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Will Europe's next crisis be a water crisis?

Gisela Elsner
Konrad-Adenauer-Stiftung, Germany

Abstract

Water is an important factor in the effects of climate change and, at the same time, it is a victim of global warming. Extreme weather events such as prolonged heat, which causes droughts and flash flooding, have been reported by various European countries. Given these challenges, many EU member states have set up action plans for water management. The recent National Water Strategy from the German federal government is one of them. While these policies help to tackle country-specific challenges, given the fact that Europe shares water resources, coordinated action is also needed at the EU level. The EU Water Framework Directive and related legislation are key instruments in this regard. However, the implementation of water-related policies and regulations at EU level needs to shift from crisis management to risk management, taking an integrated, cross-sector approach, in order to prevent water challenges from becoming Europe's next crisis.

Keywords

Water management, German federal government, National Water Strategy, Water crisis, Climate change, Climate leadership, EU Water Framework Directive, Drought, Flood

Introduction

Water is the basis of life for all living beings and its flows transcend national boundaries. Cities and states were built on waterfronts. In the EU, 22 of the 27 member states are coastal countries, and 23 EU capitals are adjacent to either rivers or the coast. Many of the member states share access to the same bodies of water. Historically, water access enabled trade. Therefore, it makes sense that the EU, the initial purpose of which was to form a

Corresponding author:
G. Elsner, Konrad-Adenauer-Stiftung, Klingelhöferstr. 23, Berlin, D-10785, Germany.
Email: gisela.elsner@kas.de

common market, established the EU Water Framework Directive (WFD) in the year 2000 (European Parliament and Council 2000). It has since been complemented by more specific legislation such as the Drinking Water Directive (European Parliament and Council 2020), the Groundwater Directive (European Parliament and Council 2006), the Floods Directive (European Parliament and Council 2007) and the Urban Waste Water Treatment Directive (European Council 1991),[1] to mention just a few. From their titles, these directives provide an insight into the various types of water use and the challenges to be dealt with regarding its protection and management, mainly due to the increasing effects of climate change.

'Water is the messenger delivering the bad news of climate change'[2]

The size of the task becomes evident when looking at media stories across Europe in recent months and even years, where water-related events and analyses of the causes of them are everyday headline topics. Prolonged, and at times extreme, heat, causing droughts and wildfires, as well as extraordinarily low river levels, have been reported in various European countries, including France, Spain and Portugal. Bulgaria, Romania, Poland and Greece, as well as the Nordic countries, are also showing symptoms of water stress. According to the European Drought Observatory (European Commission 2023), at the end of June 2023—that is, not very far into the summer—more than 45% of the territory of the EU27 was under a drought warning, while almost 7% was in alert status.

If these dry periods are followed by sudden heavy rainfall, catastrophic flash flooding can wipe out livelihoods, including crops, very quickly, as happened in Italy and Croatia recently, and in Germany in the summer of 2021. These incidents show how water is an important factor in the effects of climate change. This is reflected in both droughts and flooding, two extreme weather events that are usually considered polar opposites. Concurrently, the increasing groundwater shortages, as a long-term challenge, demonstrate that water is also a victim of global warming. Recent scientific findings have indicated that groundwater resources in large parts of Europe have been dwindling since the beginning of the twenty-first century, mainly due to excessive extraction for use in the supply of public water, as well as for agricultural and industrial production (Barnett 2022). Alongside water availability and consumption, the pollution of water bodies resulting from the input of chemicals, namely residues originating from agricultural production, pharmaceuticals, cosmetics and detergents, is also an environmental and thereby a policy challenge.

Water in the context of the energy world of tomorrow

At the same time, water is an important element when it comes to combating climate change, for example, with regard to finding new ways of sustainable energy production. However, even low-CO_2 technologies for energy production and storage consume

enormous amounts of water. Photovoltaic power plants, for instance, frequently must be cooled and cleaned with water. Water is the raw material in the production of hydrogen, of which approximately nine litres is needed per kilogramme of hydrogen produced (H2.B Zentrum Wasserstoff Bayern 2023). Furthermore, the extraction of lithium, an indispensable raw material for electric vehicle batteries, for example, has a very diverse water consumption pattern depending on how it is extracted—in the process that currently dominates, however, which involves the evaporation of saline brine, consumption is very high (Algermißen et al. 2023, 5).

The establishment of a Tesla factory, with its water-intensive production facilities, in Brandenburg, a water-poor region not far from Berlin, is testament to the fact that the fabrication of more climate-friendly products can be quite testing for the environment and in particular for water resources. The protests around this project show how increasing competition for water can raise tensions and challenge social cohesion.

Another manifestation of conflicting goals regarding climate protection is an anticipated water-management issue in the same German region, south-east of Berlin. A recent study published by the German Federal Environment Agency predicts the likelihood of severe water shortages once brown coal mining is phased out, at the latest by the end of 2038, as a result of replacing this high-emission energy source with renewable energy sources. Mining for coal has the side-benefit of groundwater being pumped from the mining sites into the rivers of the area, among them the River Spree, which runs through Berlin and plays an important role in providing the capital with drinking water. Currently, about 40% of the river's water is from mining drainage. Together with the increasing likelihood of drought caused by the aforementioned effects of climate change, the Spree could, according to the study, carry up to 75% less water locally once mining has stopped (Uhlmann et al. 2023). This would have severe impacts on nature and the drinking-water supply in the region. With high temperatures expected over the summer months, just before the recess of the German Bundestag the Christian Democratic Union/Christian Social Union (Christlich Demokratische Union Deutschlands/Christlich-Soziale Union in Bayern, CDU/CSU) parliamentary group highlighted this matter in a parliamentary motion. This prompted the federal government, together with relevant stakeholders, these being the federal states and municipalities, to take the necessary steps in a timely manner to prevent imminent water scarcity in the region (German Federal Government 2023a). These examples show that time is of the essence—and a planned, proactive and thereby strategic approach is needed, both on the national and the European level.

Strategise national water management: the German government's recent National Water Strategy

Given the aforementioned challenges which most EU member states are faced with in different forms of appearance and urgency, many have set up strategies and action plans for water management. The recent National Water Strategy from the German federal government is one such plan and was adopted in March 2023 (Germany, Federal Ministry

for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection 2023b). In view of the consequences of climate change, the federal government intends to initiate a new era of water transition (*Wasserwende*, or 'water turnaround'), focusing on 10 strategic themes, challenges and visions for 2050 in order to accelerate the transformation of the water sector (Germany, Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection 2023a).

The objective of the strategy is to provide anticipatory responses as to how the water supply for both people and the environment can be secured in sufficient quantity and necessary quality by the year 2050. The National Water Strategy has several different foundations. The coalition agreement of the 'traffic-light coalition' government, composed of the Social Democrats (Sozialdemokratische Partei Deutschlands, identified with the colour red), Liberals (Freie Demokraten, yellow) and the Green Party (Bündnis 90/Die Grünen), is one of them. In addition, the outcomes of a multi-year national water dialogue involving experts from water management, agriculture and other economic sectors; research associations; the federal states and municipalities; and the national citizens' dialogue on 'Water', have also been taken into account. However, a large part of the process had also already taken place under the CDU/CSU-led grand coalition with the Social Democrats. The Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection has the overall lead.

The topics covered span from raising awareness of water as a global resource to natural water management and the risks arising from chemical inputs, the climate-adapted development of water infrastructure, energy- and material-cycle issues, and the efficiency of administrative bodies. The strategy is flanked by a comprehensive programme of almost 80 measures to transform the water sector into a more sustainable one.

During a consultation process, the federal states and their associations had the opportunity to make suggestions and comment on the draft National Water Strategy. While the strategy has been welcomed in principle, the main points of criticism centre on questions of implementation, in particular a lack of specificity about responsibilities, financial resources and timelines, as well as deficits in the prioritisation of measures, monitoring and data accessibility. Furthermore, the requirement for the need for more people to carry out the implementation is highlighted, in view of the somewhat precarious resources at the disposal of the administrations responsible (Uhlmann et al. 2023)

Other member states of the EU have also set up or announced national water plans or strategies, either explicitly or as part of broader environmental policies, in an attempt to manage the challenges around water in the context of climate change. This is the case for Austria, Finland, France, Italy, Malta, the Netherlands, Poland and Spain. However, the extent to which these plans refer to the European WFD varies between countries.

A coordinated European response?

Given the fact that Europe shares its water and marine environments, protecting these resources and ecosystems from over-abstraction, pollution and other threats requires

coordinated action at EU level. According to Article 1 of the EU WFD, its purpose is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. As a key tool for implementing the WFD, member states are requested to draw up River Basin Management Plans and outline specific measures to achieve the purpose and environmental objectives set out in Articles 1 and 4, namely to prevent and reduce pollution, to promote sustainable water use, to protect and improve the aquatic environment, and to mitigate the effects of floods and droughts.

To ensure the coherent, coordinated and cooperative implementation of the WFD and the more specific directives that relate to water, a Common Implementation Strategy was agreed between the EU member states, Norway and the European Commission just a few months after the WFD entered into force. Triennial work programmes regularly update the strategy to address priorities in water protection and management. The fields of activity outlined in the current work programme (2022–4) focus on enhancing the implementation of the WFD through more systematic approaches to tackling the challenges surrounding water. In particular, additional efforts are needed to continue increasing water-use efficiency in various sectors, to further improve the coordination and coherence of the sectoral plans, to include adaptation strategies and enhance drought management in Europe, and to improve the data available on water quantity. These efforts need to be undertaken in an attempt to promote resilience in the greater context of climate change (CIRCABC 2021).

Just as water is a transboundary resource, so are the challenges relating to its protection and management. Solutions to these problems therefore also have to be systematic and coordinated. As a report by the European Environment Agency (2021) puts it, water-related policies and regulations are in place at the EU level, but their implementation needs to be improved and there needs to be a shift from crisis management to risk management, which will come from taking an integrated, cross-sector approach. The EU Green Deal (European Commission 2019) as well as the EU Strategy on Adaptation to Climate Change (Climate Adapt 2022) represent opportunities to create synergies to achieve sustainable water management and reduce vulnerability to water stress. Raising awareness among the populations of the EU member states will be essential. National water strategies could assist here, as they can focus on the specific situations in the respective countries. The policies of sectors such as industry and energy also have to be taken into account, especially with regard to water reuse.

A matter of security and social cohesion

It is increasingly understood that basic questions around the management of water, especially access to it and priorities in the context of scarcity, are becoming a political issue (Weise and Zimmermann 2023)—including at the global level, where water management is seen as a cross-cutting key element in achieving the UN Sustainable Development Goals and as an element of human security (IISD 2023). The German federal government's recent National Security Strategy also prioritised the security aspect of water in terms of access to it and the protection of water resources, and makes reference to the

National Water Strategy (German Federal Government 2023b, 21 and 67). Tensions arising from growing competition over water could spark further migration from water-poor world regions. Increasing water stress could likewise challenge social cohesion, not only in the EU, but even within its member states. In particular in the south of Germany, legal disputes related to the prioritisation of the water supply or the distribution of costs for the use of water as a limited resource are reported to have doubled over the past two decades (Joeres et al. 2022). In western France, there have even been violent clashes following tensions between environmentalists and farmers over the construction of water reservoirs (Guillot 2023).

Conclusion

To prevent water challenges from becoming Europe's next crisis, the EU should strive for real climate leadership by making use of the legal and institutional framework at its disposal to take its water diplomacy to the next level. Efforts to strengthen diplomatic outreach and technical support for transboundary water governance, the coordination of state and civic actors, and focusing on water reuse and improved water efficiency in the energy and industry sectors, as well as directing climate finance into scaling up regeneration efforts, are important steps to take towards having a holistic view of water and combating scarcity—or ideally even partly reversing it.

Notes

1. In October 2022, the Commission adopted its proposal for a revised directive (European Commission 2022).
2. According to J. Famiglietti, hydrologist and director of the Global Institute for Water Security at the University of Saskatchewan, quoted in Barnett (2022).

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Author biography

Gisela Elsner *is currently a policy advisor on global sustainability in the Department 2030 Agenda of the Analysis and Consulting Division at Konrad-Adenauer-Stiftung e.V. (KAS) in Berlin. Working for KAS since 2006, she has led the KAS Rule of Law Programme for Latin America (2006–11) and Asia (2015–20), as well as the Latin America Regional Department at KAS head office (2012–15).*