question 4 <u>Main criterion:</u> Main criterion: What is the role of the key activities in strengthening self-provision? <u>Subcriterion:</u> For which key activities can a plausible causal relationship with a change in the self-provision behaviour of stakeholders be assumed? ▶ Question 5 <u>Main criterion:</u> State of implementation of APA II measures; <u>Subcriterion:</u> What are the obstacles and success factors in the implementation? 	
Key issues and questions	
<ul style="list-style-type: none"> ▶ Comprehensive evaluation of the status of implementation in the ministry ▶ Challenges in the implementation and success factors ▶ Role of mainstreaming the measures into the DAS for the implementation of the measures ▶ Are their additional activities outside of APA II? 	
Procedure	
<p>The qualitative interviews are, if possible, conducted by telephone and digitally recorded. If, under exceptional circumstances, this is not possible or where it is practical, the interviews may also be conducted in person. The content of the interviews is based on a guideline containing the key questions. The interview series will be conducted after the APA status tool has been evaluated in order to be able to address any questions and topics that might have been raised in this process.</p>	
Evaluation procedure	
<p>The recordings of the interview are transcribed, anonymised and undergo a qualitative content analysis using the MAXQDA software (or a comparable software). Relevant text passages can thus be encoded and then evaluated in a structured manner. The results from interview series C are an important source for implementation of the APA II measures. The findings are linked to the results from the APA status tool and impact level analyses and indicators.</p>	

Table 12: Description of the procedure for further research and analyses

Further research and analyses	
Structural information	
Data source	Online research, results of existing projects on the topic of adaptation
Which subcriteria is this data collection method used for?	
<ul style="list-style-type: none"> ▶ Question 1 <u>Main criterion:</u> Main criterion: How has vulnerability changed over time in Germany? <u>Subcriteria:</u> Comparison of results from vulnerability analyses at the federal level (according to key areas and/or regions); What changes in determinants of vulnerability can be seen within the six subject-related and geographical key areas covering all fields of action that were identified in the Vulnerability Analysis? ▶ Question 3 <u>Main criterion:</u> To what extent has climate change adaptation been suitably embedded? <u>Subcriteria:</u> To what extent has adaptation been organisationally embedded in the federal ministries?; To what extent has adaptation been taken into account in legal, planning-related, informational and economic instruments ▶ Question 4 <u>Main criterion:</u> What key activities for strengthening self-provision have been implemented? <u>Subcriteria:</u> ... by providing information and networking: ... by adapting framework conditions 	
Key issues and questions	
<ul style="list-style-type: none"> ▶ Change in vulnerability in the six key areas identified in the Vulnerability Analysis ▶ Key activities for strengthening self-provision on the part of citizens and companies ▶ Mainstreaming of climate impact adaptation in planning law and other policy instruments 	
Procedure	
Further research and analyses are conducted by the evaluation team. Execution is based on a guideline containing key questions. This mainly regards online research and the evaluation of results from existing projects on the topic of adaptation.	
Evaluation procedure	
The results are qualitatively and quantitatively evaluated on the basis of the guiding questions. Their content is linked to the evaluation of the corresponding indicators and the results from the interview series. There is a partial overlap with the document analysis.	

Table 13: Description of the indicator evaluation procedure

Evaluation of indicators	
Structural information	
Data source	Monitoring Report, vulnerability analyses, other sources
Which subcriteria is this data collection method used for?	
<ul style="list-style-type: none"> ▶ Question 1 <u>Main criterion:</u> How has vulnerability changed over time in Germany? <u>Subcriteria:</u> Comparison of results from vulnerability analyses at the federal level (according to key areas and/or regions); What changes in determinants of vulnerability can be seen within the six subject-related and geographical key areas covering all fields of action that were identified in the vulnerability analysis? ▶ Question 4 <u>Main criterion:</u> To what extent do citizens and companies increasingly assume responsibility for adaptation to climate change? <u>Subcriteria:</u> How do citizens provide for climate change?; How do companies provide for climate change? 	
Key issues and questions	
<ul style="list-style-type: none"> ▶ What changes can be seen within the six subject-related and geographical key areas covering all fields of action that were identified in the Vulnerability Analysis? (Impact and response) ▶ Changes in indicators of the vulnerability analyses that were conducted by the UBA in 2005 and 2015 and will be conducted in 2021/22 ▶ To what extent do citizens and companies increasingly assume responsibility for adaptation to climate change? (self-provision) ▶ If appropriate, selective consideration of specific individual indicators 	
Procedure	
The evaluation team selects a number of relevant indicators, for which information is available. Thus, plausible causal relationships with the DAS process are established.	
Evaluation procedure	
The findings on the indicators are mainly evaluated and interpreted in a qualitative manner. Where this is possible, quantitative analyses were conducted as well. The results are linked to the contents of the other research and analyses, to interview series C and D and to the data collected using the APA status tool.	

Table 14: Description of the procedure for interview series D

Interview series D	
Structural information	
Data source	Sector experts who are proposed by the evaluators and selected by the IMAA
Number of interviews	6 to 12
Projected duration of the interview	Approximately 1 to 2 hours
Which subcriteria is this data collection method used for?	
<ul style="list-style-type: none"> ▶ Question 1 <u>Main criterion:</u> How has vulnerability changed over time in Germany? <u>Subcriterion:</u> What changes in determinants of vulnerability can be seen within the six subject-related and geographical key areas covering all fields of action that were identified in the Vulnerability Analysis? ▶ Question 1 <u>Main criterion:</u> What is the role of the DAS process with respect to changes in vulnerability? <u>Subcriteria:</u> What are the effects (regarding determinants of vulnerability in the six key areas) of the APA II measures?; What are the effects of additional activities conducted by the federal ministries in the DAS process (with regard to determinants of vulnerability)? ▶ Question 3 <u>Main criterion:</u> To what extent has climate change adaptation been suitably embedded? <u>Subcriterion:</u> To what extent has adaptation been taken into account in legal, planning-related, informational and economic instruments? 	
Key issues and questions	
<ul style="list-style-type: none"> ▶ The key issues and questions are derived from the indicator discussion over the course of the evaluation. ▶ Amongst others, it is planned to discuss plausible causal relationships between measure clusters and indicators (from Vulnerability Analysis and Monitoring Report) with the experts. 	
Procedure	
<p>The qualitative interviews are, if possible, conducted by telephone and digitally recorded. If, under exceptional circumstances, this is not possible or where it is practical, the interviews may also be conducted face-to-face. The content of the interviews is based on a guideline containing the key questions.</p>	
Evaluation procedure	
<p>The recordings of the interview are transcribed, anonymised and undergo a qualitative content analysis using the MAXQDA software (or a comparable software). Relevant text passages can thus be encoded and then evaluated in a structured manner. The results from interview series D are an important source of information on the effects of the DAS process with respect to the subject-related and geographical key areas covering all fields of action. The findings are linked with the results on the effects of the APA status tool, indicators and other research and analyses.</p>	

4 Analyses

Evaluation of all collected qualitative and quantitative data is based on the five guiding questions presented in section 2. However, the information needed to answer the questions is gained at the level of the main criteria and subcriteria which requires consolidating and aggregating the individual results. If necessary, the subcategories need to be broken down further to gain knowledge that is as differentiated as possible, for example, if the subject matter (such as the mainstreaming of the DAS in the federal ministries) differ significantly in their importance. The information collected by using the different methods presented in section 3 must be consolidated in order to be able to evaluate to what extent each individual subcriterion has been fulfilled or how they must be responded to.

The basis for the comprehensive evaluation is the analytic matrix that represents, for all indicators for which data is collected, a) what evaluative questions, main criteria and subcriteria they are assigned to, and b) based on which data collection method (for example, document analysis, interview series, APA status tool, further evaluations) information on a specific indicator was acquired. The analytic matrix is the basis for the aggregation of all acquired data since it provides an overview as to which information (i.e. for example insights from two different interview series) should be used to evaluate a subcriterion.

To ensure that the evaluation is as objective as possible, so-called “evaluation categories” are introduced where appropriate and in agreement with the stakeholders involved. These evaluation categories define what “successful achievement” of specific subcriteria means by describing minimum threshold values and, if required, additional levels of success which must be achieved before a specific object of evaluation can be evaluated positively. The evaluation categories can be specified for subsequent evaluation based on the results obtained in the up-coming evaluation.

Based on the results of the comprehensive evaluation, conclusions on the five guiding questions of the evaluation will be drawn and recommendations for the further development of the DAS process will be compiled. For this purpose it will be crucial to consider the answers to the five evaluative questions in a comprehensive manner and to draw the right conclusions based on the synopsis of the answers.

To further validate the acquired insights and recommendations, they will undergo a final Delphi survey. A Delphi survey is a group consensus procedure which relies on a panel of experts who are provided summaries of the current insights for commenting and completion in several rounds. The Delphi procedure, which is planned to be anonymised, has the following advantages with respect to the evaluation:

- ▶ It provides an opportunity to clarify evaluative questions that are still open or have not been conclusively answered.
- ▶ It enables a majority of survey participants from different groups to respond to the statements of the other participants and to discuss them.
- ▶ This provides a broader basis for the results.
- ▶ This provides structure to a possibly heterogeneous spectrum of opinions and renders it more easily comprehensible, which may also highlight starting points for consensus.
- ▶ The results can be validated and, thus, given greater legitimacy.

In particular, members of the IMAA and of the AFK are to be included in the anonymous Delphi survey. In addition, other experts should participate as well. These persons should have excellent knowledge in this policy area or at least relating to the topic of adaptation to climate change in Germany and they should not have been previously involved in political decisions on this topic. It would be useful to call upon the experts who took part in the interview series B (consultants) and D (sector experts). Extending the group of participants beyond members of IMAA/AFK is intended to prevent a distortion of the results which might occur if only persons involved in the political process participated in the survey.

During the Delphi survey, the insights gained from the five evaluative questions and main criteria and subcriteria of evaluation as well as the recommendations derived from them are summarised and e-mailed to the participants in form of substantiated hypotheses with a request for commenting and completing them. The content of the substantiated comments of the survey participants, which are sent via e-mail, is analysed, evaluated and summarized by the evaluation team (if necessary, they clarify any issue in the course of a short telephone call). The results of the first Delphi round are then anonymised and sent to the survey participants with a request for commenting and completing them for the second round. The content of the comments made by the survey participants is again analysed, evaluated and summarised by the evaluation team. If required for purposes of clarity and unambiguity of the results, additional Delphi rounds are conducted in a similar manner.

Subsequently, the insights acquired by means of the Delphi survey are used to draw up the final version of the results and conclusions.

5 Reporting

The final version of the results and conclusions of the evaluation are written down in a scientific report. As an example, the planning for the first evaluation is presented below:

The scientific report is to comprise approximately 100 content text pages (plus annexes) and its completion is planned for the beginning of 2019. Publication on behalf of the German Environment Agency is planned for 2019; the contents of the extended report will not be agreed upon with the IMAA; however the environment ministry will forward the report to the IMAA well in advance of publication so as to enable the body to position itself with respect to the results.

Based on the scientific report, a condensed version along the lines of a management summary including 10 to 12 pages will be compiled. This short version, which will be focused on the results, conclusions and recommendations, will be reviewed and approved by the IMAA and published as part of the 2020 Progress Report.

Both in the scientific report and in its condensed version, the results of the conducted interviews will only be included in anonymised and aggregated form. Only the group affiliations of the survey participants will be disclosed (for example identifying the survey participants as members of federal ministries, consultants or experts in a specific area), however no names or specific institutions will be given.

For reasons of transparency and to ensure availability for comparisons in the scope of subsequent evaluations, the raw data including the interview transcripts will be handed over to the contracting authority after completion of the evaluation. The contractors (evaluation team) will then delete the raw data.

6 Subsequent evaluations

It is planned to repeat evaluation of the DAS process at regular intervals. From the point of view of the project team, the following issues must be taken into account when these subsequent evaluations are performed:

- ▶ The DAS preparation process with its follow-up documents up to the first Progress Report does not need to be reconsidered. That means that these documents should not be subject to another document analysis.
- ▶ In addition, the subcriterion “What was the process for drawing up the documents?” (discussion of the framework conditions for the DAS process) should only be taken into consideration for documents drawn up after the first evaluation.
- ▶ Insights from future editions of the Monitoring Report and the Vulnerability Analysis should be taken into account. In particular, the comparison between the Vulnerability Analysis of 2015 and 2021/22 will probably provide a lot of insights into the progress made with respect to adaptation, which should be addressed under the main criterion “How has vulnerability changed over time in Germany?”.
- ▶ If data on the adaptation progress at the federal state level becomes available during future evaluations, it should be checked to what extent they can also be used for evaluating activities at federal level.

7 Documentation of methodology development

The present methodology was developed between February 2016 and May 2017 based on a series of steps. The main steps are as follows:

1. The project team conducted research to identify processes for the evaluation of national adaptation or sustainability strategies, particularly in Europe, and examined the objectives and approaches in these processes in detail. The objective of the analysis was a) to determine the status quo of such evaluations, b) identify possible barriers and c) to check to what extent promising aspects of the processes can be applied to the DAS context. In this connection, 15 processes were examined on the basis of document analyses. In addition, some stakeholders in processes of particular interest were interviewed via telephone. The persons selected for these interviews were either involved in evaluation processes that seemed to be particularly innovative or they worked in a context that was relatively similar to the German framework conditions.
2. Based on the analyses and an examination of key documents from the DAS process, possible objectives, functions and subject-related key areas of the evaluation were discussed with the contracting authorities.
3. On the basis of this discussion, the contractors developed a logic model, which represents the causal chains of the DAS process with respect to the key objectives (reducing vulnerability and improving adaptive capacity). Evaluation questions for each of the levels in the logic model – from input to impact – were linked to the logic model.
4. The contractors intensively discussed this draft with experts from other countries who were involved in conducting evaluations of national adaptation strategies.
5. The project team presented the optimised draft of the logic model and the evaluation questions to the contracting authorities during another work meeting. Related comments and discussions on this were incorporated in the logic model and led to a detailed representation of the causal structure and the evaluation questions.
6. In October 2016, the contractors discussed this detailed representation with IMAA representatives. Comments made during this meeting resulted in sharpened methodology and a more precise phrasing of the questions.
7. Based on this, the contractors drew up guidelines for interviews and document analyses as well as the APA status tool. All these data collection methods were tested and continuously improved during the testing process. adelphi would like to thank the eleven partners (federal ministries, federal authorities, state ministries and consultants) who were involved in testing the interview guidelines and the APA status tool. The interviews also provided important insights that could be used to refine or extend the evaluation questions. Taking into account research on available data sources (particularly indicators from the Monitoring Report) the contractors finalised the evaluation methodology draft and grouped the existing evaluation questions into overriding questions, main criteria and subcriteria.
8. The final draft was discussed with IMAA and representatives of the federal states in a workshop in April 2017. After agreeing on some minor changes of methodology, the IMAA approved the procedure. Following this, the contractors finalised the draft taking into account the comments made during the workshop.

8 Schedule

The proposed schedule of the first evaluation is presented in the following Gantt diagram. The representation shows an example of the sequence and interconnection of the individual steps.

Figure 6: Flow diagram

Phase and task	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Planning phase																	
Initial workshop		■															
Finalisation of evaluation concept and analytic matrix		■	■														
Adaptation of data collection tools			■														
Creation of inception report			■														
Data collection phase																	
Logistic preparation of data collection			■	■													
Document analysis, research and analyses				■	■			■									
Conduction of the interviews, use of the APA status tool				■	■	■	■	■	■								
Analysis phase and reporting																	
Data aggregation (using analytic matrix)								■	■	■	■						
Implementation of Delphi surveys												■	■	■			
Comprehensive data analyses															■	■	
Draft of evaluation report																■	
Final workshop (for presentation of results)																	■
Finalisation of the evaluation report																	■

Source: Illustration by adelphi

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