Plea to politicians: sustainable water management is key for adapting to climate risks

The climate crisis includes a water crisis, as the effects of climate change are most noticeable in the availability of water – through problems such as water shortages or water pollution. Our global food and energy security is also closely linked to water supply. Scientists and practitioners involved in “Water as a Global Resource”, a funding programme being run by Germany’s Ministry of Education and Research, are therefore marking World Water Day by calling on politicians to take action: make sustainable water management a bigger focus of climate adaptation efforts.

Two thirds of the global population already face serious water shortages at least one month per year – and the number is rising. Natural stocks of clean water are being depleted faster than they can be renewed. Overuse of global water resources is causing conflicts of interests. Population growth and climate change can both exacerbate the water crisis. And in these days of worldwide trade, local and regional water resources and systems are globally linked: as well as considering the needs of people here, we must also consider the needs of people on the other side of the world.

Copper, for instance, is used to produce photovoltaic panels. Mining copper uses large quantities of water. If the copper needed for the panels is imported, this will affect the water resources in the exporting country. This means that energy production in one country can increase the water stress in another country, making it necessary to address the local impacts on the environment and society.

The funding programme “Water as Global Resource”: 90 institutes, 12 projects

The funding programme GRoW, which is being run by the German Federal Ministry of Education and Research (BMBF), has been investigating these global–local relationships since 2017. GRoW takes an integrated view of the ways in which water, energy, food and climate interact. This means that GRoW can help mitigate the climate crisis by working to overcome the water crisis. The teams of researchers and practitioners working in GRoW deliver urgently needed expertise on the availability and status of global water resources. They also develop solutions for climate-resilient water resources management at the local level. Over 90 institutions active in research, business and practice are participating in 12 joint research projects. GRoW is one of the world’s largest funding measures working in this field. The results of the programme will be – depending on current developments – presented at a final conference in Berlin in late June.

A plea to politicians on World Water Day

GRoW supports the UN in its call on World Water Day 2020 to climate policymakers: “We cannot afford to wait. Climate policymakers must put water at the heart of action plans”. With this in mind, GRoW recommends making better use of the potential of digital innovations for climate-resilient water management and including considerations of local water management in global supply chains. Science can make a significant contribution here: by providing expertise for
relevant actors, and by highlighting clear responsibilities for sustainably managing water resources.

The GRoW research projects address the following key questions about climate change:

How can businesses manage the risk of water shortages in the era of climate change?

Many of the goods that Germany imports come from regions where water is in extremely short supply: cotton from Central Asia, for instance, or cereals from North Africa and ores from desert regions. Companies primarily measure and manage their water consumption at production sites. Yet supply chains often conceal significant water uses and, as a result of climate change, considerable risks. The GRoW project WELLE is addressing this by developing a method for measuring companies’ water footprints. It takes account of direct and indirect water use in upstream energy and material chains. This allows the project’s industrial partners to introduce measures for reducing water shortages at local hotspots in their value chains.

How much water will be available in the future?

The GRoW projects SaWaM and MedWater are addressing this question with a focus on arid regions and the Mediterranean, which is a hotspot for the effects of climate change. The projects use satellite and modelling data to investigate the available water resources. Global and publicly available observation and forecast information are then pooled and regionalised to allow weekly and monthly forecasts of future water availability and optimize water use. “This is especially relevant for arid and semi-arid regions that are already suffering from water shortages – and they account for 40 percent of the earth’s land surface,” says Professor Harald Kunstmann, Deputy Director of the Institute of Meteorology and Climate Research – Atmospheric Environmental Research (IMK-IFU) at KIT in Garmisch-Partenkirchen, Germany.

Does water scarcity pose a risk for the energy transition?

Water is a major factor in the use of fossil fuels and renewable energies. The GRoW project WANDEL therefore examines the impacts of water scarcity on efforts to transform the energy supply. To do so, it compares different energy systems in terms of their global water consumption. It takes account of the direct water consumption and the water pollution at the site of the power station. The cases it focuses on include the thermal coal-fired power station at the Upper Weser watershed in Germany, and sugar cane production for biomass in Brazil. The analyses also incorporate indirect consumption, such as for the imported copper used in photovoltaic panels.

How to issue timely warnings of droughts and their consequences for food security?

Droughts impact water resources, crop productivity, trade in food products and the need for international food aid. The GRoW project GlobeDrought investigates these relationships and is building an information system for drought events. Working with partners such as the United Nations University, GlobeDrought is developing an experimental early warning system that can identify critical drought conditions and the need for emergency aid.

How sustainably is water used in agriculture?

Agriculture is by far the world’s largest consumer of global water resources. As agricultural goods are traded internationally, so too is the water needed for their production. Yet there is currently no recognition that agriculture and ecosystems are vulnerable to fluctuations in the climate. “We’re developing more precise tools for observing and measuring the efficiency of water use in agriculture globally,” says Wolfram Mauser, Coordinator of the GRoW project ViWA and Chair of Geography and Geographical Remote Sensing at Ludwig-Maximilians-Universität in Munich.
Clean water for all – but how?

The drinking water supply in the megacity of Lima is under enormous pressure from climate change. The GRoW project Trust is using new methods to measure the volume and quality of surface waters in Lima, and also considers conflicts of use – between the population and commercial agriculture, for instance. In doing so, the project addresses a pressing issue: water crises caused by increasing urbanisation and the effects of climate change.

About Water as a Global Resource (GRoW)

With its funding programme “Water as Global Resource” (GRoW), Germany’s Federal Ministry of Education and Research is helping to achieve the Sustainable Development Goals. Over 90 institutions from academia, business and practice are involved in 12 joint research projects. A defining feature of the funding programme is that it links local and global action. Rather than limit their focus to local and regional solutions, the joint research projects also produce improved global information and forecasts regarding water resources and water demand.

The Water as a Global Resource Conference, which will take place in Berlin on 23 and 24 June 2020, will provide an overview of GRoW’s global analyses and local solutions for sustainable water resources management. The event is open to the press.

You can details for the individual research projects are available on the GRoW website.

You can reach the networking and transfer project GRoWnet here:

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About adelphi

adelphi is a leading independent think tank and public policy consultancy on climate, environment and development. Our mission is to improve global governance through research, dialogue and consultation. We offer services for sustainable development, helping governments, international organizations, businesses and nonprofits design strategies for addressing global challenges. adelphi is coordinating the networking and transfer project GRoWnet, which supports the GRoW research activities. GRoWnet aims to leverage synergies between the joint research projects, encourage implementation of the newly developed methods and increase the overall impact of the funding programme.

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