DR BÁRBARA WILLAARTS

RESEARCH SCHOLAR AND SCIENTIFIC PROJECT MANAGER, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS

"Water science should generate impact beyond academia"

The International Institute for Applied Systems Analysis (IIASA), in Austria, conducts research into problems of a global nature that are too large or too complex: water security is one of them, requiring a transdisciplinary and system's approach.

Cristina Novo Pérez

Water security is more than a buzzword at the intersection of water and sustainable development: in practice, it is a complex concept encompassing water resources and how they are governed and managed, for all, now and in the future. Currently, at the Water Security Research Group at IIASA, Bárbara Willaarts' research focuses on water resource scarcity and integrated management with an impact beyond academia. In this interview, she delves into the many aspects of water security in the developed and developing world.

Can you tell us briefly about your career path and your current role in the International Institute for Applied Systems Analysis?

Originally from The Netherlands and born in Spain, I am a senior researcher with over 18 years of experience in environmental planning and policy, and the last ten years with a special focus on water scarcity and integrated water resources management. My research is driven by two main principles. One is collaborative and interdisciplinary research aiming to understand complex problems and find joint solutions to support the development of pathways to sustainability. Two, impact-oriented research in and beyond academia to enhance the social and policy relevance of science and my research in particular. I have developed most of my professional career in research organizations and policy think tanks and I benefit from an international reach through geographical settings ranging from Europe to Latin America, and more recently Africa and Asia. In addition to my career as a scientist, I also work as a consultant for different international organizations on a wide range of aspects related to water security. Currently, I am working as a project manager and research scholar within the Water Security Research Group at the International Institute for Applied Systems Analysis (IIASA), Austria, an international research organization and policy think tank, coordinating the research effort and the stakeholder engagement strategy of several international projects dealing with water security, participatory scenario planning and the localization of the 2030 Sustainable Development Agenda.

What are the key elements of water security? Do some of them tend to be more of a priority than others?

The first question that we need to ask ourselves is what water security means in practice, beyond being a fancy and now popular concept. There are various definitions, but if I had to explain it in plain language, I would say it is about exploring how countries and regions are managing their water resources, and how these are supporting the economy, livelihoods, and environmental goals. The water security agenda comes to develop the role of water in meeting the sustainable development agenda of countries. To ensure that water delivers positive outcomes for the economy, society and the environment, we need to explore the water sector using a system's approach, which means not just looking at what resources are available, but how those are governed (institutions, regulatory framework, financing and infrastructures) and managed (are water resources and water-related risks being managed effectively, how good are water services being delivered). A critical assessment of these aspects should allow us to understand where the gaps are

"The water security agenda comes to develop the role of water in meeting the sustainable development agenda of countries"

"Rich countries are also water insecure, and this is due to a combination of multiple aspects that include governance and financial gaps"


CIMOD
View
Sort by
Refresh
Paste
Paste shortcut
Graphics Properties...
Graphics Options
New
Screen resolution
Personalize

"Our development model and our short-term thinking lays at the heart of the water security challenges we face globally and locally"

and identify entry points for action. We often see how water rich countries are also water insecure, and this is due to a combination of multiple aspects that include governance and financial gaps, but also lack of enforcement and prioritization of policy measures. The opposite also holds true, and sometimes we see countries that are water scarce but their governance and management instruments support the delivery of high economic, societal, and environmental benefits. In short, it is not only about what resources you have available but, importantly, how you make the best out of them, and this requires smart and long-term vision thinking.

Can current global levels of human development and well-being decline if we do not ensure progress concerning water security?

Definitively. The current level of water extractions and pollution in many parts of the world resulting from our development model is having enormous implications on our rivers, aquifers, and freshwater ecosystems, and this ultimately translates into a higher number of social conflicts and economic risks. Our development model and our short-term thinking lay at the heart of the water security challenges that we face globally, but also locally within our countries and regions. Choosing to exhaust aquifers for the sake of facilitating short term economic development of the irrigation sector, is a societal and political decision that will pay back with a boomerang effect as it will have enormous consequences for other economic activities and citizens, even more if we take into account climate change impacts on water availability in much of the areas that strongly rely on groundwater.

Similarly, we have largely neglected the water pollution problem and chosen not to prioritize treatment efforts. These are often political decisions driven by short term objectives, generating huge externalities that have larger economic and societal costs for all of us. Improving our water security is at the end of the day investing in inclusively sustaining our well-being. This said, it is important to know that water security is a status, not the end of a journey. If countries want to become more water secure or maintain their status, they have to have a vision and work on the pathways to it day by day. Different challenges and different contexts might require also different sets of solutions.

> **Water security is a status, not the end of a journey. Countries have to have a vision and work on the pathways to it day by day**

Is there a role for new technologies in advancing water security? To what extent are cyber threats to critical water infrastructure a concern?
Technology has and will continue to play a major role in achieving the water security agenda. However, a country's water security agenda requires much more than technological solutions. It requires first of all political commitment, an ambitious enabling environment, with institutions well resourced and coordinated, and a clear vision on what wants to be achieved, including the societal, economic and environmental outcomes, and how. Technology is one important aspect, but more important is the willingness of decision makers and water users to make it happen.

What trends have you observed in terms of the role of water security for political stability and economic development?
Without wanting to send any apocalyptic message and acknowledging that much more often in history water challenges have been addressed through cooperation as opposed to conflicts, the truth is that decisions we are making as countries or consumers today are exacerbating for the most part the conflicts across sectors and borders everywhere. In the developing world, large transboundary basins with many riparian countries facing enormous development and environmental challenges, are making development decisions that will eventually have large implications for downstream countries in terms of what water, when, and of what quality they will receive. This uncertainty and the silo planning

Technology is one important aspect, but more important is the willingness of decision makers and users to make water security happen

style of countries increase the socio-economic risks and political tension over the borders. In much of the developed world like Europe, we are trying hard to advance along with the water security agenda, but with various levels of effort. Lots of efforts are going to improve the regulatory framework and to some extent its enforcement, but while we are focusing on this, other aspects such as how to allocate and manage water efficiently to deliver the largest benefits for all now and in the future are not being sufficiently prioritized. And this is why today we are witnessing also in Europe an increasing number of social conflicts

around water and ultimately with more than likely economic implications. Wetlands are being dried out because of the short-term economic development goals of some sectors, citizens in Europe having unreliable access to clean tap water because of intensive pig farming or economic development targets from some lobbies, etc. In summary, I think the number of conflicts will increase everywhere unless we rethink the role of water in our society, and we force our governments and decision makers to be brave and develop inclusive and sustainable water security visions, and to put in place the necessary actions to put all of us on the sustainability pathway, which is also the pathway to security and social peace.

Can you tell us about your research to assess water security and design strategies to improve water security in specific regions of the world?

The main features that define the research that we undertake on water security at IIASA are transdisciplinary and system's approaches. This means that we look at water from a holistic perspective, acknowledging that water is an extremely complex domain involving many sub-sectors and dimensions (irrigation, water services, freshwater ecosystems, hydropower, tourism, etc), an incredible number of actors (users, planners, citizens, utilities, industries, etc) with many different types of knowledge (scientific, practical, cultural, etc), all of which need to be considered to address the complexity of the challenges that we face. We understand that excellent water science should be innovative and move forward the knowledge frontier, but also it should be able to generate impact beyond academia. For this reason, we develop different types of science-based tools, such as state-of-the-art integrated assessment models but also innovative participatory approaches, and we test them working in close collaboration with stakeholders to identify priority needs from the stakeholder's perspective and elicit viable and cost-effective solutions to inform decision making. Another relevant feature is that we benefit from being a research organization with advanced research experience and know-how on other important domains such as energy, agriculture, biodiversity, climate change, migration and economic frontiers among other research domains. This gives us the chance to work in multi-disciplinary projects at the interphase between the energy-food-water-biodiversity-climate nexus, to name some. Since we are an international organization, we work in very diverse geographical settings from across the globe, and we have an increasing number of projects at the interphase of "science for development", especially in Africa and focused on advancing the water security agenda of countries in collaboration with local research organizations and decision makers. While the landscape of research organizations working on water security is wide and very strong, we believe we have singular and innovative approaches that are helping basin commissions from transboundary basins and countries overall to design the roadmap to water security and improve their institutional capacities to tackle the different challenges.

Are water-related hazards and extreme events sufficiently contemplated in water security strategies?

For a long time, the focus of water security has been mostly on water quantity. Luckily the approach is now wider, and other critical considerations such as quality and water-related risks such as droughts and floods are becoming more prominent in the water security debate. As mentioned earlier, water security is and should be treated as a holistic approach to see how water supports countries economic development, social wellbeing, and environmental sustainability. The increased frequency of floods and droughts we have experienced in past years, and the huge impacts these are creating, are slowly helping countries and decision makers to realize that water security is also pretty much about protecting and mitigating the impacts of water related risks. And this is of utmost importance taking into account that climate change will likely exacerbate the frequency and intensity of these extreme events.

"Decisions we are making as countries or consumers today are exacerbating the conflicts across sectors and borders everywhere"