Academia contribution to integrative and adaptive risk governance and monitoring for water-related SDGs: tools and lessons

Session report, 16 January 2015

Session Structure

The session was convened by Claudia Pahl-Wostl (University of Osnabruck) and Janos Bogardi (University of Bonn). Bogardi began providing an overview presentation on the challenges and contributions the academia can make to support the realization of the post-2015 development goals around water-related SDGs. The session continued with a panel discussion with experts working on different aspects related to water monitoring and governance, including: Rick Lawford (Morgan State University), Anik Bhaduri (University of Bonn) and Joyeeta Gupta (University of Amsterdam and UNESCO-IHE Institute for Water Education). The panellists made a brief introduction to some of the tools they've used, highlighting their innovative/valuable aspects as well as the existing barriers that need to be overcome in order to improve governance and monitoring of SGDs.

1. Implementation challenges surrounding governance and monitoring of SDGs

A comprehensive and dedicated SDG on water goal requires defining SMART targets

From a scientific point of view the targets listed under goal 6 can be classified as either "*hows*" and "*whats*". How are these targets going to be implemented? How are they going to be monitored?, What are we going to measure? What indicator is most suitable (actionable)? Further difficulties exist in relation to the timeframes defined as some targets seem to be unattainable, e.g. those set for 2020 instead of 2030. From the Academia perspective, we need to make sure to develop smart SDG targets, and this will require them to be: 1) specific, 2) measurable, 3) attainable, 4) realistic and 5) timely, among other factors. At the same time, the targets should not be too simplistic – providing taps is not the same thing as providing water.

To attain the proposed individual goals we need to manage the high interdependencies existing between different SDGs

SDGs have been largely formulated as individual goals – but many are clearly interdependent. Achieving food security goals will require additional quantities of water and land, evidencing the need for an improved a coordination. Otherwise, many SDGs, including those related to water, could become unattainable. Today there is growing evidence that sectoral policies, including those related to food, water, energy and the environment, have large impacts on other domains. At the same time, the SDGs on general governance issues also need to be implemented in order to ensure that the institutional context is appropriate for SDG implementation. The need to break these policy 'silos' and work towards the integration and alignment of multiple policy goals has been outlined since the Water-Food-Energy Nexus Conference held in Bonn in 2011, and it is now

being endorsed by Future Earth within one of its cluster activities. A nexus approach should be adopted to explore potential trade-offs and synergies across SDGs.

Actions on risk governance are required to minimize the negative impacts of existing and emerging risks in relation to the SDGs

Global drivers like population growth, growing food demand, rising living standards and globalization are increasing the interconnectedness across sectors, regions and stakeholders. As a result of this growing interconnectedness, the chances of systemic and emerging risks are also rising. From the SGDs perspective, a slow additional risks of creating food insecurity or failing to achieve the risks of insecure food supply or environmental goals. Actions are thus required to improve risk governance, which will require developing appropriate institutions and coordinated plans to minimize the negative consequences of the associated risks. Tools like risk assessment are very useful for evidence-based risk governance, as they can contribute to assess complexities and interdependencies across the different policy domains and at the same time support the achievement of a balanced progress across all the SDGs.

2. Addressing the challenges: Developing and using tools

There are different tools, guidelines and other resources developed and used by the academia that may be useful to address implementation challenges and help ensure the provision of SDGs.

Cases discussed

Applications of Earth observations in monitoring the Water SDG by Richard Lawford, Morgan State University, US

The United Nations Open Working Group's (OWG) 2014 report on Sustainable Development Goals includes a water goal. Effective monitoring of this goal needs to be action-oriented, measuring progress objectively, and guiding global investments. Recently, as part of the UN Global Expanded Monitoring Initiative (GEMI), a Task Team on Earth observations (EOTT) has explored the potential role of Earth observations (EO) for indicator monitoring. Earth observations, which include both satellite and in-situ data, can provide robust monitoring for indicators because of their geospatial consistency, accessibility, repeatability, and global coverage. EO data are being used to derive population density maps that support monitoring and could assist in monitoring Waste Water and Water Quality Management (WWQM) indicators. Geographical Information System (GIS) platforms enable EO data to be combined with socioeconomic and survey data for more complex indicators. Water Resources Management (WRM) indicators lend themselves to the use of water cycle data used in routine water management purposes. Emerging integration capabilities such as land data assimilation systems and the University of Tokyo's Water Cycle Integrator can also track WRM indicators. In addition, the present and future role of novel data, including new "Big Data" sources and citizen science will also play a significant role. Two avenues for addressing sustainable development monitoring are being considered. The first avenue integrates Earth observations into the current monitoring framework through the recommended design of a more open system. The second avenue explores how a different approach to sustainable development could enable Earth observations to inform a near-real time monitoring and adaptive management system that would direct resources to resolving non-sustainable practices and emergencies.

Getting the Water Prices Right through An Incentive-Based Approach by Anik Bhaduri, University of Bonn.

The introduction of water pricing, has been subject to debate for a long time. While seen as a powerful tool to enhance water use efficiency and decrease overuse, water pricing has been opposed and proven inefficient in many cases for various reasons. One major obstacle to introduce or raise prices for irrigation water is the concern that pricing irrigation water could increase inequality and turn small farms unprofitable. In other cases water users are simply not willing to pay (more) for water because unlimited access to water is seen as a basic right.

Given the strong potential benefits of water pricing in inducing water use efficiency and achieving cost recovery objectives for maintenance of irrigation infrastructure, it is pertinent to create incentives to increase farmers' willingness to pay (WTP) for water, and improve the understanding and knowledge of farmers' preferences, which must be taken into consideration for implementation of water pricing. Bhaduri and Kloos (2013) explore how water pricing can be implemented by bundling water services with additional non-water-related services in an appropriate institutional setup so that farmers' WTP for water will increase. These services can include supporting local schools and health centers, offering educational programs and microcredits or infrastructure development.

To assess the effectiveness of this approach, the authors conducted a choice experiment in the Khorezm region in Uzbekistan. The results of the study show that farmers are willing to pay higher prices for irrigation water, if the additional money is used to provide non-water related social services, such as maintenance of local schools and health centers, training programs and microcredits. This indicates that individual benefits, such as access to additional irrigation water, are not the main driver to increase farmers' willingness to pay regarding irrigation water, but social and communal benefits are a more powerful incentive to increase payments for water use. Bundling water fees with other social services can be used as an efficient tool to increase awareness and acceptance of water pricing, while the payments should be administered in a transparent way and benefit the entire community.

Bhaduri, A, Kloos, J, 2013, Getting the Water Prices Right Using an Incentive-Based Approach: An Application of a Choice Experiment in Khorezm, Uzbekistan,The European Journal of Development Research 25: 680-694

3. Lessons learnt from implementing the tools

During the panel discussion, participants from the Academia community shared their experience in utilizing available tools and what lessons can be drawn to improve water risk governance.

Richard Lawford stressed the role of earth observations in monitoring water related SDGs, as well as the existing barriers to adopt these technologies. Currently there are a growing number of ongoing initiatives to facilitate the adoption of EO in supporting different monitoring activities. One important activity is the Global Earth Observation (GEO), a voluntary partnership of organizations working on monitoring earth observations. Within GEO, there is a specific working group dealing with water. This group defined the so-called 'International Water Task Target', and is currently working intensively to produce comprehensive sets of data and information products to support decision-making for efficient management of the world's water resources, based on coordinated,

sustained observations of the water cycle on multiple scales. So far, GEO has supported some of the UN activities related to defining indicators for tracking progress of water-related SDGs. Their contribution provided two recommendations in relation to water SDG monitoring. First, the river basin is the ideal unit for monitoring. Second, earth observations can provide useful input data particularly for developing indicators in relation to water quality and water efficiency targets, and perhaps less relevant for other targets.

Some of the potential barriers in relation to the adoption of EO technologies relay on their high costs. But as Lawford outlined, just as surveys are cost effective reliable option for the joint monitoring programme (JMP), EO can play the same role for expanded water monitoring. One important advantage is that they can provide immediately answers on the progress of SDGs and associated risks. It won't be necessary anymore to set up a review program every two years.

He provided some recommendations in relation to the use of EO to monitoring SDGs. First, the integration of EO into the planning of those monitoring activities makes sense for some targets as mentioned above; therefore they should be used only when it makes sense to do so. Second, to take full advantage of using EO for developing monitoring indicators, it will be desirable to llaunch a research activity to prototype an indicator monitoring approach that takes full advantage of the space and time resolutions of EO. And third, there is a need to strengthen EO programmes, so they can better support the needs of the SDG' Agenda.

Anik Bhaduri highlighted that adopting measures to reduce consumption and misuse of water are largely driven by stakeholders perception's about water risk. The larger the variance in service supply or business profit, the larger will be the interest of the stakeholder in adopting specific practices in order to reduce water-related risks. Many stakeholders eg. farmers or firms are typically risk averse thus, the larger the variability they experience in their profits or in service supply, the more willing they will be to make necessary investments to adopt conservation and efficiency measures. The water storage at a farm level often helps to mitigate the effects of scarce and unreliable water supply. Bhaduri shows in his presentation a complementarity relationship between investments in efficient irrigation and water storage capacity at the farm level.

Bhaduri also noted that managing water risks, requires a pool of measures, including: innovation, financing and governance. In relation to finance, he outlined that flexible and incentive based water pricing can induce efficient usage of water by farmers and thus reduce water risks, but appropriate mechanisms need to be developed to protect the poor ie. ensure equity, ensure a better demand management, facilitate the institutional changes and promote transparent and efficient legal framework. From his experience working with irrigation communities of Uzbekistan, farmers are willing to pay up to nine times more for irrigation water, if the additional money is used to provide non water-related social services (eg. community training, schools, health centres, provision of micro-credits). This would allow them not only to improve water use efficiency, but also to enhance social well-being.

Joyeeta Gupta outlined in relation to risk governance that it is important first to differentiate between the types of risks that need to be managed. Mostly because some risks are objective and calculable while others are subjective and therefore socially constructed. Gupta also noted there many different type of governance approaches to deal with risks (e.g. adaptive governance, adaptive co-management, adaptive management and anticipatory governance). These risk governance approaches differ from each other in the degree of social and scientific consensus that has been reached prior to the formulation of policy responses. In fact the implementation of SDGs is normally approached from different governance perspectives. For instance, sanitation is regarded as an structural problem in rich countries so it is normally governed with an adaptive

management approach i.e. technocratic vision with a low public participation based on learning and applying by doing. However, in poorer countries sanitation may be a moderately structured or unstructured problem requiring differing stakeholder participation strategies. Finally, Gupta also highlighted the small correlation existing between political regimes and achievement of MDGs. In some very poor countries with weak democracies MDGs have been partly attained while in many democratic countries with a higher income, their achievement has been limited

5. Conclusions

The conclusions of the session can be summarized in the following points:

To attain water SDG and the achievement of its different targets, it is key to set up a robust science-based and internationally mandated process to regularly monitor, review and assess progress of the implementation. In doing so, it is critical to realize that achieving the target should not be an end in itself – there should be some analysis of the quality of the effectiveness of the target. It is also, important to adopt a broad framework to assess the multiple synergies and trade-offs emerging across SDGs.

Monitoring is crucial to track progress of SDGs and identify emerging risks of unattained. Earth Observation Technologies can play a key role supporting the monitoring of some water targets, but in order to do so it is very important to: 1) ensure that an EO-based monitoring system maintains a minimum level of continuity over the next 15 years; 2) Develop the national level capabilities to effectively use an EO-based monitoring system; and 3) Develop best practices for the interpretation of indicators on a range of time scales.

Risk is an important factor influencing the decision towards sustainable use of water. The greater the risk, the greater the willingness of stakeholders to adopt measures to increase water efficiency. But to induce water sustainability under a risk context, new policies and tools are needed. Flexible and incentive-based water pricing can play an important role in minimizing water risks.

Risk management and governance requires framing risk appropriately; as risks can framed differently in different contexts. Alongside, depending how risk is framed, different governance approaches can be implemented.

Session Photos

Session panel: from left to right Ricahrd Lawford and Joyeeta Gupta