

The Fight Against Climate Change as an Opportunity in Germany?

Current Developments and Further Needs where Water is in Excess

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It is uncommon for northern European cities to feel like tropical countries in early summer. Berlin in June 2017 presented one of these rare exceptions. There would be no cause for serious concern had the city not been deluged by more than four times the average monthly rainfall, flooding several areas in the city. Similar extreme weather events occurred across Germany and Europe.

In August 2017, 30 European partners published the results of a study funded by the European Research Council in the journal *Science*. Using a new international river flow dataset of unparalleled scale and diversity, the researchers provide an explanation for the link between climate change and floods.

Germans say *es ist fünf vor zwölf* – meaning it's five to twelve – to express that time is running out. The impact of climate change has created a need for improved monitoring of water resources and aquatic systems as well as extreme weather events. New flood prediction and prevention methods, tools, and technologies are needed more than ever before.

With the clock ticking, challenges need to be addressed promptly. A solid framework for this is essential. The German Strategy for Adaptation to Climate Change aims to reduce vulnerability and improve adaptive capacity to climate change. The strategy specifies the consequences of climate change for 13 sectors in Germany and presents mitigation measures. The strategy is integrated into an international framework of climate change measures.

Active involvement in international scientific networks and strategic partnerships between institutions and companies are essential parts of climate research. German cities in particular are supporting the development and application of technologies that offer new solutions to climate change challenges. According to the Federal Environment Agency (UBA), more than 90 percent of all major German cities (76 cities with more than 100 000 inhabitants) are actively developing concepts and strategies to adapt to climate change. The primary instruments include specific local and regional adaptation measures, planning parameters, and structural measures.

Considering that extreme events such as water shortages or heavy rainfall and the resulting floods will occur more often in the future, efficient water use, flood and sea protection, and the related infrastructure must be improved. Awareness needs to be raised about the risks and information should be provided to prevent damage to property and persons.

What can be done where water is in excess?

Climate modeling instruments can help highlight regions where water is in excess. In Germany, more than 50 research institutions share findings from climate and adaptation research on the Klimanavigator platform. The resulting modeling systems have a high spatial resolution, which enables small-scale structures, such as those in mountainous regions, to be described. The models offer a higher level of detail about the distribution of temperature and precipitation. Additionally, the system is able to produce simulations of weather extremes such as intensive convective precipitation or storms.

Particular attention needs to be paid to the way drainage systems are planned. Reservoirs and water treatment plants need to be equipped to handle larger volumes to prevent combined sewer systems from flooding. Furthermore, customized area management needs to restrict the sealing of surfaces – especially in highly populated areas – to ensure rainwater can soak away in case of heavy rain events. The so-called “sponge city” concept calls for urban areas to be adapted to collect rainwater on green roofs or in public places, and even to allow these areas to flood for a short time when there is water in excess. This concept is already being implemented in the city of Hamburg through its green roof strategy.

Last but not least, flood retention areas need to be created. The European Water Framework Directive (WFD – Directive 2000/60/EC) and the EU Flood Risk Management Directive (FRMD – Directive 2007/60/EC) already stipulate an integrated management of river basins with coordinated protection and usage requirements. In Germany the federal government and the states have identified priority measures for the rivers Elbe, Danube, Rhine, Weser and Oder under the National Flood Protection Program. More than 20 000 hectares of wetland will be restored throughout Germany, creating more than 1.2 million cubic meters of additional containment volume as assessable polder. The program includes 32 interregional projects for dike relocation, 59 projects for controlled flood retention, and 16 projects covering vulnerabilities.

However, implementing these measures requires the public and private sector to work hand in hand. New technologies from innovative companies are needed to ensure that Germany reaches its ambitious goals for adaptation to climate change. This is why strong support is available to foreign firms consid-

ering an investment in the field of climate change adaptation in Germany.

Financing and incentive instruments

Enterprises in the climate change adaptation sector that are planning to establish a facility in the promising German market can take advantage of a wide range of financing and incentive instruments.

Direct grants and other funding instruments, e. g. public promotional loans, public guarantees, and equity capital, can reduce investment costs significantly in designated support areas.

Visit www.gtai.de/incentives for a wide range of information on the available incentives and funding. Here is a quick overview of a small selection of relevant R&D financing and incentive instruments.

NaWaM supports R&D in the field of sustainable water management

The Federal Ministry of Education and Research (BMBF) promotes the development of innovative technologies, processes, and systemic solutions for sustainable water management through the “Sustainable Water Management” (NaWaM) funding program. The aim is to develop key technologies in cooperation with industry, adapt them to changing basic conditions, and disseminate them internationally.

The BMBF calls for the participation of industrial enterprises, in particular small and medium-sized enterprises, in collaborative projects. Through this program the ministry aims to strengthen Germany’s leading international position in the water technology sector.

www.fona.de

Franco-German Fellowship Programme

Germany and France are jointly promoting R&D in the areas of climate change, renewable energy, and ecosystems. The countries are inviting researchers from all over the world to cooperate with German and French partners to advance research under the motto “Make our planet great again”.

The calls for proposals have already been published. Further information:

www.fona.de

Promoting adaptation to climate change: Attractive funding

The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) funds measures to adapt to climate change. Funding priorities include the establishment of concepts for adaptation to climate change within enterprises. The aim is to strengthen the adaptability of different actors locally as well as regionally. Funding is provided in the form of grants, up to a maximum of EUR 300 000.

en.dwa.de/journals.html

Further information:

www.foerderdatenbank.de

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www.gtai.de/umwelttechnik

<http://www.gtai.de/GTAI/Navigation/EN/Invest/Industries/environmental-technologies.html>

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