



Adaptation preparedness scoreboard

Draft country fiche for Germany

Disclaimer

This draft country fiche was prepared in the context of the implementation of the EU's Strategy for Adaptation to Climate Change (EUAS). The indicators were developed and agreed with experts from the Member States (MS). This draft version of the fiche is published as background information to the public stakeholder consultation about the evaluation of the EUAS running from early December 2017 to early March 2018. It constitutes work in progress, a particular stage of information collection and dialogue between the Commission and the Member States. It presents a snapshot of the status in the country as of September or October 2017. The fiches are planned to be finalised and published as an annex to the strategy's evaluation report in the fourth quarter of 2018, before which they will be further updated and modified. Should you have any specific comments on the draft fiche, please send it to the mailbox CLIMA-CLIMATE-CHANGE-ADAPTATION@ec.europa.eu

Please note that the assessments (yes/no/in progress) need to be read in conjunction with the narrative that accompanies them. They assess the state of play *within* each country. While all effort has been made to ensure the coherence across fiches in the assessment of the same indicator, it should not be directly compared across the MS. Two countries with a "yes" on the same indicator could have a different national situation leading to that assessment. Not all indicators have the "in progress" status, some can only be "yes" or "no". For a more detailed explanation of what each indicator means and how its value is determined, please refer to the description of the scoreboard, a document published alongside the country fiches.

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POLICY FRAMEWORK

Adaptation strategies

A1. National adaptation strategy

Germany adopted its National Adaptation Strategy (DAS)¹ in December 2008. Its aim is to reduce vulnerability to the consequences of climate change, to maintain or improve the adaptability of natural, social and economic systems, and to take advantage of opportunities that may rise from effects of climate change. The strategy presents an overview of effects of climate change, respectively following a sectoral and a geographic approach. In short, the DAS takes into account existing climate projections on a global and on a national level, laying a basis for identification of knowledge gaps and the first steps towards an action plan.

A2. Adaptation strategies adopted at subnational levels

All *Bundesländer* have developed climate change adaptation strategies and have developed measures, some as a part of an integral climate change strategy or programme.

Bundesländer or regions at the NUTS I level exercise legislative powers in all areas which are not exclusive competence of the Federal level. Environmental policy (including climate change adaptation) is a concurrent competence between the federal level and

¹ German Federal Government (2008). German Strategy for Adaptation to Climate Change. Available at: http://www.bmub.bund.de/fileadmin/bmu-import/files/english/pdf/application/pdf/das_gesamt_en_bf.pdf

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Bundesländer level. *Bundesländer* also implement legislation at the lower levels of governance.

At the time when the DAS was developed (before 2009), 13 *Bundesländer* had already carried out studies on the impacts of climate change on various sectors. Sectors commonly covered include water management, forestry, agriculture and health. Studies of the impacts of climate change on biodiversity and soils are less common. The northern German *Bundesländer* have studies on coastal protection.

Specific strategies and measures taken by the Länder administrations are drafted in a coordinated manner, by means of KomPass - Climate Impacts and Adaptation in Germany².

Although both DAS and APA (Adaptation Action Plan) were drafted at Federal level, these Federal documents build on the activities already undertaken by various Länder and the actions that were commonly defined and carried out by both governance levels. This shows the result of a continuous dialogue between the Länder and the Federal government. The actual actions concerned vary from Land to Land. Some Länder focused on reduction of emissions contributing to the greenhouse effect – even by means of legislation, while others adopted a fully-fledged adaptation strategy at Länder level.

Adaptation action plans

B1. National adaptation plan

The German Action Plan (APA)³, which operationalises the actions mentioned in the DAS, was adopted in 2011. Its main objectives are to implement the DAS and to take steps for the next revision of the national strategy. The APA presents a sectoral approach. The sectors presented are Human health, the Building sector, Water regime, Water management, Coastal and marine protection, Soil, Biological diversity, Agriculture, Forestry and forest management, Fishery, the Energy industry (conversion, transport and supply), the Financial services industry, Transport and transport infrastructure, Trade and industry, Tourism industry; and Cross-sectional topics such as Spatial, regional and physical development planning and civil protection.

B2. Adaptation plans adopted at sub-national level

The APA lays down a set of criteria for measures to be taken at the level of the *Bundesländer* (federal states), in addition to those to be addressed at federal level. Examples of these criteria are the extent to which measures are of no-regret, or of direct or indirect relevance for adaptation to climate change. The gap resulting from the lack of a cost benefit analysis was provisionally filled by means of expert judgment on the efficiency and effectiveness of measures.

² <http://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/anpassung-regional-sektoral> German Federal Government (2011). The Competence Center for Climate Impact and Adaptation (KomPass). Available at: <http://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/kompass>

³ German Federal Government (2011). Adaptation Action Plan of the German Strategy for Adaptation to Climate Change. Available at: http://www.bmub.bund.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/aktionsplan_anpassung_klimawandel_en_bf.pdf

B3. Sectoral adaptation plans

Neither the DAS nor the APA presented an analysis allowing to prioritise measures, such as a cost benefit study specifically addressing risks per sector, or a supporting vulnerability analysis. This was, however, well acknowledged and prompted the Federal Government to make the closing of this significant knowledge gap a key area of the Action Plan from 2011 onwards⁴. Within the "Netzwerk Vulnerabilität", also established in 2011, vulnerability assessments were carried out to support prioritisation of climate risks. These have been published in 2015 in a dedicated report on Germany's vulnerability to climate change⁵. The DAS monitoring/progress report (2015) also summarises the results.⁶

SCOREBOARD

Step A: preparing the ground for adaptation

1. Coordination structure

1a. A central administration body officially in charge of adaptation policy making

Yes / No

The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety is the central administration body officially in charge of adaptation policy making at federal level.

1b. Horizontal (i.e. sectoral) coordination mechanisms exist within the governance system, with division of responsibilities

Yes / In progress / No

Horizontal (i.e. sectoral) coordination mechanisms exist within the governance system, with division of responsibilities. At the federal level, there is an Inter-ministerial Working Group (IMA Anpassung) mandated by the cabinet which meets 3 – 6 times a year, involving all federal ministries. This 'IWG Adaptation Strategy' supervised the drafting of the APA, among other activities.

Within the Network Vulnerability (*Netzwerk Vulnerabilität*), experts from relevant federal departments and agencies contribute their expertise to determine the vulnerability for climate change impacts of relevant sectors. Network partners are for example the Federal Office of Civil Protection and Disaster Assistance, the Federal Institute for Geosciences and Natural Resources, the German Meteorological Service, various research institutes and the KfW bank⁷.

⁴ German Federal Government (2011). Adaptation Action Plan of the German Strategy for Adaptation to Climate Change. Available at: http://www.bmub.bund.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/aktionsplan_anpassung_klimawandel_en_bf.pdf

⁵ German Federal Government (2015). Vulnerabilität Deutschlands gegenüber dem Klimawandel. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/climate_change_24_2015_vulnerabilitaet_deutschlands_gegenueber_dem_klimawandel_1.pdf

⁶ German Federal Government (2015). Monitoringsbericht 2015. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/monitoringbericht_2015_zur_deutschen_anpassungsstrategie_an_den_klimawandel.pdf

⁷ Netzwerk Vulnerabilität (n.d.). Netzwerkpartner. Available at: <http://netzwerk-vulnerabilitaet.de/tiki-index.php?page=Netzwerkpartner>

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1c. Vertical (i.e. across levels of administration) coordination mechanisms exist within the governance system, enabling lower levels of administration to influence policy making

Yes / **In progress** / No

Vertical (i.e. across levels of administration) coordination mechanisms exist within the governance system. A working group on adaptation to the impact of climate change under the Conference of Environmental Ministers integrates the federal states in the process (*Ständiger Ausschuss zur Anpassung an die Folgen des Klimawandels [StA AFK]*)⁸. This group meets twice a year to provide input from the federal state level into the national process, to exchange experiences with the strategy processes in the various federal states and to coordinate joint activities. Their primary focus to date has been to develop 'Länder-specific' activities for the implementation of the APA as part of the German DAS, as well as the development of systematic climate impact monitoring across States by testing and selecting the most meaningful set of indicators to monitor changes throughout nature and the wider environment. More specifically, the APA also lays out those activities to be carried out jointly by Federal and State governments, namely expanding the knowledge base, intensifying the communication of knowledge, building networks, drawing up joint concepts and implementing measures, as well as joint Federal-Länder funding programmes for adaptation⁹.

Action on adaptation at city level is also increasing. For this reason, the Federal Government, is expanding the dialogue about adaptation with the local authority associations and other bodies, such as the Klimabündnis¹⁰ and ICLEI¹¹ and providing funding support.

It has not been possible to obtain information on whether there are formalised coordination mechanisms between Länder and federal adaptation experts, between cities and federal or Länder level, and whether sub-national sectoral plans, such as regional development plans and River Basin Management Plans / Flood Risk Management Plans, take into account climate change impacts.

2. Stakeholders' involvement in policy development

2a. A dedicated process is in place to facilitate stakeholders' involvement in the preparation of adaptation policies

Yes / No

A dedicated process is in place to facilitate stakeholders' involvement in preparing adaptation policies. This was the case for the preparation of both the DAS and the APA, which were accompanied by a cross-sectoral, multi-stakeholder discussion and various formats for participation as part of the ongoing dialogue and participation process concerned with the DAS. The DAS preparation involved information gathering from administration, the private sector, interest groups, scientists and the general public. For stakeholders from priority sectors, very limited evidence could be collected concerning involvement, participation or public consultation. The examples that could be

⁸ Federal / State Working Group "Climate, energy, mobility - sustainability". Anpassung an die Folgen des Klimawandels. Available at: <https://www.blag-klina.de/Themenfelder-Anpassung-an-die-Folgen-des-Klimawandels.html>

⁹ German Federal Government (2011). Adaptation Action Plan of the German Strategy for Adaptation to Climate Change, Section D (p. 44-47). Available at: http://www.bmub.bund.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/aktionsplan_anpassung_klimawandel_en_bf.pdf

¹⁰ Climate Alliance. Available at: <http://klimabuendnis.org/>

¹¹ Local Governments for Sustainability. Available at: www.iclei.org

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gathered concern stakeholders from the financial and insurance sector who were identified in the DAS and practitioners who were consulted in drafting the projections of climate change in meteorology.

Coordination networks have been set up in several German Bundesländer for stakeholder involvement in the climate change adaptation process. Each network is maintained by project partners that typically include research institutions, municipal administrations, regional planners, Bundesländer authorities, associations and representatives from the industry and priority sectors (e.g. agriculture and forestry). Networks typically carry out projects and hold conferences for exchange of experiences.

Some stakeholder networks are specific to *Bundesländer*; others focus on a specific climatic area, for example the RADOST¹² network for adaptation in the Baltic Sea coastline of Germany.

2b. Transboundary cooperation is planned to address common challenges with relevant countries

Yes / No

Transboundary cooperation is mentioned in the DAS in the context of river basin management, in which Germany and its Länder are very active. The international river basin committees for the Rhine, Danube, Meuse, Elbe, Saar-Mosel. The International Commission for the Protection of the Rhine published a Climate Change Adaptation strategy in 2014¹³ are examples of ongoing transboundary efforts. In addition, Germany has been a leader in BaltAdapt and the follow-up by the Council of the Baltic Sea States¹⁴, as well as participating actively in the Danube adaptation strategy¹⁵. However, no information could be collected on other forms of transboundary cooperation for any other sector.

Step B: assessing risks and vulnerabilities to climate change

3. Current and projected climate change

3a. Observation systems are in place to monitor climate change, extreme climate events and their impacts

Yes / In progress / No

Observation systems are in place to monitor climate change, extreme climate events and their impacts. The German government carries out continuous long-term observation of processes in the atmosphere, the oceans and on land. Extreme weather events are monitored and the impacts of climate change on different sectors (fields of action from DAS) are monitored using indicators. This is reported in a Monitoring report (2015) and is planned to be updated every four years¹⁶.

¹²Regional Adaptation Strategy for the German Baltic Sea Coast. Available at: <http://klimzug-radost.de/fakten/rahmen/klimaanpassung-deutschland>

¹³IKSR (2015). Strategy for the IRBD Rhine for adapting to climate change. Available at: http://www.iksr.org/fileadmin/user_upload/Dokumente_en/Reports/219_en.pdf

¹⁴Council of the Baltic Sea States. Available at: <http://www.cbss.org/>

¹⁵ICPDR (2012). ICPDR Strategy on Adaptation to Climate Change. Available at: http://www.icpdr.org/main/sites/default/files/nodes/documents/icpdr_climate-adaptation-strategy.pdf

¹⁶German Federal Government (2015). Monitoringsbericht 2015. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/monitoringbericht_2015_zur_deutschen_anpassungsstrategie_an_den_klimawandel.pdf

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Germany also participates in and funds several international research programmes, and is one of the leaders in Europe on climate research and Earth observation from space.

Germany's National Meteorological Service (DWD)¹⁷ is responsible for meeting meteorological requirements from all areas of the German economy and society. DWD plays an important role in providing services to the Federal Government and the Länder in terms of climate monitoring. This includes the provision of climate projections for the planning and preparation of adaptation measures.

Monitoring the atmosphere is part of the remit of Germany's National Meteorological Service, results of which are made visible through the Climate Atlas¹⁸. The German Meteorological Service – as the successor of earlier meteorological services – has over 150 years of experience in observing the weather and the climate. It operates extensive observation networks, which include conventional meteorological and climatological observation stations as well as a network of weather radars. Model-based re-analyses achieve a description of atmospheric parameters over longer periods of time, and if necessary combined with regional re-analyses for a higher spatial resolution.

3b. Scenarios and projections are used to assess the economic, social and environmental impacts of climate change, taking into account geographical specificities and best available science (e.g. in response to revised IPCC assessments)

Yes / In progress / No

Projections are available on both the Federal and the Länder level.

Both statistical and dynamic regional climate models are used. Only studies that were developed after 2009 take ENSEMBLES into account when determining a climate signal. Most of them look at time frames up to 2100. A number of different IPCC scenarios are used, including the RCP scenarios, although A1B is most frequently selected as the reference scenario (followed by A2 and B1). Both statistical and model-based approaches are used to determine the consequences of climate change, depending on the sector under consideration. Most calculations of the potential future consequences of climate change use only climate projections, and socioeconomic background conditions such as demographics or land use are seen as constants.

Excerpts of projections of climate change can be found in the Climate Atlas¹⁹. Regional climate change projections are also carried out by the individual Länder.

3c. Sound climate risks/vulnerability assessments for priority vulnerable sectors are undertaken to support adaptation decision making

Yes / In progress / No

Climate risks/vulnerability assessments for priority vulnerable sectors are undertaken to support adaptation decision making.

The first vulnerability assessment of climate change impacts for selected fields of actions in Germany was conducted in 2005²⁰. In 2011, the "Vulnerability Network" was established: a network of 16 governmental departments and institutes, financed by the BMUB and supported by the scientific project UBA. The aim was to conduct an up-to-date, standardised cross-sectoral vulnerability assessment, covering the whole of

¹⁷ DWD. Available at: <http://www.dwd.de>

¹⁸ DWD. Climate Atlas. Available at: http://www.dwd.de/EN/climate_environment/climateatlas/climateatlas_node.html

¹⁹ DWD. Climate Atlas. Available at: http://www.dwd.de/EN/climate_environment/climateatlas/climateatlas_node.html

²⁰ German Federal Government (2005). Climate Change in Germany - Vulnerability and Adaptation Strategies of Climate-Sensitive Systems. Available at: <http://www.umweltbundesamt.de/en/publikationen/klimawandel-in-deutschland-vulnerabilitaet>

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Germany. Two different scenarios were used; strong change and weaker change and for the prioritisation, social, economic, ecological and cultural criteria were used. Furthermore, interactions between different 'action fields' were analysed and cross-cutting vulnerabilities were identified. The results of the extensive vulnerability assessments were published in 2015, pointing out which sectors are most vulnerable and should be prioritised within the adaptation action plan²¹.

In addition, various studies and activities have been carried out by individual Länder to assess the level of vulnerability to climate change. These have been reviewed in a meta-analysis and include 155 studies that had been published up to mid-2012 throughout different Länder. The meta-analysis has extracted the most relevant findings across Länder and impact sectors in order to feed these into the analysis of climate risk and vulnerability represented in Chapter 6 of Germany's vulnerability to climate change report (2015)²².

3d. Climate risks/vulnerability assessments take transboundary risks into account, when relevant

Yes / In progress / No

Sectoral vulnerability assessments take transboundary risks into account in a qualitative way. The 2015 vulnerability report recognises international risks mainly for the sectors industry and business, transportation and infrastructure, fishing, finance and in lesser degree biodiversity, human health and tourism. Within flood risk and water management, transboundary cooperation is already well established.

Germany recognises that the impacts of climate change in other parts of the world will be large and those can in effect have impacts on Germany, for example through trade and migration (progress report). The research regarding the quantification of these effects is, however, still premature.

Germany is active, *inter alia*, in the framework of the Alpine Convention, has played a leading role in the BaltAdapt project and in the formulation of the Baltic Sea Region Action Plan for Adaptation²³, as well as takes active part in the implementation of the EU Strategy for the Alpine Region (EUSALP, 2015)²⁴.

4. Knowledge gaps

4. Work is being carried out to identify, prioritise and address the knowledge gaps

Yes / In progress / No

Work is being carried out to identify, prioritise and address the knowledge gaps, in collaboration with key stakeholders (from science, administration and the private sector) Research and development in the field of climate change and adaptation are supported and developed by a national centre of competence for consequences of climate change

²¹ German Federal Government (2015). Vulnerabilität Deutschlands gegenüber dem Klimawandel. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/climate_change_24_2015_vulnerabilitaet_deutschlands_gegenueber_dem_klimawandel_1.pdf

²² Meta-analysis findings of existing Länder studies are published in chapter 6 of German Federal Government (2015). Vulnerabilität Deutschlands gegenüber dem Klimawandel. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/climate_change_24_2015_vulnerabilitaet_deutschlands_gegenueber_dem_klimawandel_1.pdf

²³ Council of the Baltic Sea States. Available at: <http://www.cbss.org/>

²⁴ <https://www.alpine-region.eu/>

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and adaptation (KomPass²⁵). The KomPass centre derives from the DAS. Its core tasks are policy advisory, environment research, information distribution, networking and stakeholder involvement.

The Climate Service Centre was an initiative developed by the German Federal Government, initiated in 2009. In June 2014, the Centre was institutionalised in the Helmholtz Association, renamed Climate Service Center 2.0²⁶. It offers decision support and decision support tools for administrations dealing with effects of climate change. Global consequences of climate change are researched by a national climate research centre in Potsdam²⁷.

Specific effects of climate change for the building sector have been researched in Exwost²⁸. An additional overview of translation of projections to the regional level can be found in KlimZug²⁹. The aim of KlimZug is to integrate expected climate changes and the associated extreme weather forms in regional planning and development processes, and thereby prepare a region for life and economic activity under the conditions of climate change. Networks are to be formed, partly to increase the future competitiveness of regions, partly to advance the development and use of new technologies, methods and strategies for adapting to climate change in regions³⁰.

Identified knowledge gaps are used to prioritise public funding for research on impacts, vulnerabilities and adaptation to climate change.

Knowledge gaps are well defined by research institutes dealing with climate change. In some cases, designated research bodies within a sector exist, working on climate change challenges, on both mitigation and adaptation sides.

The APA presents efforts to be undertaken in scientific research, dealing with uncertainties, new observational methods and systems. Extensive studies on these topics are funded by the Federal Ministry of Education and Research (BMBF) and the German Research Foundation (DFG).

The federal government defines priority research fields in its APA (2011)³¹ to strengthen the knowledge base and to develop climate models on different scales. The BMBF contributes through several research projects, e.g. 'The economics of climate change'³² and a research programme related to 'Climate services' within the framework of "JPI Climate"³³ collaboration between 14 European countries to coordinate jointly their climate research and fund new transnational research initiatives, for which BMBF is one of the key funders).

The Inter-Ministerial Working Group on climate has published guidelines for Climate Impact and Vulnerability Assessments, containing recommendations for applying regional and national assessment methods.

5. Knowledge transfer

²⁵ German Federal Government (2011). The Competence Center for Climate Impact and Adaptation (KomPass). Available at: <http://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/kompass>

²⁶ Climate Service Center Germany. Climate Services for Adaptation. Available at: <http://www.climate-service-center.de/>

²⁷ Potsdam Institute for Climate Impact Research. Climate Impacts and Vulnerabilities. Available at: <https://www.pik-potsdam.de/forschung/klimawirkung-vulnerabilitat>

²⁸ BMUB. ExWoSt. Available at: http://www.bbsr.bund.de/BBSR/DE/FP/ExWoSt/exwost_node.html, buildings

²⁹ German Federal Ministry of Education and Research. KlimZug. Available at: <http://www.klimzug.de/en/160.php>

³⁰ German Federal Government (2008). German Strategy for Adaptation to Climate Change. Available at: http://www.bmub.bund.de/fileadmin/bmu-import/files/english/pdf/application/pdf/das_gesamt_en_bf.pdf

³¹ German Federal Government (2011). Adaptation Action Plan of the German Strategy for Adaptation to Climate Change; p. 19ff. Available at: http://www.bmub.bund.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/aktionsplan_anpassung_klimawandel_en_bf.pdf

³² BMBF (2015). Economics of Climate Change Adaptation. Available at: <http://www.oekonomie-klimawandel.de/>

³³ JPI Climate. Available at: <http://www.jpi-climate.eu/home>

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5a. Adaptation relevant data and information is available to all stakeholders, including policy makers (e.g. through a dedicated website or other comparable means)

Yes / In progress / No

Adaptation relevant data and information is available to all stakeholders through a dedicated website. In the framework of the APA, KomPass transformed its webpage into a national Information, Communication and Cooperation Platform on Adaptation³⁴. The KomPass portal is intended to serve the networking of information provision on adaptation activities and policy, and is being further expanded for this purpose in cooperation with other governmental agencies.

In addition to the website of DKD and KlimAdapts, Klimanavigator³⁵ (Climate Navigator), is a national web portal that guides users to climate and environmental information.

Other informative websites related to the current and future German climate are the German Climate Portal (*Deutsches Klimaportal*)³⁶ and the Regional Climate Atlas³⁷.

Science-policy interfaces, such as workshops, are in place to facilitate dialogue between researchers and decision and policy-makers. Since several research projects are funded and endorsed by the German government, active interaction between science and policy does take place. An example of interfaces between government, society and the scientific community is offered by the Helmholtz centre for environmental research³⁸. On the level of Bundesländer, examples of interactive workshops can also be found³⁹.

5b. Capacity building activities take place; education and training materials on climate change adaptation concepts and practices are available and disseminated

Yes / In progress / No

Capacity building activities take place; education and training materials on climate change adaptation concepts and practices are available and disseminated.

Making knowledge available, providing information, playing an enabling role is one of the key areas of the German DAS. This area comprises initiatives by the federal government to expand knowledge bases, provide and communicate information, expand the research and information infrastructure and support stakeholder dialogue, participation and networking.

On the level of Bundesländer, examples of interactive workshops can also be found⁴⁰. An example of interfaces between government, society and the scientific community is offered by the Helmholtz centre for environmental research⁴¹.

Education and capacity building was an important part of the project KlimZug, part of the sustainable development project of the Federal Ministry of Education and Research⁴².

The aim of KlimZug is to integrate expected climate changes in regional planning and development processes and to build cooperative networks.

Many tools, guidelines and handbooks have been developed by the federal government within the research projects⁴³. Between 2011 and 2014 five regional conferences were

³⁴ German Federal Government (2011). The Competence Center for Climate Impact and Adaptation (KomPass). Available at: <http://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/kompass>

³⁵ Klima Navigator. Available at: <http://www.klimanavigator.de/>

³⁶ German Climate Portal. Climate Services for Germany. Available at: <http://www.deutschesklimaportal.de>

³⁷ Germanys Regional Climate Atlas. Available at: <http://www.regionaler-klima-atlas.de/>

⁴⁰ MKULNV. Klimashutz. Available at: <https://www.klima.nrw.de/mediathek/dokumentation/workshops-anpassung/>

⁴¹ UFZ. Available at: <http://www.ufz.de/>

⁴² German Federal Ministry of Education and Research. KlimZug. Available at: <http://www.klimzug.de/en/160.php>

⁴³ BBSR. Available at: www.klimastadtraum.de

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organised by the federal government (BMUB) which discussed specific adaptation themes and aimed to support cooperation between stakeholders.

Step C: identifying adaptation options

6. Adaptation options' identification

6a. Adaptation options address the sectoral risks identified in 3c, the geographical specificities identified in 3b and follow best practices in similar contexts

Yes / No

Adaptation options are defined based on sectoral risk assessments and good practices defined in 3c and taking into account geographic specificities as defined under 3b.

In the DAS, adaptation options are presented to a limited extent – nonetheless opening up the possibilities for development of adaptation measures through the APA. For the further development of the DAS and the prioritisation of climate risks and needs for action, an up-to-date, standardised cross-sectoral vulnerability assessment and progress report were published in 2015^{44,45,46}. The Adaptation Action Plan is updated according to these findings, for example, it includes more sector specific measures and instruments⁴⁷. An overview of the actions taken and options identified, collected at the federal level, can be found in the KomPass project catalogue, providing an overview of programmes and projects related to climate change adaptation⁴⁸.

6b. The selection of priority adaptation options is based on robust methods (e.g. multi-criteria analyses, stakeholders' consultation, etc.) and consistent with existing decision-making frameworks

Yes / No

The updated Adaptation Action Plan II (APA II) as initiated under the DAS progress report⁴⁹ includes prioritisation of adaptation options, based on the vulnerability assessments, urgency and the time that it takes to implement a measure. Measures are classified within the clusters: water, infrastructure, land, health, economy and spatial planning and civil protection. In addition, measures transcending these fields are described.

⁴⁴ German Federal Government (2015). Monitoringsbericht 2015. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/monitoringbericht_2015_zur_deutschen_anpassungsstrategie_an_den_klimawandel.pdf

⁴⁵ <http://www.umweltbundesamt.de/en/publikationen/klimawandel-in-deutschland-vulnerabilitaet>

⁴⁶ German Federal Government (2015). Vulnerabilität Deutschlands gegenüber dem Klimawandel. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/climate_change_24_2015_vulnerabilitaet_deutschlands_gegenueber_dem_klimawandel_1.pdf

⁴⁷ German Federal Government (2015). Fortschrittbericht zur Deutschen Anpassungsstrategie an den Klimawandel. Available at: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimawandel_das_fortschrittsbericht_bf.pdf

⁴⁸ German Federal Government (2011). The Competence Center for Climate Impact and Adaptation (KomPass). Available at: <http://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/kompass>

⁴⁹ German Federal Government (2015). Fortschrittbericht zur Deutschen Anpassungsstrategie an den Klimawandel. Available at: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimawandel_das_fortschrittsbericht_bf.pdf

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6c. Mechanisms are in place to coordinate disaster risk management and climate change adaptation and to ensure coherence between the two policies

Yes / In progress /No

There is evidence of mechanisms in place to coordinate disaster risk management and climate change adaptation, and it is clear that there have been contacts and cooperation between the institutions responsible for both policies. A representative of the Federal Office for Civil Protection and Disaster is part of the inter-ministerial working group for climate adaptation. The office nominated a contact person for the topic civil protection and climate change. Members of the office are represented in the Strategic Governmental Agencies Alliance (see 8b) and in the 'network vulnerability'⁵⁰.

Since 2007, there is a 'Strategic Governmental Alliance Climate Adaptation' between the Federal Office for Civil Protection and Disaster Assistance, The German Meteorological Service, the Federal Institute for Research on Building, Urban affairs and Spatial Development and other institutions.

7. Funding resources identified and allocated

7. Funding is available to increase climate resilience in vulnerable sectors and for cross-cutting adaptation action

Yes / In progress /No

Yes, for all measures described in the APA II, the amount and source of available funding is described, both for vulnerable sectors as for cross-cutting adaptation action.

The government is providing funding for developing the German Climate Projections, the national climate change risk assessment, the maintenance of the Adaptation Subcommittee, the climate services websites, and other research and cross-cutting actions needed to implement the NAP and coordinate action nationally.

The Federal Government is funding exemplary model and demonstration schemes at local and regional level, that develop and test concepts and approaches for adapting to climate change.

Since the beginning of 2011, the ongoing funding of local authority climate protection concepts under the National Climate Protection initiative⁵¹ has been supplemented with options to develop integrated adaptation and climate protection concepts, and sub-concepts for adaptation. Furthermore, the BMU is currently preparing a funding scheme promoting adaptation to climate change at the level of individual enterprises.

The BMUB's promotional programme on adaptation to climate change⁵² has been in operation since October 2011, consisting of the three following promotional priorities: incentive for enterprises to draw up adaptation plans, promotion of training services in the field of adaptation to the impact of climate change, promotion of local lighthouse projects, as well as intermunicipal or regional associations to establish cooperation, draw up plans and implement them on a pilot basis for adaptation to climate change.

⁵⁰ Netzwerk Vulnerabilität (n.d.). Netzwerkpartner. Available at: <http://netzwerk-vulnerabilitaet.de/tiki-index.php?page=Netzwerkpartner>

⁵¹ BMUB. Climate Initiative. Available at: <http://www.bmub.bund.de/en/topics/climate-energy/climate-initiative/general-information/>

⁵² BMUB. Support program for adaptation to climate change. Available at: http://www.bmub.bund.de/themen/forschung-foerderung/foerderprogramme/anpassung-an-die-folgen-des-klimawandels/artikel/foerderprogramm-fuer-massnahmen-zur-anpassung-an-den-klimawandel/?tx_ttnews%5BbackPid%5D=216

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Where relevant, funding is available to increase climate resilience in vulnerable sectors. All activities under the Action Plan are funded from the budgets of the respective governments' departments within the current financial planning. Thereby all activities reside in the responsibility of the ministries.

Local authorities' adaptation activities are supported by the expanded opportunities to obtain funding under the National Climate Protection Initiative. Further support is being provided by the Environment Ministry and the German Environmental Agency (BMUB/UBA), the Federal Ministry of Transport and Digital Infrastructure (BMVI/BBSR) and the Federal Ministry of Education and Research (BMBF), in particular⁵³.

Step D: Implementing adaptation action

8. Mainstreaming adaptation in planning processes

8a. Consideration of climate change adaptation has been included in the national frameworks for environmental impact assessments

Yes / No

Germany has recently integrated the consideration of climate change (adaptation) in its EIA and SEA frameworks. This happened as part of the transposition of the revised Environmental Impacts Assessment Directive (EIA) into Germany's legislation as part of a wider reform of the country's urban planning legislation in March 2017⁵⁴.

In the majority of adaptation plans of the Bundesländer, the environmental impact assessment is mentioned as an existing tool to deal with effects of climate change in local spatial planning.

8b. Prevention/preparedness strategies in place under national disaster risk management plans take into account climate change impacts and projections

Yes / **No**

Within Civil Protection, there are several partnerships related to climate change adaptation and extreme events are considered within risk analyses. Climate change and adaptation is being included in education activities for crisis management, emergency planning and civil protection⁵⁵. The Strategic Governmental Alliance Climate Adaptation has initiated a study of alterations in extremes of temperature, precipitation and wind speed, which is currently in preparation⁵⁶.

Early warning systems for civil protection purposes draw heavily on the information that is available for extreme events. The source information is updated with the latest knowledge on extreme events – also taking on board effects of climate change.

There is, however, no evidence found of how disaster risk management plans and associated risk analysis take account of future climate projections.

⁵³ German Federal Government (2015). Progress Report on the German Adaptation Strategy on Climate Change. Available at: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimawandel_das_fortschrittsbericht_bf.pdf

⁵⁴ <https://www.bundesregierung.de/Content/DE/Artikel/2016/11/2016-11-30-urbane-gebiete.html>

⁵⁵ German Federal Government (2015). Fortschrittbericht zur Deutschen Anpassungsstrategie an den Klimawandel. Available at: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimawandel_das_fortschrittsbericht_bf.pdf

⁵⁶ German Federal Government. Being prepared for extreme weather events. Available at: <http://www.umweltbundesamt.de/presse/presseinformationen/gewappnet-sein-fuer-extreme-wetterereignisse>

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8c. Key land use, spatial planning, urban planning and maritime spatial planning policies take into account the impacts of climate change

Yes / No

When the Federal Regional Planning Act was revised in 2008, adaptation to climate change was introduced into the legislation as one of the principles of spatial planning (Paragraph 2, Section 2, No. 6). This put in place a framework that will allow the spatial plans of the Länder and regions to be gradually supplemented with the aspect of provision for the spatial requirements of climate adaptation during their redrafting process. In every revision of spatial plans, sectoral environmental plans will be incorporated.

An example of a project integrating climate change into land use and land management is the KLIMAPAKTproject, setting best practices for spatial planning in Germany (2008-2010). The internet platform *Klima und Raum* is a result of this project and aims for long term networking between research, institutions and practice⁵⁷. A recent report (2016) of the Federal Environmental Office provides a practical guide for consideration of climate change adaptation in spatial planning⁵⁸. There are several more research projects related to climate change and spatial planning, such as *Klimawandelgerechter Regionalplan*⁵⁹ and other projects within KlimaMORO, which aim is to develop strategies for spatial development and climate change⁶⁰.

A focus point for the government is to develop planning instruments that can incorporate climate adaptation.

8d. National policy instruments promote adaptation at sectoral level, in line with national priorities and in areas where adaptation is mainstreamed in EU policies

Yes / In progress / No

National policy instruments promote adaptation at sectoral level, in line with national priorities. The APA has a sectoral approach. The concrete implementation is then left to the Länder. The action programmes and model projects are adopted by the relevant stakeholders. But in practice climate adaptation does not have highest priority in most of the municipalities (except in the model projects)⁶¹.

The progress report (2015) identifies the following sectors as having incorporated climate adaptation: the protection of critical infrastructure, spatial development, forest management, biodiversity, water/flood management. The German Resources Strategy, the Resource efficiency programme and EU policy for maritime spatial planning have potential to include the importance of climate adaptation.

Examples of the policy instruments applied to promote adaptation at sectoral level:

⁵⁷ Klima und Raum. Available at: <http://www.klima-und-raum.org>

⁵⁸ German Federal Government (2016). Klimaanpassung in der räumlichen Planung. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/1968/publikationen/fkz_3711_41_103_internet_hauptprodukt_praxishil_fe_klimaanpassung_in_der_raumlichen_planung.pdf

⁵⁹ BBSR (2016). KlimREG. Available at: http://www.bbsr.bund.de/BBSR/DE/FP/MORO/Forschungsfelder/2014/KlimREG/01_start.html?nn=406988

⁶⁰ KlimaMoro. Available at: <http://www.klimamoro.de>

⁶¹ German Federal Government (2015). Fortschrittbericht zur Deutschen Anpassungsstrategie an den Klimawandel. Available at: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimawandel_das_fortschrittsbericht_bf.pdf

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-The building code was amended to include requirements for climate change and climate adaptation so it is considered in urban planning by municipalities⁶². -Regulations are adapted to include climate adaptation, such as applying a climate change factor for facility safety to the expected intensities of river high water, flood events and heavy rainfall.

Research projects are also important for the promotion of adaptation in different sectors. For example, KLIWAS (by BMVI) investigated the impacts of climate change on waterways and shipping and developed adaptation options⁶³. It developed new methods and tools within 30 projects and involved many stakeholders, which increased the systemic understanding of the sector and encourages implementation of adaptation measures.

8e. Adaptation is mainstreamed in insurance or alternative policy instruments, where relevant, to provide incentives for investments in risk prevention

Yes / No

One of the activities described in the APA is discussing insurance options for physical damage. Another measure is the binding inclusion of climate factors in risk analysis by financial services companies.

According to the progress report (2015), the insurance sector can react to climatic changes accordingly and can continue to provide insurance against natural disasters. The insurance sector in Germany is well aware of the risks of climate change and climate change is considered within risk management.

9. Implementing adaptation

9a. Adaptation policies and measures are implemented, e.g. as defined in action plans or sectoral policy documents

Yes / **In progress** / No

Adaptation policies and measures are being implemented, e.g. as defined in action plans or sectoral policy documents. Good practices can be found mainly for coastal protection, flood protection and prevention, protection against heavy rains, heat waves and droughts⁶⁴.

In the plans drafted by the Länder, specific challenges to these sectors are addressed when deemed relevant by them. A complete overview can be found on the Kompass web page⁶⁵. Per sector, a short background of relevant mechanisms induced by climate change is described.

The progress report states that from the 150 measures, 43 are implemented, 78 are in the process of being implemented, while 13 measures are not yet being implemented and 10 are in preparation (state of May 2015). Most important reasons for the delay of implementation of certain measures are a longer than expected preparation and discussion phase or lacking human or financial resources.

⁶² German Federal Government (2015). Fortschrittbericht zur Deutschen Anpassungsstrategie an den Klimawandel. Available at: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimawandel_das_fortschrittsbericht_bf.pdf

⁶³ KLIWAS. Available at: http://www.kliwas.de/KLIWAS/DE/Home/homepage_node.html

⁶⁴ German Federal Government (2015). Fortschrittbericht zur Deutschen Anpassungsstrategie an den Klimawandel. Available at: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimawandel_das_fortschrittsbericht_bf.pdf

⁶⁵ German Federal Government (2011). The Competence Center for Climate Impact and Adaptation (KomPass). Available at: <http://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/kompass>

9b. Cooperation mechanisms in place to foster and support adaptation at relevant scales (e.g. local, subnational)

Yes / No

Cooperation mechanisms are in place to foster and support adaptation at relevant scales (e.g. local, subnational).

For the Federal Government, attention is given to the support of adaptation at local level⁶⁶, including through funding schemes. Cooperation between the federal level and the Bundesländer is well coordinated. In order to support activities at the local level, the Federal Government has initiated projects on adaptation issues in various model regions, facilitated dialogues (with support of relevant ministries), grants and workshops. As a result, several reports with research results, guidance and implementation examples have been published^{67,68}. Within the project KlimZug, cooperation networks are built to effectively integrate climate adaptation measures into regional planning and development projects⁶⁹. IT-supported information services for climate impact assessment are available for local authorities, such as the UBA/KomPass Klimalotse, an adaptation decision-support tool and the BBSR's Stadtklimalotse⁷⁰. The website Klimascout gives a wiki-like overview of climate change adaptation for municipalities⁷¹.

9c. Procedures or guidelines are available to assess the potential impact of climate change on major projects or programmes, and facilitate the choice of alternative options, e.g. green infrastructure

Yes / No

Procedures or guidelines are available to assess the potential impact of climate change on major projects or programmes, and facilitate the choice of alternative options.

From 2014-2017, the climate resilience of infrastructures is being examined. through a project which investigates the weak spots of current infrastructure and develops scenarios for future infrastructures considering climate and extreme weather events, societal and technological change as well as a vision of future climate resilient and sustainable infrastructures⁷².

A project about climate-resilient regions studies the vulnerability of (critical) infrastructure in the context of climate change. Approaches to design climate-resilient infrastructures will be developed. This includes the consideration of social, organizational and institutional consequences that are associated with the adaptation of existing or alternative infrastructures. Based on this, policy recommendations will be developed for

⁶⁶ EU (2016). Regional and local adaptation in the EU since the adoption of the EU adaptation strategy in 2013. Available at:

<http://cor.europa.eu/en/documentation/studies/Documents/Local%20and%20regional%20adaptation.pdf>

⁶⁷ BBSR (2016). Klimaresilienter Stadtbau. Available at: http://www.bbsr.bund.de/BBSR/DE/Veroeffentlichungen/Sonderveroeffentlichungen/2017/klimaresilienter-stadtbau-dl.pdf?__blob=publicationFile&v=3

⁶⁸ BBSR (2016). Anpassung an den Klimawandel in Stadt und Region. Available at: http://www.bbsr.bund.de/BBSR/DE/Veroeffentlichungen/Sonderveroeffentlichungen/2016/anpassung-klimawandel-dl.pdf?__blob=publicationFile&v=2

⁶⁹ German Federal Ministry of Education and Research. KlimZug. Available at: <http://www.klimzug.de/en/160.php>

⁷⁰ German Federal Government. Klimalotse. Available at: www.klimalotse.anpassung.net/

⁷¹ KlimaScout. Available at: <http://www.klimascout.de/kommunen/index.php?title=Hauptseite>

⁷² German Federal Government (2017). Klaris. Available at: <https://www.umweltbundesamt.de/en/topics/climate-energy/climate-change-adaptation/adaptation-tools/project-catalog/klaris-needs-opportunities-for-climate-resilient>

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actors at the federal level and other adaptation stakeholders (e.g. municipalities) for developing climate-resilient infrastructures⁷³.

It is not clear if Green Infrastructure (GI) is facilitated specifically as an alternative to major projects or programmes, but Germany is active in the field of GI, and GI is at least promoted as a climate adaptation measure for flood protection. Also in urban areas, green areas, water retention basins and reduction of sealed soil are seen as important measures for adapting the city to climate change (as described in the National Urban Development Policy (*Nationale Stadtentwicklungspolitik*)).

9d. There are processes for stakeholders' involvement in the implementation of adaptation policies and measures

Yes / No

Stakeholders are being actively involved in the German adaptation policy development and implementation process. For the development of the DAS and APA in particular academia, research, NGOs and the business sector have been strategically involved⁷⁴.

In order to showcase and bundle how non-state actors are involved in the implementation process ongoing activities by stakeholders are captured in an ever-expanding information platform to share this knowledge and experience with other interested citizens, business, NGOs, etc. primarily on local and regional levels: 'Tatenbank Anpassung' (Actionbase Adaptation)⁷⁵.

At the same time, both the APA as well as expert opinion⁷⁶ since its publication emphasise that there is still a need to embed the necessity for climate adaptation more deeply in society, in particular among non-state actors and citizens in order to encourage more active involvement.

Step E: Monitoring and evaluation of adaptation activities

10. Monitoring and reporting

10a. NAS/NAP implementation is monitored and the results of the monitoring are disseminated

Yes / No

The impacts of climate change on different sectors (fields of action from DAS) and the progress on adaptation are monitored using qualitative and quantitative indicators. This is reported in a Monitoring report (2015) published by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety and is planned to be reported every four years⁷⁷. The progress report includes information on allocated budgets.

⁷³ German Federal Government (2016). Climate-resilient regions. Available at: <https://www.umweltbundesamt.de/en/topics/climate-energy/climate-change-adaptation/adaptation-tools/project-catalog/climate-resilient-regions>

⁷⁴ For example, see p. 17 of APA (http://www.bmub.bund.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/aktionsplan_anpassung_klimawandel_en_bf.pdf)

⁷⁵ http://www.tatenbank.anpassung.net/clin_095/Tatenbank/DE/Home/home_node.html.

⁷⁶ <https://www.nachhaltigkeitsrat.de/aktuelles/nachhaltigkeitspolitik/detailansicht/artikel/tut-deutschland-genug-zur-anpassung-an-den-klimawandel/>

⁷⁷ Umweltbundesamt (2015). Monitoringsbericht zur Deutschen Anpassungsstrategie an den Klimawandel. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/monitoringbericht_2015_zur_deutschen_anpassungsstrategie_an_den_klimawandel.pdf

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10b. The integration of climate change adaptation in sectoral policies is monitored and the results of the monitoring are disseminated

Yes / No

Monitoring of integrating climate action in the priority sectors is not included within the methodology of the monitoring process. However, the progress report is structured per vulnerable sector.

10c. Regional-, sub-national or local action is monitored and the results of the monitoring are disseminated

Yes / No

No formal monitoring and reporting mechanism seems to be in place for adaptation on regional or local level, but the progress is being reported within the brochure *Anpassung an den Klimawandel in Stadt und Region*⁷⁸. Guidelines and tools are given for monitoring and reporting on a local scale.

11. Evaluation

11a. A periodic review of the national adaptation strategy and action plans is planned

Yes / No

A periodic review of national adaptation strategies and action plans is undertaken through the monitoring report and the progress report. These reports serve evaluation purposes for any revision needed. An update of the APA was for instance published in 2015, containing among other things a detailed planning of activities and a funding plan aimed at reaching the DAS objectives. The monitoring report described under indicator '10a' is to be drawn up every four years.

The progress review, on the one hand, records climate changes and climate change impacts on environment and society, i.e. the classic sustainability dimensions of environmental, economic and social aspects. On the other hand, it also represents the process of implementing the Adaptation Strategy (by means of 'process indicators').

11b. Stakeholders are involved in the assessment, evaluation and review of national adaptation policy

Yes / No

Stakeholders are involved in the assessment, evaluation and review of national adaptation policy mostly through consultation, and as receivers of information. It would appear as though active stakeholder involvement has been limited to science and research stakeholders.

The indicators for the monitoring of climate change impacts and adaptation have been developed in a 5-year long process in which governmental and non-governmental

⁷⁸ BBSR (2016). Anpassung an den Klimawandel in Stadt und Region. Available at: http://www.bbsr.bund.de/BBSR/DE/Veroeffentlichungen/Sonderveroeffentlichungen/2016/anpassung-klimawandel-dl.pdf?__blob=publicationFile&v=2
http://www.bbsr.bund.de/BBSR/DE/FP/MORO/Studien/2011/LeitfadenRegionaleKlimafolgenbewertung/Download/s/DL_Handbuch.pdf;jsessionid=9E901BD9056219A1DFBB0E103B660DB1.live11294?__blob=publicationFile&v=3

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experts from national and Länder-level were involved, but no evidence can be found that stakeholders were involved in the evaluation of the indicators⁷⁹.

⁷⁹ Umweltbundesamt (2015). Monitoringsbericht zur Deutschen Anpassungsstrategie an den Klimawandel. Available at: https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/monitoringbericht_2015_zur_deutschen_anpassungsstrategie_an_den_klimawandel.pdf

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SUMMARY TABLE

Adaptation Preparedness Scoreboard		
No.	Indicator	Met?
Step A: Preparing the ground for adaptation		
1 Coordination structure		
1a	A central administration body officially in charge of adaptation policy making	Yes / No
1b	Horizontal (i.e. sectoral) coordination mechanisms exist within the governance system, with division of responsibilities	Yes / In progress / No
1c	Vertical (i.e. across levels of administration) coordination mechanisms exist within the governance system, enabling lower levels of administration to influence policy making.	Yes / In progress / No
2 Stakeholders' involvement in policy development		
2a	A dedicated process is in place to facilitate stakeholders' involvement in the preparation of adaptation policies	Yes / No
2b	Transboundary cooperation is planned to address common challenges with relevant countries	Yes / No
Step B: Assessing risks and vulnerabilities to climate change		
3 Current and projected climate change		
3a	Observation systems are in place to monitor climate change, extreme climate events and their impacts	Yes / In progress / No
3b	Scenarios and projections are used to assess the economic, social and environmental impacts of climate change, taking into account geographical specificities and best available science (e.g. in response to revised IPCC assessments) Yes / In progress / No (e.g. in response to revised IPCC assessments)	Yes / In progress / No
3c	Sound climate risks/vulnerability assessments for priority vulnerable sectors are undertaken to support adaptation decision making.	Yes / In progress / No
3d	Climate risks/vulnerability assessments take transboundary risks into account, when relevant	Yes / In progress / No
4 Knowledge gaps		
4	Work is being carried out to identify, prioritise and address the knowledge gaps	Yes / In progress / No
5 Knowledge transfer		
5a	Adaptation relevant data and information is available to all stakeholders, including policy makers (e.g. through a dedicated website or other comparable means).	Yes / In progress / No
5b	Capacity building activities take place; education and training materials on climate change adaptation concepts and practices are available and disseminated	Yes / In progress / No
Step C: Identifying adaptation options		
6 Identification of adaptation options		
6a	Adaptation options address the sectoral risks identified in 3c, the geographical specificities identified in 3b and follow best practices in similar contexts	Yes / No
6b	The selection of priority adaptation options is based on robust methods (e.g. multi-criteria analyses, stakeholders' consultation, etc.) and consistent with existing decision-making frameworks	Yes / No
6c	Mechanisms are in place to coordinate disaster risk	Yes / In progress

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Adaptation Preparedness Scoreboard		
No.	Indicator	Met?
	management and climate change adaptation and to ensure coherence between the two policies	/No
7 Funding resources identified and allocated		
7	Funding is available to increase climate resilience in vulnerable sectors and for cross-cutting adaptation action	Yes / In progress / No
Step D: Implementing adaptation action		
8 Mainstreaming adaptation in planning processes		
8a	Consideration of climate change adaptation has been included in the national frameworks for environmental impact assessments	Yes / No
8b	Prevention/preparedness strategies in place under national disaster risk management plans take into account climate change impacts and projections	Yes / No
8c	Key land use, spatial planning, urban planning and maritime spatial planning policies take into account the impacts of climate change	Yes / No
8d	National policy instruments promote adaptation at sectoral level, in line with national priorities and in areas where adaptation is mainstreamed in EU policies	Yes / In progress / No
8e	Adaptation is mainstreamed in insurance or alternative policy instruments, where relevant, to provide incentives for investments in risk prevention	Yes / No
9 Implementing adaptation		
9a	Adaptation policies and measures are implemented, e.g. as defined in action plans or sectoral policy documents	Yes / In progress / No
9b	Cooperation mechanisms in place to foster and support adaptation at relevant scales (e.g. local, subnational)	Yes / No
9c	Procedures or guidelines are available to assess the potential impact of climate change on major projects or programmes, and facilitate the choice of alternative options, e.g. green infrastructure	Yes / No
9d	There are processes for stakeholders' involvement in the implementation of adaptation policies and measures.	Yes / No
Step E: Monitoring and evaluation of adaptation activities		
10 Monitoring and reporting		
10a	NAS/NAP implementation is monitored and the results of the monitoring are disseminated	Yes / No
10b	The integration of climate change adaptation in sectoral policies is monitored and the results of the monitoring are disseminated	Yes / No
10c	Regional-, sub-national or local action is monitored and the results of the monitoring are disseminated	Yes / No
11 Evaluation		
11a	A periodic review of the national adaptation strategy and action plans is planned	Yes / No
11b	Stakeholders are involved in the assessment, evaluation and review of national adaptation policy	Yes / No