

World Water Week 2018

Water, Ecosystems and Human Development

Overarching Conclusions

Stockholm is just the beginning

Photo: Thomas Henriksson



Dear friends of water! The time has come to summarize World Water Week 2018, though this is certainly no easy task. With 265 sessions, not even the most optimistic participant could hope to cover but a fraction of them.

At the same time, almost regardless of which activity you attended, there were some common and important themes.

Firstly, there is a growing sense of urgency – nature has given us several stark wake-up calls this year, leaving us in no doubt that we must act immediately to tackle the world's growing water challenges. In response to this, questions of good water governance must move to the fore.

Secondly, ecosystems are key to wise water management and water is key to ecosystems. We must learn to work with nature to find the solutions that make our societies stronger and more resilient.

Thirdly, everyone depends on water and therefore everyone must have a voice in the water discussion. The water community needs to be transparent and inclusive, encouraging new groups to join our ranks.

With so many participants echoing these same sentiments, there is real cause for optimism. More and more people are aware of the importance of water; there is a growing number of organizations making firm commitments to reduce their water footprint; and there are many new innovations to help us use water more sustainably.

What is needed now is collaboration to make sure that these initiatives gain traction. Therefore, I am delighted to see the crucial role World Water Week has come to play as a meeting place. This is where a grassroots activist can easily strike up a conversation with a government official, and a

young entrepreneur can discuss her or his latest innovation with a leading scientist.

Many participants have commented that this open atmosphere is something that really sets World Water Week apart from other conferences. It may have something to do with the fact that we tend to attract a younger crowd than many similar events. We also constantly try to encourage more interaction, this year with the new networking sessions that proved hugely popular.

In fact, it is not only the multitude of things that happened in Stockholm in August that make it hard to summarize World Water Week 2018. Just as significant are all the projects and partnerships that will eventually grow out of the Week's informal meetings.

Many leading water initiatives started rather tentatively with conversations and new acquaintances during earlier World Water Weeks. One such example is the City Water Resilience Framework, which currently brings together Amman, Cape Town, Hull, Mexico City and Miami. The original idea grew out of a meeting between Arup and Rockefeller Foundation during World Water Week.

Most likely, we will soon hear about many new inspiring ideas and partnerships that started with some random notes on a napkin during World Water Week 2018.

Torgny Holmgren
Executive Director
Stockholm International Water Institute

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Let all voices be heard!

Water is everybody's business. This has never been felt more strongly than during World Water Week 2018. After a year of extreme weather events across the globe, many participants said that public awareness of the disastrous consequences of climate change, flooding and water scarcity in their respective countries had grown. And calls for action are intensifying.

World Water Week is the most important meeting place to discuss these challenges annually. The 2018 theme Water, Ecosystems and Human Development was an excellent starting point to reflect on how we humans depend on water and ecosystems for our very existence. Since this is the case for every single human being, it must also be a discussion in which everyone is invited to take part. The water community has a responsibility to communicate in a way that is accessible to a wider audience, and to actively engage with other sectors of society. If we succeed at this, there is genuine cause for optimism about the future.

INCLUSIVENESS – when all voices are heard

World Water Week is unique in the way it brings very diverse actors together: academics and activists, grassroots organizations and heads of state, companies and civil servants. A core aim of the week is to bring down barriers and make it easier for people to meet across geographical, sectorial and age divides.

We must make even stronger efforts to engage with people outside the traditional water world. To achieve this, we must:

- **Reach out to other sectors.** The water community must actively participate in debates about, for example, energy, agriculture, industry and infrastructure, and thereby contribute new perspectives and learn from others.
- **Apply a human-rights based approach.** Since all humans depend on water, everyone must be listened to.
- **Tap into the knowledge of young people.** With almost a third of participants being under 35, the Week was full of examples of how young people innovate, form NGOs and start-ups.
- **Raise awareness about gender perspectives.** Many of the sessions discussed gender perspectives but at times a lack of disaggregated data hampered analysis. For water policies to be truly effective, gendered roles and practices must always be taken into account.

INNOVATION – looking at the world through many prisms

The inclusive approach is also important because today's complex challenges require many different perspectives. Innovation is increasingly about actors from different sectors and academic fields joining forces in an agile and iterative process where new ideas are constantly tested – and frequently discarded.

The theme of water, ecosystems and human development clearly demonstrates how common thinking about knowledge is rapidly becoming obsolete. Much of today's most exciting cutting-edge research is based on natural processes or traditional knowledge, with this year's recipients of the Stockholm Water Prize and Stockholm Junior Water Prize as prime examples.

To find solutions to today's and tomorrow's water challenges, we must stop thinking that one type of knowledge or approach necessarily excludes other kinds of understanding. To achieve this, we must:

- **Put both academic research and traditional knowledge to use.** Research and traditional knowledge often complement and inspire each other. Many indigenous approaches have led to more sustainable ideas and new businesses.
- **Discover new types of innovation.** Natural sciences are always important, but more and more sessions also discuss innovations drawn from social and behavioural sciences. Information is often not enough to create change, we must also understand people's attitudes and behaviour.



Photo: Mikael Ullén

"I'm raising my voice for the ones who come behind me, for my people and for the planet."

Autumn Peltier, First Nation water-activist, Canada

- **Apply a circular approach.** During World Water Week, many organizations and companies demonstrated how they are improving their life-cycle analyses and reducing their water footprint.
- **Focus on nature-based solutions.** Many sessions discussed nature-based solutions, where much more research is needed. However, there are also plenty of solutions that could already be applied to boost resilience in for example agriculture, business and infrastructure.
- **Blend man-made (grey) and nature-based (green) solutions.** In many cases, conventional "grey" approaches to planning could be shifted to "green" alternatives, but at other times a blended approach works best.

INSPIRATION – creating new solutions for tomorrow

This spirit of inclusion and innovation offers true hope for tomorrow. To achieve efficient water governance, we need a culture that is both solution-focused and open to new ideas and different perspectives.

Conventional thinking around water is no longer enough to take us where we need to go. Only by daring to experiment with unorthodox ways of doing things, learning also from our failures, can we achieve the necessary changes.

World Water Week aims to play a leading role in this important shift. With so many creative people under one roof, the Week is not just a meeting place, it also has the potential of being an innovative hub, moving the world in a more water wise direction.

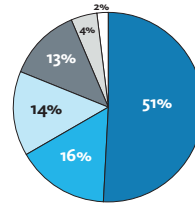
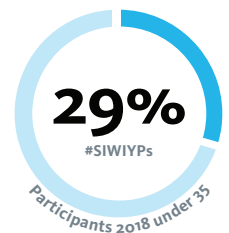
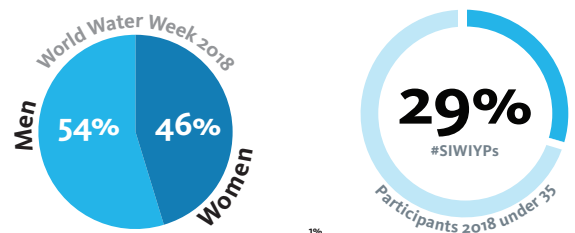
Record interest in World Water Week 2018

World Water Week 2018 was attended by more than 3,600 participants from some 135 countries, representing over 1,000 organizations. Participants could choose between 265 sessions from 400 convenors. On site were also 90 volunteers, who worked tirelessly to make it all happen.

In this report, we have summarized some of the main take-aways from what was an immensely inspiring week.

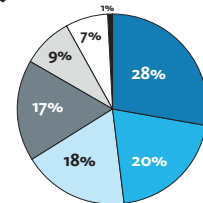
70%

of sessions met the criteria of World Water Week's Gold Standard, meaning that at least 40 per cent of presenters were female, at least one presenter was under 35, and the session was designed to encourage audience participation.



Participants by region

- Europe
- Africa
- North America
- Asia
- Latin America & the Caribbean
- Oceania



Participants by organization

- NGO/Civil soc./Prof
- Gov. agency
- Scientific/Research/Academic
- Private sector
- Intergov. organization
- Other
- Media

This happened during the Week 2 plenaries 5 field visits 37 sofas 125 events 69 showcases 27 seminars



In the Opening Plenary H.E. Amina J. Mohammed, Deputy Secretary-General of the United Nations, talked about the strong link between environmental degradation, poverty and violent conflicts.

Photo: Thomas Henrikson



Photo: Thomas Henriksson

The rapporteurs play a key role during World Water Week, bringing back ideas and lessons learnt from all sessions.

Lessons from the Week

The scientific core of the Week is the seminars, which this year focused on the theme of Water, Ecosystems and Human Development. In addition, World Water Week 2018 offered 125 events, 69 showcases, 37 Sofas and five field visits. To highlight the key findings of the Week, the Scientific Programme Committee and especially assigned rapporteurs have gathered the most important take-aways from the Week in this document.

The SIWI seminars were co-convened with 25 international organizations and featured 28 keynote presentations. Actors from all disciplines are invited to submit abstracts on any subject related to the theme of the year. **The Scientific Programme Committee**, consisting of leading scientists from the water and development fields, determines the seminar topics, selects from submitted abstracts and develops the seminar programmes. On pages 6–7 you find reflections from Torkil Jønch Clausen, head of the Committee.

The Scientific Programme Committee is supported by the **Young Scientific Programme Committee**, which is comprised of nine committed young professionals who provide invaluable input during the selection and development process. They also support **the Rapporteurs**, whose job it is to document all sessions during World Water Week. The rapporteurs' divide into three teams, focusing on Economic, Environmental and Social perspectives, and attend all sessions to collect ideas and solutions.

This year, the rapporteurs used five questions as starting points when reflecting on the outcome of the Week. You can read their take-aways on pages 8–17.

The submission period to join the Rapporteurs team in 2019 opens in April.

Economic team

Senior rapporteurs: Danka Thalmeinerova, Vinayak Subramanyam

Junior rapporteurs: Alqayam Meghji, Christos Paraskevopoulos, Hampus Nilsson, Hannah Elizabeth Paton, Amali Abraham Amali, Lauren V. Bosche

Environmental team

Senior rapporteurs: Angela Renata Cordeiro Ortigara, Samer Talozi

Junior rapporteurs: David Falk, Colleen Cranmer, Nicole Chabaneix, Krupesh Patel, Gabriel Sainz, Felipe Fischmann

Social team

Senior rapporteurs: Bianca Shead, Zodwa Dlamini

Junior rapporteurs: Claudius Mpofu, Md Tahmidul Islam, Nicholas Haluska, Emelie Glad, Ajay Korpall, Roaa Hamid.

THE 2018 SEMINARS

The nine SIWI Seminars addressed key aspects of the Week's theme "Water, ecosystems and human development". They were co-convened by SIWI and 25 international organizations and featured some 28 keynote presentations along with 97 presentations selected from the 399 abstracts submitted. Round-table discussions, high-level panels and more ensured active participation of participants throughout the Week. Brief key messages from the Seminars are provided below.

Summaries of each of the Seminars can be found at worldwaterweek.org.

Torkil Jørch Clausen on behalf of the Scientific Programme Committee

TAPPING INTO COLLECTIVE WISDOM: GENDER SENSITIVE DEVELOPMENT AND WATER ECOSYSTEMS

| Implementation of gender proactive approaches, driven by women adopting new 'non-traditional' roles, for inclusive and equitable ecosystem management and water development, can only be effective if change is embraced by those desiring transformation. Citizen science and bottom-up decision-making on why and what disaggregated data is measured – and by whom – has a direct effect on benefactor agency and empowerment, and is a critical step towards creating linkages between SDG 5, 6 and 10. Combining the collective, indigenous and traditional knowledge of women with modern science ensures that communities are equipped with appropriate approaches to better manage natural ecosystems.

IWRM AND ECOSYSTEM-BASED APPROACHES: COMPLEMENTARY, DUPLICATING OR COMPETING?

| We have the tools we need for integrating issues and involving stakeholders. The challenge is in understanding who are the important stakeholders to bring into the process. Our understanding and research have evolved to become integrated, but in our decision-making processes, sector-focused management remains. Sectoral silos are the major impediment to the implementation of integrated approaches. Target 5 of SDG 6 on 'IWRM at all levels' is a key mechanism to bridge silos, and the many water-related SDGs, to involve stakeholders in holistic and coherent water and ecosystem management from source to sea. Some countries have shown the way: giving indigenous peoples jurisdictional rights over water resources brings ecosystem understanding and concerns into decision-making.

THE EMERGING POLITICS OF SUSTAINABLE ECOSYSTEMS

| Equality needs to be seen as the political driver for proactive development of sustainable ecosystems. We should not wait for the next crisis before responding to and managing pre-conflict situations. People and nature, including ecosystem and nature-based solutions, are one. We need to establish an evolved definition of development that equalizes people and nature. The Human Development Index is in place, for example, and there is growing recognition that we cannot have peace without development, nor development without peace. Equality goes beyond inclusiveness. Voices

alone are insufficient: inclusivity and equitable access are what is needed. We must enable national investment to achieve the water-related SDGs through a compact between all social partners, at diplomatic and all delivery levels of society.

ECOSYSTEM-BASED WATER MANAGEMENT: FROM INNOVATION TO PRACTICE

| Researchers should always work with practitioners to develop solutions. This engagement requires commitment, time and money from both sides. Working together increases the relevance and uptake of the data and the creation of tools. Governance is a way of improving the adoption of good ideas. Innovators can flourish and inform policy makers and practitioners if there are policies that encourage innovation, and governance systems that genuinely encourage stakeholder participation and transparency.

Access to relevant science can help policymakers to develop excellent water management strategies and enable practitioners to apply them. There are plenty of good tools – making them openly available and free of charge increases their uptake and democratizes their use.

OUTSIDE THE FENCE: INDUSTRY'S ROLE IN ECOSYSTEM MANAGEMENT

| As critical partners in the delivery of the SDGs, businesses need to implement water strategies that include beyond-the-fence line actions to address risks, drive business growth, and contribute to solving environmental and social issues. To invest in water strategy and stewardship is to frame the value of business strategy and investments. Multi-stakeholder collaboration, pre-competitive engagement, and peer-learning within and across sectors, play a critical role in motivating engagement and solving the "wicked problem" of water. Value creation for the private sector drives innovation, both technologically and socially. Companies that have effectively addressed water, ecosystems and human development needs through collective action and ecosystem strategies are attractive to a wider investor and consumer base.

SUSTAINABLE INFRASTRUCTURE FOR INCLUSIVE, GREEN GROWTH

| Green vs grey water infrastructure is a false dichotomy. Neither green nor grey infrastructure can



Photo: Mikael Ullén

Jum Mun Kang, Director General of Green Environment Bureau in Daegu, described how the city, the third largest in South Korea, has embarked on a journey to improve its water quality and water management after the industrial and economic boom in the country.

guarantee the attainment of all water resources needs on their own. An optimum blend of grey and green infrastructure is needed for sustainable infrastructure. Many experiences exist that have grounded

the suitability of ‘blended engineering’ for alleviating water resources challenges, such as managed aquifer recharge and sustainable wetland management. Tools to catalogue, model and assess sustainable infrastructure are widespread, and they pave the way for the proliferation of blended approaches.

While the economics of traditional engineering is fully developed, there are many unanswered economic questions on green and/or blended infrastructure. This is a barrier to greater financing of blended and/or green interventions.

IS THERE SUCH A THING AS INNOVATIVE FINANCING FOR ECOSYSTEM MANAGEMENT?

Few water sector projects with a significant ecosystem component currently meet criteria to attract private capital. Establishing financial viability for investment in nature-based solution projects remains a major challenge. There are many examples of financing ecosystem management on every continent, but few have been implemented at a large scale. Common obstacles include absence of a favorable legal and regulatory framework, absorption capacity within local communities, land stewards, and incentives to invest.

Impact investors are a likely source of capital for ecosystem projects. However, there is a lack of pipeline due to constraints related to willingness to pay for cost of project preparation, proper criteria for impact investment, suitable financial vehicles beyond government, and financing ear-marked for green investments.

INVESTING IN FRESHWATER ECOSYSTEMS AND BIODIVERSITY: A KEY DEVELOPMENT CHALLENGE

Biodiversity alone will be insufficient to drive change. We need to market and communicate the value of nature for development and form transformative alliances. To reach goals, such as those specified in the Convention for Biodiversity, we need to set realistic targets, measure them and act.

Business models that combine the preservation of the aquatic environment with income generation from public services have succeeded in meeting biodiversity and economic targets. Good examples demonstrate affordable approaches to the preservation of the aquatic environment and access to sanitation services. This has been achieved thanks largely to the integration of wastewater treatment, drinking water provisioning, and electricity services within the framework of a single multi-service contract.

URBAN AND ECOSYSTEM DEVELOPMENT: HAND IN HAND

Green cities are not just a privilege for the wealthy. Nature-based solutions can be better suited to challenges of a city and come with additional benefits for human well-being. Thus, grey cities are a ‘deceptive luxury’. Urban residents are the heart of integrated urban and ecosystem development, as they can unlock the political will to invest in nature-based solutions. Examples of successful implementation of such solutions are abundant, but there is a ‘missing link’ between local solutions and large-scale implementation. Revealing the true value of nature-based solutions will help civil society and political leaders to make a case for them.

In summary, investing in water, ecosystems and human development, balancing green and grey solutions, is key to the achievement of the 2030 Development Agenda, and contribute to a better future for humans and the planet.



1 How can a systems perspective, from source to sea, which includes water and ecosystems, be developed and implemented?

ECONOMY: UNLOCKING THE POTENTIAL OF SYSTEMS-BASED APPROACHES | Systems-based approaches offer opportunities to promote responsible economic development. An economic model founded on a systems perspective would require and generate new technologies, new business models, and new markets. The development and implementation of such a model will require co-operation and collaboration between multiple stakeholders, with the role of industry and agriculture being especially important.

There are a growing number of life-cycle assessment and “water footprint” tools available that enable the evaluation of the impact of goods and services throughout the value chain. These tools measure the impact of manufacturing, production, and end-use technology on water use and water stress. A systems perspective incentivizes industry through reputational and financial benefits. International certifications such as the Dow Jones Sustainability Indices recognize actors striving to operate more sustainably, and create competition among them to do so. Long-term financial benefits can also be realized through the development of a circular economy and a systems perspective approach.

Consumers have a crucial role in encouraging a shift towards a systems-based model. Consumer-driven demand for sustainable methods and products will help mainstream responsible source-to-sea business practices. This is also likely to incentivize companies to audit and improve water use in production processes and, ultimately, products’ end-use technologies.

Investors will also play an integral role in the shift to a systems-based approach. Active shareholders who choose to invest in sustainable solutions drive industry to adopt responsible source-to-sea approaches, and help tilt the international investment landscape towards greater sustainability.

ENVIRONMENT: KNOWLEDGE, STAKEHOLDER AND POLICY INTEGRATION | A systems perspective needs to become an integral part of the tools used by decision-makers and planners working with water and ecosystems challenges. Integration – of knowledge, stakeholders and policies – was a recurring theme throughout the Week when discussing how to transform systems perspectives from concepts into practical tools.

In terms of knowledge, information and research already

exists with which to develop actionable plans to ensure the achievement of SDG 6. The following existing techniques and knowledge need to be implemented more widely: water quality and quantity monitoring; identification of pollution at source; and the intrinsic knowledge of different sectors and communities.

Integration of data and information from different sources should help identify knowledge gaps, and thereby enable more actionable measures to be taken towards fulfilling them. More information is needed on the impact of new contaminants, (e.g. microplastics), groundwater contamination, unsustainable sand extraction, and antimicrobial resistance.

To address knowledge gaps and promote data sharing, stakeholders from academia, civil society, statistical and technical experts, international organizations and governments need to engage meaningfully. Areas of engagement should include the design, implementation and monitoring of solutions for water and ecosystems management.

Meaningful engagement is equally important for local communities, where steps need to be taken to genuinely understand that local populations have unique perspectives and valuable insights into the systems of which they are part. Private and non-governmental stakeholders need to be engaged as part of

Consumer-driven demand for sustainable methods and products will help mainstream responsible source-to-sea business practices.

solutions, and to be made accountable for the impacts of their decisions on the environment. Some companies are already looking at the in- and out-flows of their operations, and are implementing a systems perspective in smaller, closed-loop

environments. Steps have also been taken to achieve holistic water resource management at community level.

Policy integration is also crucial. As a cross-cutting issue, good water governance requires transparent, accountable, and participatory processes to bring together relevant stakeholders, and to provide a strong direction for the development and implementation of the systems perspective.

SOCIAL: BRINGING PEOPLE AND COMMUNITIES INTO DECISION-MAKING

Despite widespread recognition of the need for greater collaboration, it was frequently acknowledged that much work continues to be done in silos. This is a barrier to a meaningful shift towards the adoption of a systems perspective at scale.

As well as to water and ecosystems, a systems perspective can also be applied to people and communities. It is critical to understand and work with people and communities to optimize water security initiatives. Understanding human ecosystems will ensure that all stakeholders have a voice. This is particularly important for marginalized and disadvantaged groups. Engaging effectively with communities is pivotal to any systems perspective. This requires consultation, education, and communication to create a sense of ownership among stakeholders – a critical factor to the success of any project.

Environmental systems cross multiple boundaries of different types. These need to be understood to effectively manage the resources and interests that move between them. Significant opportunities exist for the application of technology in this area to map and measure systems to provide information to stakeholders and monitor the success of initiatives. But having the appropriate policies and governance structures in place are crucial to the effective management of transboundary systems.

A systems perspective requires a long-term approach. Projects must transcend local and national political cycles to achieve their potential and build resilience. A long-term perspective allows full evaluation of the effectiveness of measures.





2 In a given situation, how do we identify the right green and/or grey solutions? What are the key success criteria and constraints to their implementation?

ECONOMY: THINK GREEN FIRST, NOT LAST | Although grey and green solutions are needed, there is a historical tendency to favour grey solutions. Such alternatives, while financially attractive for some, tend to disregard green solutions. Appropriate incentives and prioritization are essential to make informed decisions that best serve current and future needs and circumstances. Prior to decisions on grey investments, consideration needs to be given to low-cost and cost-effective green solutions.

Difficulties in accurately evaluating the financial performance of green solutions constrain their wider use. Green solutions do not necessarily require additional financial support, but may involve the redirection of existing resources. Education can increase the recognition of the efficacy of these

solutions. Particular focus on knowledge sharing of the multiple benefits and low maintenance costs of these measures can help decision-makers to prioritize such measures effectively.

Agriculture is the main economic sector to realize the potential of green solutions. However, current funding schemes and some subsidies hamper financing of these measures. Green solutions also represent another viable opportunity to achieve cost-effective flood and drought risk reduction.

Numerous grant schemes have successfully helped to revitalize wetlands and improve catchments. Financing of green infrastructure must go beyond individual grants however, and should be integrated and embedded into government budgets. Water tariffs and fees also have a role in this context.

Agriculture is the main economic sector to realize the potential of green solutions.

ENVIRONMENT: BLENDING THE BEST OF GREEN AND GREY | From an environmental perspective, there are no ideal green or grey solutions – although flawed solutions certainly exist. Identifying solutions is highly case-specific, and a combination of green and grey solutions (blended solutions) may often bring greater benefit to societies, economies, and the environment.

However, grey solutions are more widely known and implemented. This confers grey solutions with a greater degree of trust in society in general, and among developers and policy

makers in particular. Therefore, increasing knowledge of the full range of benefits of ecosystems, nature's outstanding effectiveness and resilience, and the multiple co-benefits that nature-based solutions provide is pivotal. More case studies and more up-scaling of solutions would help build trust in nature-based solutions, and support their use by engineers and policy makers.

The successful implementation of green infrastructure is dependent upon co-design and co-implementation with local stakeholders (upstream and downstream). This drives local stakeholder stewardship of initiatives, reinforcing their long-term and multiple benefits. Furthermore, effective monitoring and adaptive management must be in place to enable continuous adjustment of systems in the face of landscape and climate change. Key factors for the development of green solutions include:

- increasing knowledge about the added value of green solutions;
- eliminating their perceived risk;
- attaining community engagement and ownership;
- achieving south-to-south co-operation and knowledge exchange;
- and achieving desired multi-purpose uses.

Funding alone is not always sufficient to promote the use of green solutions. As is the case with so many aspects of promoting sustainable water use, this may be due to a weak enabling environment. Nature-based solutions tend to lack accepted guidelines for their application, or regulatory framework at national level. Without a proven track record, and in the face of poor societal trust, green solutions have limited attractiveness – even when they could be economically feasible and competitive. To tackle these challenges, the water community needs to demonstrate to other sectors that green solutions work, and show that the co-benefits they generate are broad and extend into economic, environmental, and social spheres.

SOCIAL: MOBILIZING NATURE-BASED SOLUTIONS | The next era of development and the achievement of the SDGs requires the mobilization of nature-based solutions as prime enablers of human social and economic development. However, this breakthrough is a long way from being mainstream.

Humans typically attribute low economic value to natural infrastructure. When the definition of value is expanded to include cultural or social value, this changes. If the full potential of nature-based solutions is to be realized and integrated more effectively with grey infrastructure, their value to society and economies must be established first. A business case can then be made on this basis.

Green infrastructure often comes with significant co-benefits, many of which are social or cultural, such as climate change resilience and adaptation, improvements to livelihoods, and the protection of biodiversity and heritage. Considerable advantages such as these are often overlooked in purely financial valuations.

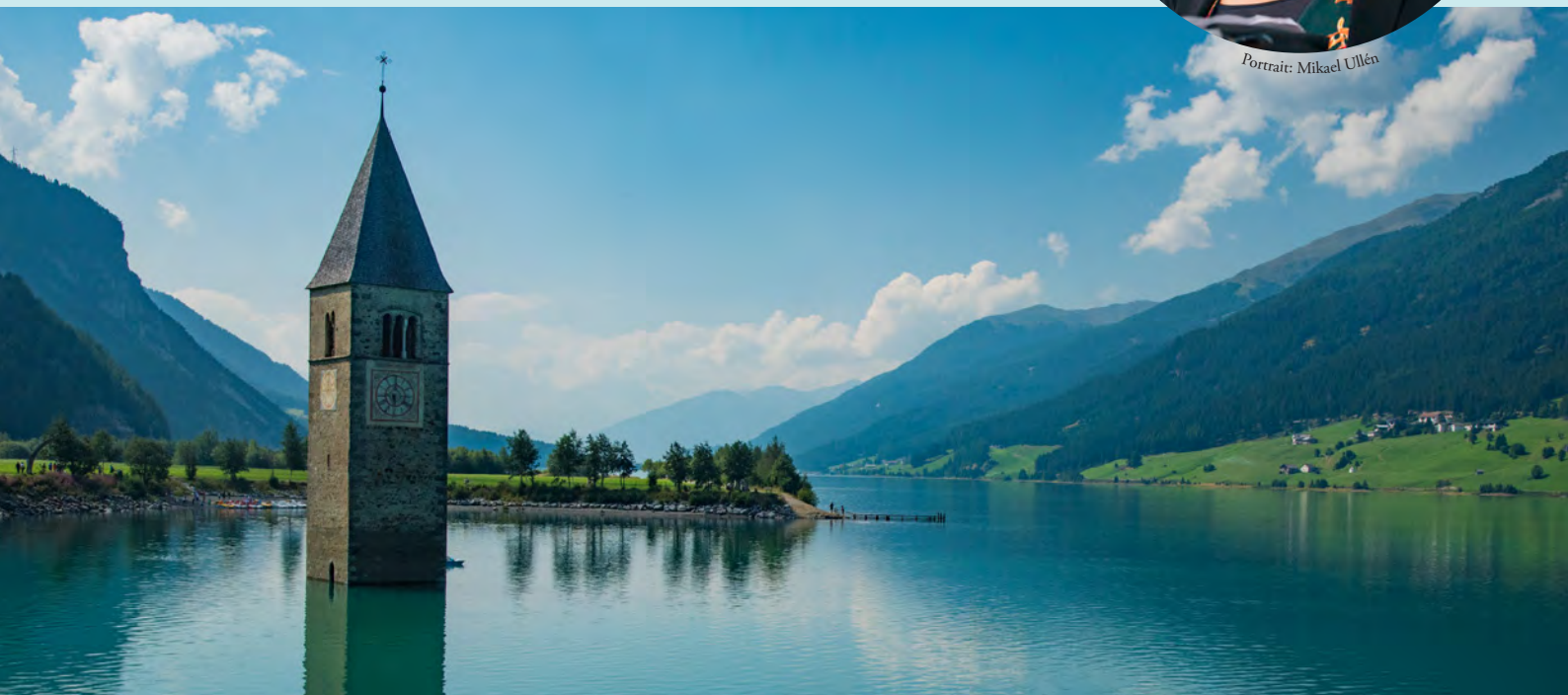
Appropriate valuation that incorporates direct and indirect benefits will help to eliminate the constraint of mobilizing mainstream funding sources for nature-based solutions. But this may also require finding new ways of measuring, evaluating and monitoring natural infrastructure.

From a social perspective, it is important to recognize the role of grey infrastructure for groups such as refugees. Refugee camps tend to establish in places that have been rejected as suitable for local communities to settle, often due to a lack of natural infrastructure. In these situations, innovative man-made infrastructure is essential to ensure access to WASH.

Monica Altamirano from Deltares, focused on nature-based flood protection and raised the concern over the lack of knowledge in nature-based solutions.



Portrait: Mikael Ullén



3 How do we create broad ownership to the implementation of the 2030 Agenda for Sustainable Development?

ECONOMY: BARRIERS TO IMPROVED STAKEHOLDER OWNERSHIP | The importance of multi-stakeholder partnerships in implementing change was often highlighted during the Week. However, from an economic perspective, broad ownership of the 2030 Agenda can only be achieved by identifying and aligning the appropriate economic incentives for all stakeholders. This can be done in a number of ways.

To facilitate economic incentives that drive ownership, there are two aspects to consider. First, widening ownership is context-driven and therefore needs to be customized according to a developing versus developed context. In a developing

context, where systems and mechanisms are still nascent, this is primarily driven through a platform or a convening body to align economic incentives. In a developed context, this is typically led by the government.

Second, stakeholder groups themselves need to be considered. In the case of industry, the issue of SDGs and water should move from the CSR space to the economic value space. Innovation in water has grown consistently in the past decade, suggesting that economic value exists in this areas – a trend that could be strengthened with appropriate market pricing mechanisms for water. Governments can further reinforce and sustain this ownership with suitable regulatory framework and schemes.

Sufficient funding exists and projects are available – along with existing and emerging technologies – but a lack of a common platform to connect supply and demand frustrates improved stakeholder ownership.

In schools, the effectiveness of ‘learning by doing’ – whereby actions such as handwashing before meals is introduced as a routine procedure – is gaining traction.

ENVIRONMENT: CONNECTING COMMUNITIES WITH THE BENEFITS OF IMPLEMENTATION | Broad ownership of implementation of the 2030 Agenda – SDG 6 in particular – can be achieved through connecting water management, the protection of ecosystems and the benefits they generate, and



ecological and hydrological processes with the everyday needs of communities and economies.

It is challenging to convince landowners to change agricultural practices to promote water conservation, especially if such changes reduce the amount of water available for crop cultivation. The water community needs to provide tangible solutions that address SDG 6 while working towards improved livelihoods and prosperity of the most vulnerable.

Increasing awareness about the SDG framework and developing capacities for its implementation are the responsibility of all, including governments, NGOs, the private sector, and other actors working directly towards these goals. Linking local actions to the global agenda, and sharing these examples, will make more people aware of solutions that are feasible and

“We empower ourselves by selling bricks and [water] tanks. For many women this is their first ever money,” Elizabeth Ntukai, from Maji Mamas (Water Women) in Kenya, said. Previously, women would spend up to eight hours a day collecting water.

closer to implementation. Policies can provide the framework to build capacities and to turn trade-offs between the SDGs into synergies. Better knowledge of trade-offs and co-ordination between sectors, (and governments in the case of transboundary water), is vital. There is a need to build permanent institutions on local, national, and regional levels to support the SDGs, as well as to develop the legal framework and technical skillsets for the implementation of the 2030 Agenda.

SOCIAL: TAPPING INTO THE SKILLS OF WOMEN AND YOUTH | Women and youth

represent more than half of the global community.

Their voices and actions are critical to implementing sustainable development.

The empowerment of women is likely to lead to greater inclusion and equality for other social groups. Supporting female leaders in communities will produce co-benefits in terms of employment, increased productivity, ecosystem services and improved water management. In Kenya, the Maji Mamas are taking ownership of issues existing within local communities to mobilize women through innovative, localized, and cost-effective solutions.

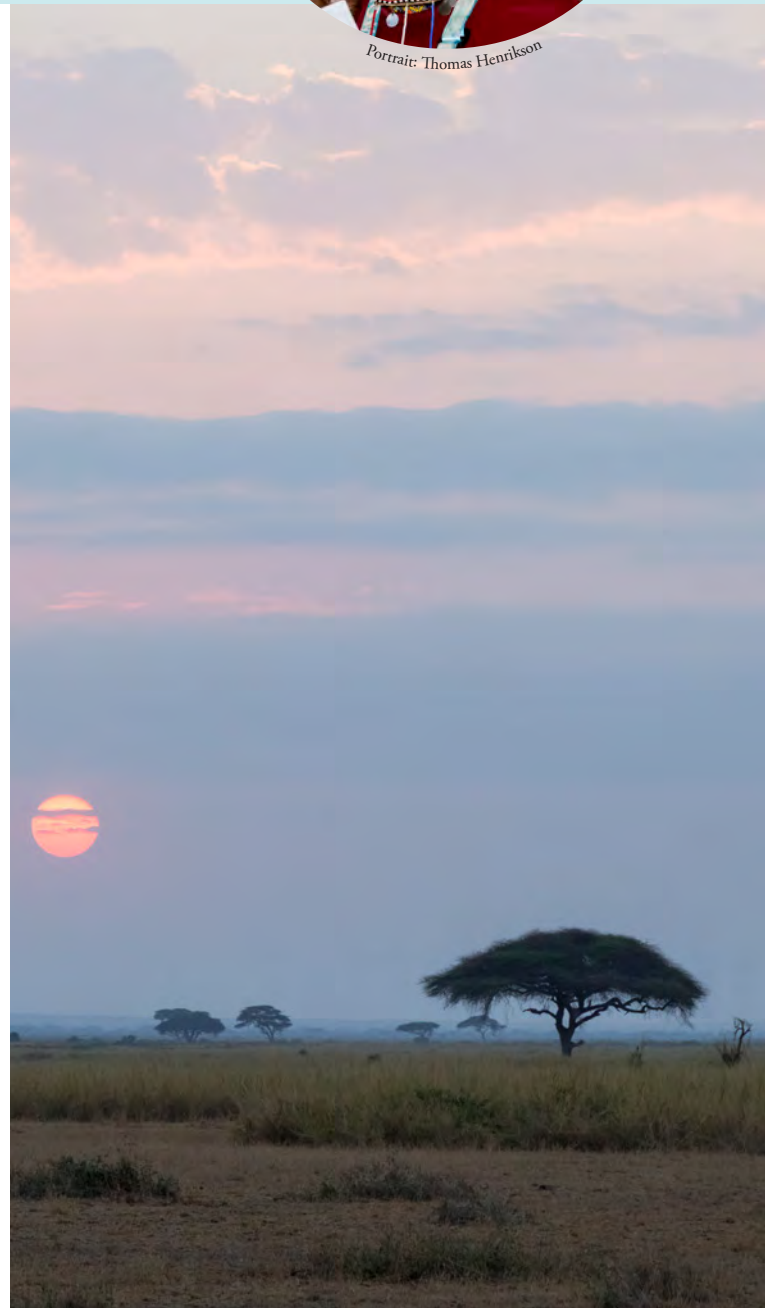
In many areas – particularly WASH – results can be delivered effectively through simple behavioural change. There is a growing body of evidence to help understand which guidance and messaging is most likely to have greatest influence on behaviour. In schools, the effectiveness of ‘learning by doing’ – whereby actions such as handwashing before meals is introduced as a routine procedure – is gaining traction. Messaging that focuses on emotional rewards such as happiness and praise has been found to be more effective than material incentives.

There needs to be greater focus on education and engaging youth as active stakeholders in determining solutions, rather than simply thinking of them as future beneficiaries of today’s initiatives.

While there is a role for structured engagement by governments and civil societies in areas such as risk mapping and assessing vulnerability, governance and reporting, to create genuine ownership, the emphasis should be on people and communities.



Portrait: Thomas Henrikson



4 How do we value water and ecosystem services for human development?

ECONOMY: EVALUATING WATER AND ECOSYSTEM SERVICES | Water is a vital commodity, indispensable for life, and yet it remains one of the lowest priced. Water is typically priced at its marginal value, which is often difficult to quantify in financial terms for water and ecosystem services. The value of water will only increase if water is priced at its marginal value, and value is attached to its externalities that reflect its scarcity.

Diversion of water from ecosystems is usually the result of increased supply elsewhere, which encourages overconsumption and does not reflect actual demand. With proven financial benefits and strong political foothold, consumption driven by human development is set to continually exceed actual needs as there is no incentive to save water.

An evaluation tool for water and ecosystem services is required, similar to the global warming CO₂ emissions system.

An evaluation tool for water and ecosystem services is required, similar to the global warming CO₂ emissions system. Current processes need to be updated with best practice worldwide to increase transparency and inclusiveness towards the private sector and the general public.

Resilient bonds could be tailored to include water and ecosystem services with a dual target of financing infrastructure and reducing expected losses. Active investment initiatives are creating an at-scale framework that could facilitate an amalgam of financial gain, economic benefit, and environmental and social goals.

Several sessions at the Week stressed the need to use innovative, market-based finance mechanisms such as tariffs, quotas, and pricing systems to move towards supplying-demand management, (away from demanding-supply management), to encourage savings. Economic benefits can be used to fill the gaps from financial metrics and connect the intrinsic value of water and ecosystem services. Integrated accounting mechanisms can augment this process.

ENVIRONMENT: ATTACHING VALUE TO ECOSYSTEMS | Currently, the direct and indirect benefits received from water ecosystems tend to be under-appreciated or ignored due to a lack of awareness of their processes. One way to communicate the true value of water ecosystems and services is to show their direct contribution to basic human needs such as health, sanitation, food and energy (with case studies, up-scaling pilot projects etc.), as well as prompting all sectors and users to recognize their

mutual co-dependence and co-responsibility over water and ecosystem's health.

Even though attaining an economic value for these services is of considerable use, the intangible value of nature's many co-benefits must also be considered. Building the true value of nature into institutions would prompt greater regulation and the emergence of financial mechanisms, such as payment for ecosystem services, which support the development of green infrastructure. All aspects of good governance – from policy to stakeholder engagement – rely on the correct valuation of freshwater ecosystem services. In this context, citizen science is increasingly regarded as a relevant tool for stimulating engagement with the general public in the conservation of water ecosystems and increasing the knowledge about nature and ecosystems.

It is therefore vital to continue to invest in interdisciplinary knowledge generation. Science needs to demonstrate that water is a vital element in the biological and geophysical processes that could offer solutions to fundamental issues linked to the conservation of these resources, from wastewater treatment to flood reduction. Such recognition would likely encourage long-term investment, for example in using nature-based solutions for preventing water related disasters, to avoid them to happen in the first place.

SOCIAL: CALCULATING THE BENEFITS OF WATER SECURITY | Water security is inextricably linked to addressing poverty and hunger, improving health, mitigating and adapting climate change, and is necessary to ensure affordable energy and sustainable cities.

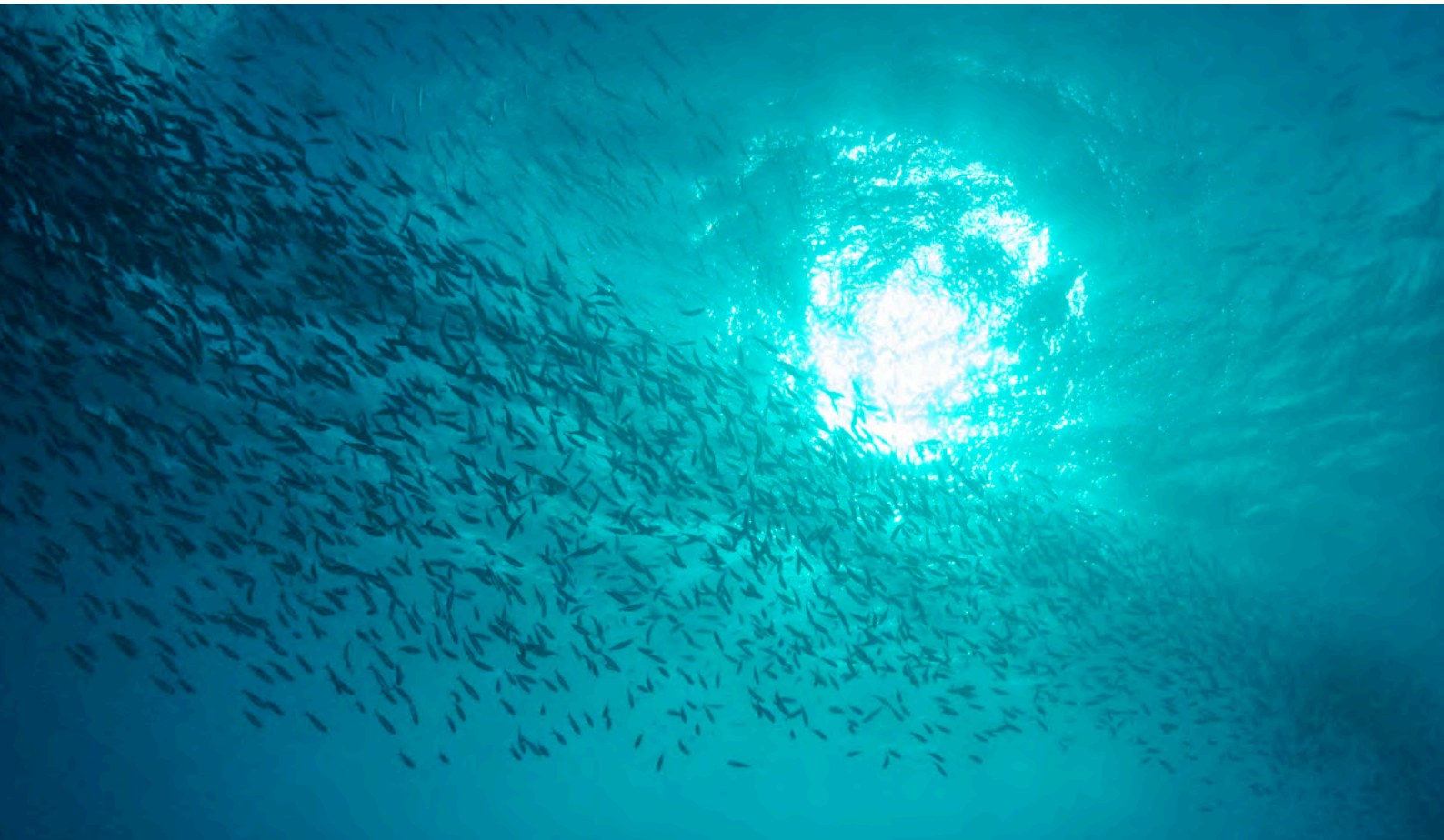
The role of ecosystem services in securing the supply of water, therefore, must include the value of additional direct and indirect benefits. There is a need for more empirical evidence to assess the impact and value of the additional benefits of ecosystem services. This is especially relevant if greater investment is to be encouraged in the resilience of ecosystem services to reduce the need for humanitarian assistance when infrastructure (green or grey) fails.

Meaningful valuations are highly complex. However, an initial step to determine value is to collect more empirical evidence of the impact of ecosystem services on human development. Engaging with communities is an essential part of this – to understand the role of ecosystems in their culture and livelihoods. Equally, however, there are many private sector organizations that rely on ecosystems in their operations and value chains. They are often well-placed to determine and quantify the risks to their business posed by disruption in ecosystem services, such as increased water treatment costs.

As with many areas of development, a multi-stakeholder approach is central to valuing ecosystem services – it requires the complementary skills and networks of communities, civil societies, the private sector, multilateral institutions and, increasingly, the financial sector.



Photo: Jonathan Ernst, World Bank



5 What governance mechanisms and tools are needed to achieve integrated water and ecosystems management?

ECONOMY: TRUST, TRANSPARENCY, ACCOUNTABILITY | To strike a balance between water, ecosystems, and human development, establishing adequate governance and economic systems is critical. A holistic approach to this balance needs to go beyond monetary terms, and encourage and embed characteristics of trust, transparency, credibility, and accountability.

Governance mechanisms need to focus on building dialogue and common language between financiers and practitioners. This will overcome transaction costs, for example minimum project size and aggregation. Inconsistent ecosystem service

valuation is a further hurdle to generating economic benefits, financial flows, and scaling-up of appropriate green and grey solutions.

Enabling and authorizing governance frameworks is necessary to achieve economic and ecological balance. Shifting emphasis from solely monetary outputs to co-beneficial outcomes such as additional ecosystem services is a key component of these frameworks. Another is acknowledging economic risk reduction, as well as social and ecological gains provided by nature-based solutions.

With regards to financing, investor appetite is evidenced by the exponential growth of the green bond market and the development of common standards. Local capacity building and use of data in decision-making are fundamental precursors to attracting finance that relies on solid governance. The misalignment in timelines between expected return on investment and ecological benefit realization has yet to be overcome.

Governance that accounts for the true value of water – economic as opposed to purely financial value – can pave the way to mainstreaming integrated water and ecosystem management, furthering progress towards achievement of the SDGs, and realizing sustainable human development.

Shifting emphasis from solely monetary outputs to co-beneficial outcomes such as additional ecosystem services is a key component of these frameworks.

ENVIRONMENT: STRENGTHENING FRAMEWORKS

| Water is a global resource, and as such it requires transboundary co-operation.

Agreements that transcend geopolitical borders provide the basis for creating long-term agendas, robust institutions, and lasting, effective legal frameworks. In addition, countries need to integrate policies across sectors to achieve a nexus-framework approach that encompasses all components of the water cycle. Regional water diplomacy can also be an effective platform for fostering healthy ecosystems – prerequisites for stability and peace.

On a national level, financial mechanisms and water-based funds are needed to streamline resource allocation to priority areas that are identified based on joint scientific research and stakeholder consultations. Financial incentives should tap into private sector funds and offer opportunities for co-investment to create collective responsibility with public actors. Furthermore, countries would also benefit from increased internal co-ordination between government bodies such as forestry, agriculture, and water ministries. Integrating water and forest policy, when possible, would be a step in the right direction of a true nexus-based landscape approach focusing on the dynamic interplay between ecosystems. Paired with this is the important role of institutions, which need to be both stable and adaptive.

On local and municipal levels, there is a need to access existing knowledge and transform this into actionable plans. Policy and solutions for water management should engage all watershed stakeholders from the initial stages, overcoming language and knowledge barriers, consultation at different implementation phases and long-term binding commitments.

In addition, communication campaigns and advocacy should be used to spread awareness about the substantial benefits provided by healthy water ecosystems, and how to preserve them.



“Forty years ago, the first and only United Nations conference on water met in Argentina. Has the time come for another major policy meeting at the highest level to make sure that models of co-operation and water diplomacy are going to respond to the needs of our time?” Danilo Türk, Chairman on the Global High-Level Panel on Water and Peace

SOCIAL: THE IMPORTANCE OF SOUND GOVERNANCE

| Integrated water and ecosystems management requires good governance throughout the process of policy development. Policies must, from the outset, cut across sectors and issues, and feature full stakeholder involvement. In addition, the language and communication of policies should resonate with a wider audience beyond experts and technocrats.

With the impacts of climate change increasingly prevalent, policies that promote resilience must now be more flexible, responsive, and forward-looking. Efforts to achieve integrated water and ecosystem management must also be based on robust legal frameworks that clarify rights and responsibilities, and define relevant procedures.

The right to access and manage water cannot be considered in isolation from the right to own land. There are still multiple countries where a lack of formal governance around land rights – and associated water rights – leave many groups vulnerable, particularly women and indigenous populations. A key focus, therefore, should be on governance. Robust land administration institutions would promote improved security of tenure, and ensure that new regulations are effectively enforced.

Tools are required to enable the cross-cutting and complex nature of issues to be effectively reflected in implementation. Improving data access and information sharing between stakeholders through open-source platforms can reduce governance barriers and engage all stakeholders associated within a systems perspective. This would be especially beneficial in transboundary basin management. Innovative monitoring solutions such as citizen observatories can provide complementary governance mechanisms that also succeed in being participatory.

Good governance lies at the core of resource management. With new partnerships, stronger institutional arrangements, and better governance tools, sustainable water and ecosystem management can be achieved for the benefit of the entire 2030 Agenda.



Photos: Thomas Henriksen

World Water Week features two world-renowned and prestigious awards: the Stockholm Water Prize and the Stockholm Junior Water Prize, both with royal award ceremonies.



Photo: Jonas Borg

Stockholm Water Prize

Professors Bruce Rittmann and Mark van Loosdrecht received the 2018 Stockholm Water Prize for microbiological research and innovations that have revolutionized water and wastewater treatment. The prize was presented to them by H.R.H. Crown Princess Victoria of Sweden on behalf of H.M. King Carl XVI Gustaf of Sweden who is patron of the prize.

In its citation, the Stockholm Water Prize Nominating Committee recognized professors Rittmann and van Loosdrecht for “pioneering and leading the development of environmental biotechnology-based processes for water and wastewater treatment. They have revolutionized treatment of water for safe drinking, and refined purification of polluted water for release or reuse – all while minimizing the energy footprint”.

FOUNDERS OF THE STOCKHOLM WATER PRIZE

Bacardi, Europeiska ERV, Poul Due Jensen Foundation, Ragn-Sells, Water Environment Federation, Xylem Inc., and Ålandsbanken.



Photo: Thomas Henrikson

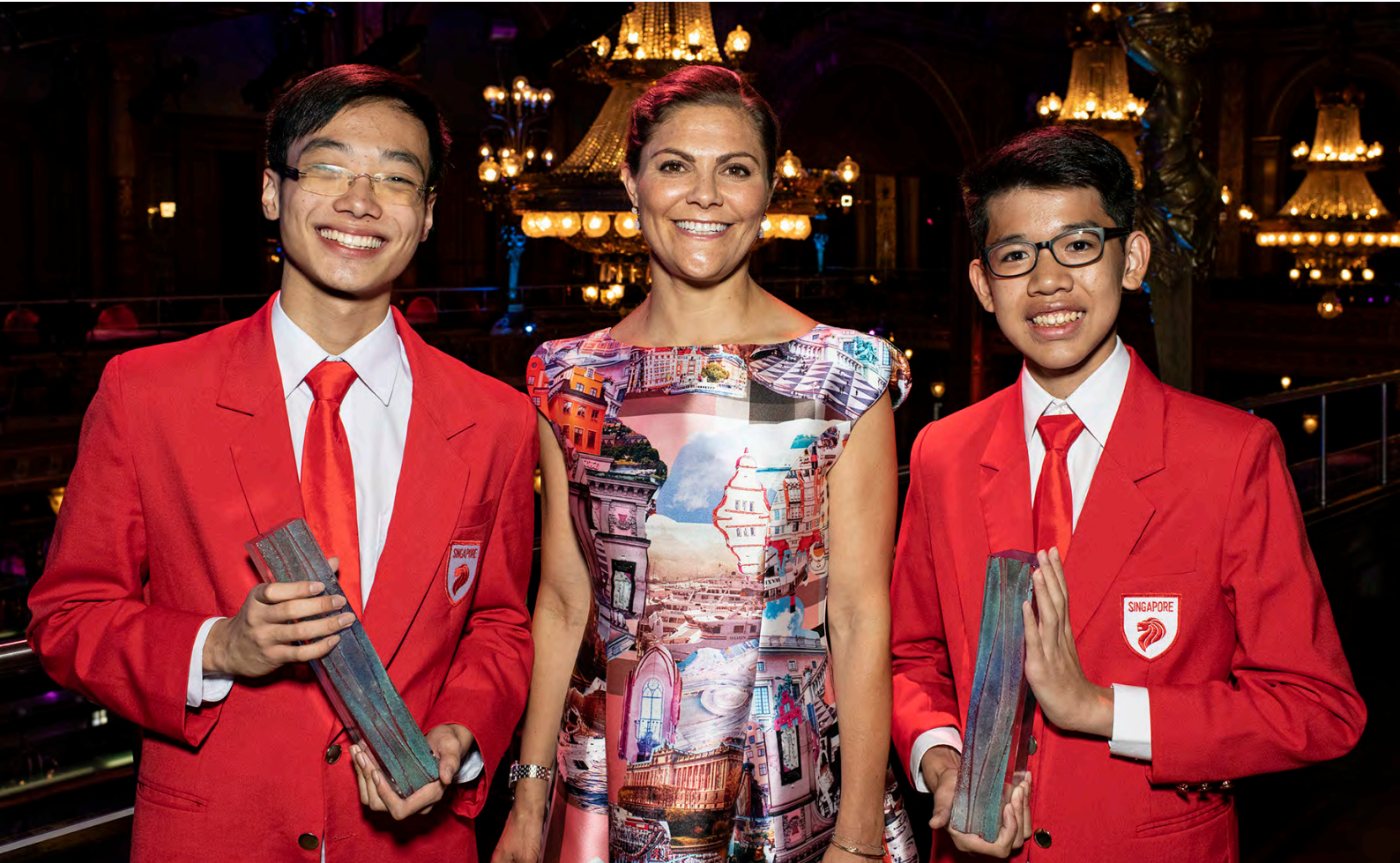


Photo: Jonas Borg

Stockholm Junior Water Prize



Photo: Jonas Borg

Three students from Singapore, Johnny Xiao Hong Yu, Caleb Liow Jia Le, and Shane Ho, won the 2018 Stockholm Junior Water Prize. They were awarded for an original project in which they produced a novel, eco-friendly synthesis of reduced graphene oxide (rGO) from durian rind and sugarcane bagasse for water filters. Xiao Hong Yu and Liow Jia Le were presented with the prize by H.R.H. Crown Princess Victoria of Sweden at an award ceremony during World Water Week.

“There is nothing more hope-inspiring than to learn about new and innovative ways to conquer our most fundamental challenges. Like freshwater, the creativity of the human mind is a most valuable natural resource; holding the keys to a just and healthy future for us all.”

H.R.H. Crown Princess Victoria of Sweden on presenting the Stockholm Water Prize

The Stockholm Junior Water Prize is presented by SIWI with generous contribution from the Global Founding Sponsor Xylem Inc. and the Raincoat Foundation.

Outreach

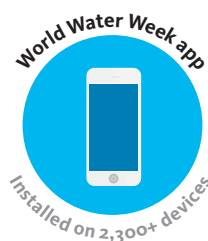
MEDIA COVERAGE | The growing international interest in water issues was clearly visible during World Water Week, with over 100 journalists from different parts of the world attending, while many more followed sessions through the online pressroom and live streaming.

The result was more than 3,400 articles, blog posts and TV and radio features around the globe.



WATERFRONT DAILY | World Water Week's WaterFront Daily is published every day during the Week. With a mix of reports from the most interesting sessions and interviews with passionate water people, it provides an invaluable snapshot of the Week, and is a great way to get an overview of the hottest current water debates.

THE SOFAS | This year, no fewer than 37 Sofas were hosted. The sofas are dynamic events that combine the platform of a speakers' corner with a studio interview format where journalists conduct interviews and facilitate discussions between experts on a variety of water issues. Interviewees include government officials, representatives from water and development organizations, the private sector, and SIWI experts.



THE WWW APP | With so many things going on at the same time, the World Water Week app is an indispensable companion. Here you not only find logistics, the programme with last-minute changes and important convenor information, you can also easily connect with other participants. Other popular features include its personal organizer function and push notifications informing about full rooms and other real-time alerts.

- 428,746 TOTAL FACEBOOK PAGE IMPRESSIONS
- 40,900 TOTAL FACEBOOK VIDEO VIEWS
- 58,700 TOTAL IMPRESSIONS ON LINKEDIN
- 12,900 TOTAL IMPRESSIONS ON INSTAGRAM



MISSED A SESSION? | Many of the Week's highlights were livestreamed and can still be viewed on SIWI's Facebook, Vimeo and YouTube channels.



Photo: Mikael Ullén



STANDING: Cindy Espina, James W. Chavula, Ekatha Ann John, Manipadma Jena.
SEATED: Rehab Abd-Elmohsen and Mohammad Al-Masum Molla.

World Water Week Journalist Grant

Since 2014, SIWI has provided journalists from low and low-middle income nations the opportunity to apply for a grant to visit and report from World Water Week. The aim is to build capacity and create new networks among journalists interested in water from different parts of the world.

This year, a record number of 300 highly qualified journalists competed for the grants. Of the seven selected, six were eventually able to travel to Stockholm and attend World Water Week:

- Rehab Abd-Elmohsen from Egypt,
- Mohammad Al-Masum Molla from Bangladesh,
- James W. Chavula from Malawi,
- Cindy Martínez Espina from Guatemala, and
- Manipadma Jena and Ekatha Ann John, both from India.

Their stories will be published on www.siwi.org. The 2019 World Water Week Grant will open for applications in March 2019.



Photos: Thomas Henrikson

"The beauty of water is that it goes deep and flows wide. I discovered it is the same with the World Water Week. With more than 300 sessions covering water-related issues from almost all geographical regions, media persons are spoilt for choice if they seek variety to write."

Manipadma Jena

World Water Week



Media & Community Partners

Key Collaborating Partners



Stockholm Water Prize



Thanks to: Grand Hôtel

Stockholm Junior Water Prize

Founding Global Sponsor



Supported by



Thanks to: Arlanda Express

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Support World Water Week and the Prizes

Whether you are at the beginning of your water journey, an established actor in the water sector, or a sustainability thought-leader, we invite you to be part of the solution. If you would like to support World Water Week, please contact us at

www.worldwaterweek.org/support