

MAGAZINE UNESCO-IHE INSTITUTE FOR WATER EDUCATION - 2014

UPDATE



UNESCO-IHE
Institute for Water Education

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About UNESCO-IHE Institute for Water Education

UNESCO-IHE is the largest international graduate water education facility in the world and is based in Delft, the Netherlands. The Institute confers fully accredited Master of Science degrees, and doctoral degrees in collaboration with partners in the Netherlands. Since 1957, the Institute has provided graduate water education to more than 14,500 water professionals from over 160 countries, the vast majority from the developing world. Find out more on our website.

Dear readers,

This is the latest edition of UNESCO-IHE's free UPDATE magazine, which is sent to counterparts across the world, as well as is shared online. UPDATE features institutional information related to water education, research and capacity development activities undertaken by UNESCO-IHE, its alumni and partners.

The Editorial Committee encourages contributions from readers, and is especially interested in hearing from the Institute's alumni about projects they are involved in and organizations to which they are affiliated. Please send any content to update@unesco-ihe.org.

We hope that you find the articles in this edition of continued value. Do let us have your reactions!

Laura Kwak
Editor-in-Chief

Are you an alumnus?

Please make sure your postal and email contact details are up-to-date to receive regular news updates from your alma mater. Update online www.unesco-ihe.org/alumni or send an email to Maria Laura Sorrentino, Alumni Officer, m.sorrentino@unesco-ihe.org.

N.B. We respect your privacy at all times and will never share your information with others without your consent.

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eSOS® smart toilets



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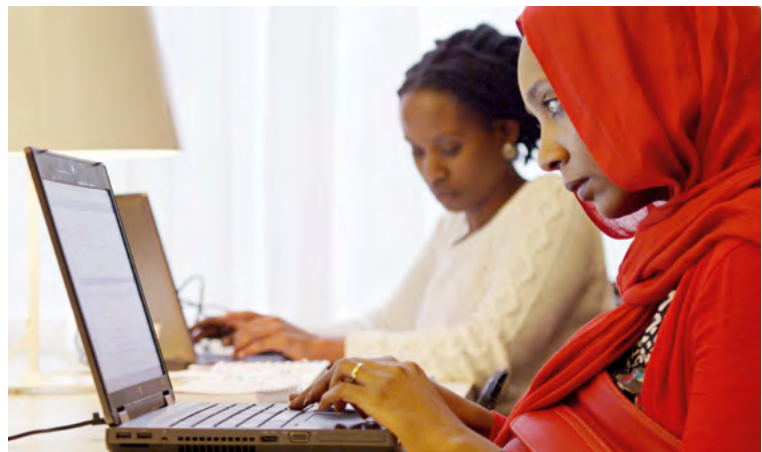
Tom Okia Okurut Alumni Award 2014

*“The beneficiaries
of water should be its
first guardians”*

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Online learning

*“We sometimes forget
the thousands of miles
between us”*



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Alumni News

UNESCO-IHE students have most innovative business cases



At the second edition of the Africa Works Conference, NUFFIC held a contest: 'Linking Knowledge From Business to Business - Innovative Business Cases'. African students studying in the Netherlands on a NFP fellowship were invited to develop and pitch plans for innovative services or products for their countries of origin. Their proposals had to show how cooperation with Dutch businesses provides a mutual benefit. The winner and first runner-up were both students from UNESCO-IHE.

The winning business plan was presented by Kevin Mureithi, MSc student of Environmental Science and Technology. His idea was to develop building products from waste materials such as plastics and glass, hoping to offer a critical solution to the waste crisis currently experienced in his home country of Kenya. According to Kevin, waste management has been overlooked by most international organizations working in developing countries. Local governments have been overwhelmed in managing the situation. This has led to a waste crisis that ultimately trickles down to pollution of the environment, especially water pollution. Kevin appreciates the support and education he received at UNESCO-IHE and the networking opportunities that the contest offered.

The first runner-up was Glory Amarachi Izimah, an MSc student specializing in Environmental Planning and Management. Her business idea was to connect private homes and small businesses in semi-urban areas of Nigeria to safe, clean and affordable piped water. The non-availability and low quality of water in these areas poses a serious threat to the health of the poor who reside in these areas. Glory's project, the Semi-Urban Water Initiative, envisions more clean tap water running in homes and businesses, not only generating income, but also improving livelihoods and contributing to WASH in Nigeria.

New Joint Programme on Water Cooperation and Peace

In 2015, UNESCO-IHE will be working with partner institutions University for Peace in Costa Rica and Oregon State University in the US to launch a new Master's programme entitled Water Cooperation and Peace.

This programme is being developed to respond to the widely acknowledged increasing competition between water users and water uses, with the potential for disputes and conflicts involving this precious resource. In view of this continuing trend, there is a need for experts and practitioners in the water sector and beyond to deal with water dispute avoidance, management and resolution. These experts and practitioners

in the water sector require in-depth knowledge of and skills in critical analysis of water conflicts, understanding of socio-hydrological dialectic dynamics, decision-making processes on water resources and services management, water dispute prevention, and management and resolution skills and tools to promote/achieve water security and to ensure dialogue and cooperation between different and competing users at different scales. Consequently, there is a need for relevant education in this area and training in these skills, which this new programme intends to provide to participants in order to increase the number of experts and practitioners in this field.

New MSc students welcomed

During the Opening of the Academic Year on 16 October 2014, Rector András Szöllösi-Nagy welcomed 170 new MSc students from 52 different countries to the Institute (class of 2014-2016). Her Excellency Judge Joyce Aluoch gave a guest lecture touching on the interlinkage of global justice and water. "It is clearer than ever that impunity of crimes has an impact across boundaries. This goes for water too. Moreover, water cuts are used as an instrument of war; this is a crime. The right to water is a human right. I am glad to see you made a choice showing you are willing to work for change," said Judge Aluoch.

Mr Tuyishimire, a senior in the Student Association Board, shared: "When you get back home, you will have a broader mindset. In our professions in the water sector, we deal with different people from different fields of expertise. Your opinion will be more valuable, as you will have the ability to think out of the box, be able to analyze different perspectives and deal with people from different backgrounds." During the ceremony, the annual Alumni Award was presented to Dr Okurut from Uganda; an in-depth interview with the award-winning alumnus starts on page 4.



UNESCO-IHE bids Rector farewell

To mark the occasion of the retirement of the Rector, András Szöllösi-Nagy, the Institute organized a farewell event on 12 September. The event included Prof. Szöllösi-Nagy's valedictory address on forecasting the future with models, a mini-symposium entitled 'Forecasting is a difficult thing, particularly if it concerns the future', and was concluded by informal goodbyes.

Szöllösi-Nagy was Rector at UNESCO-IHE from 2009 to 2014. During his tenure at UNESCO-IHE, he has been a passionate advocate for putting water on the Sustainable Development Goals agenda.

Informal goodbyes included speeches by Wendy Watson-Wright, Assistant DG for the Natural Sciences Sector at UNESCO; Fritz Holzwarth, Chair of the Governing Board; Prof. Miklos Rethelyi, Chairperson of the Hungarian National Commission for UNESCO; Prof. Janos Bogardi, Director of the United Nations University - Institute for Environment and Human Security; Lena Salame, Programme Specialist with UNESCO; Patricia Darvis, Chair of the UNESCO-IHE Works Council; Prof. Richard Meganck, former Rector; and Pedi Obani and Olivier Tuyishimire, PhD fellows and student association representatives.

During the reception, the Hydroinformatics laboratory - a screen that presents real-time ocean flows around the world - was revealed to Prof. Szollosi-Nagy as a farewell gift. He was also surprised and delighted when Bas Verkerk, the mayor of Delft, presented him an honorary medal from the city of Delft.



Honorary Fellow Professor Brian Moss

During the Institute's 2014 Closing Ceremony, Emeritus Professor Brian Moss received the UNESCO-IHE Honorary Fellowship. Prof. Moss is known for his research on the nutrient enrichment of shallow lakes through an ecosystem approach. His work has covered all parts of the globe, encompassing both lakes and rivers, as well as the landscapes that shape them.

In his acceptance speech, Prof. Moss pointed out that the importance of water is one of the main reasons for him to accept this fellowship. He expressed his concern about the ongoing damage of natural systems for our short-term convenience. "In our economics, we have treated natural systems as externalities. We could not easily assign financial values to them, so we ignored them. But like the account books of a business, the income and the expenditure must balance. Improvement in the business demands a small profit, but the profit does not come from nowhere. It comes partly from the externalities," Prof. Moss elaborates.

Dr. Tom Okia Okurut, winner of the 2014 Alumni Award

‘The beneficiaries of water should be its first guardians’

Dr. Tom Okia Okurut, Executive Director at the National Environment Management Authority in Uganda, recently received the UNESCO-IHE Alumni Award 2014. The UNESCO-IHE Alumni Award is given to an alumnus who is at the height of their career and has proven to be a role model for other water professionals by showing an outstanding contribution to water management – and Dr. Okurut certainly fits that description. UPDATE Magazine asked him about the challenges of cross-border water management, the role UNESCO-IHE played in his career and his vision for the future.

As Rector András Szöllösi-Nagy put it, the Alumni Award winner “did everything in the Netherlands except being born here.” Dr. Okurut himself certainly has fond memories of the time he spent in Delft and the people he met there. “A lot of my professional contacts hail back to my time at the Institute, really. In fact, coming back from Uganda after graduation, some alumni had already called me about a job opening: ‘They’re talking about you! The job description is about you!’ One alumnus actually bought a newspaper and brought it to me. So I applied, and got the job.

I still keep in touch with several people I met at UNESCO-IHE. There’s a young man from Honduras who did the programme in Delft and came to do his Master’s in Uganda, for example. And then there are some Dutch ladies who came to Uganda to do research with me. They stayed with me for about a year, and one of them is now working in Cameroon. Their Dutch experience benefitted them, helped them to grow.” But the UNESCO-IHE alumni network isn’t just good for keeping in touch. “I got a lot of consulting work through other alumni. Once, I went to Thailand for a meeting, and there was one man there in a grey suit during an official function who said, ‘Why do I know you?’ And I said, ‘I know you too. Where did we meet?’ Turns out we had met years ago, at the Institute!”

International cooperation
“When I was hired, the EAC was

just being reformed, and one of the objectives of the community was to develop the national resources. Now, Lake Victoria is shared between Uganda, Kenya and Tanzania. Our idea was to start a program within the East African Community, based on a European model, which would focus on the development of the Lake Victoria basin as one entity, not as one country. My job was to develop that program, armed with the knowledge I had gained at UNESCO-IHE. The community didn’t have much money at that time; there were just the two of us in that committee. We developed the actual programmes, the legal framework and the structure to mobilize resources. We also established a governing body, a central council with ministers from various ministries in each country. The most important thing was to get the laws in the region to be the same. If the laws in Uganda are very strict, people will move to Kenya, which has very relaxed laws, or to Tanzania. However, what they do there will still affect Uganda. So, the first thing we all agreed on is making the laws the same.

Four years later, all what I’d been given to do had been done. At that point, the programme was upgraded to a full-fledged institution, and the Lake Victoria Commission was born. It was specifically designed to oversee the Lake Victoria development, and I was hired as its first executive secretary.” One important lesson I learned through my work in the East African Community is to

take a diplomatic approach. Some countries were reluctant to share resources, to cede some authority to the commission. So in order to create acceptance, it was necessary for us to create projects that would bring these people together, so we could try a central approach. It was quite a challenge, since governments are sectorial by nature, and the different ministries don’t want to share information with ‘outsiders’ from another department. But eventually, people started seeing the benefit of the regional approach, and then they relaxed. By the time I left, there were some good programmes in place, and people regarded them as normal.”

Safeguarding the ecosystem

“I currently work as the Chief Executive for the National Environment Management Authority (NEMA) in Uganda. The institution was established by an act of Parliament in order to coordinate, monetize, regulate, and supervise everything that has to do with the environment. Our work does not just concern water management; we work in all ministries that have an impact on the environment, in one way or another. Are they doing their work in a sustainable manner? We look at water resources and sewage discharge, agriculture and land use, fisheries, roads and construction work, shipping... We’re everywhere!

Population is a big factor in water management. Water normally attracts people, and most of the cities are centred on Lake



Victoria. It's one of the most densely populated areas in the country, and that definitely has an impact on the ecosystem. That's why no investment goes through without first obtaining our license. Companies have to submit a proposal on how they're going to handle their waste, how is it going to affect the water, et cetera. It goes beyond water management, though. Recently, oil was discovered in the National Park - the centre of tourism, and the most diverse region in Uganda. NEMA makes sure the oil drilling activities only minimally disturb the ecosystem and the environment. After all, the main problem with oil is the waste and its impact on wildlife."

Promoting awareness

"Part of NEMA's responsibilities is promoting awareness. Internationally, we post information on the web for people to stay up to date. However, our educational department also employs sociologists to teach people about water directly. People are the beneficiaries of water, so they should be the first guardians of water resources. Promoting awareness is a continuous process. We recently also introduced high-level public dialogues, where we

discuss topical issues, invite expats and MPs and set up a debate. We recently had a discussion on how water and the environment form a national security issue. One of the UNESCO-IHE alumni and myself were moderators of that discussion. It was very interesting, and attracted a lot of attention. After all, if you deprive people of water, that is a war crime. If you work in agriculture and implement changes that deprive 500 people of access to water, these people can rise up against the government, killing and rioting in the streets. Then it becomes political.

In water management, public engagement is fundamental. Most of our population is living in rural villages. These people are living off the natural resources, so they have to be fully engaged. We need to explain to people that they have a value; they have to play a positive role. That's how you engage people."

The future of UNESCO-IHE

"I think the institute has really grown since I was here. UNESCO-IHE is a mascot for innovation. Innovation that can be done through teaching. All of us, wherever we work, we may not necessarily have brought

something new, but we have innovated and informed people about what can be done. We've accomplished a lot. However, I would like to see UNESCO-IHE design programmes based on feedback from alumni, to better prepare current students for some of the hands-on unexpected issues the alumni have encountered. I talked to the Rector about this recently: introducing a Masterclass for leaders, like they teach at Harvard. I would really encourage the State Secretaries in Uganda to get some high-level training. For

the most part, the people in charge of water and environment are not engineers; their knowledge is not in that area. They simply need more education on water.

If I were to design a programme, I'd bring in a lot of managers in charge of land use, and invite them to come and study water as part of the bigger picture. Land use and water are one and the same, tied together. They need each other. Failure in managing the land results in failure to manage the water."

UNESCO-IHE Alumni Award 2014

Dr. Tom Okurut, who graduated in 1999, received the UNESCO-IHE Alumni Award 2014 last October. This year we have received 55 nominations for alumni from 30 different countries. All nominations show the great impact and important career developments achieved by these alumni after their studies. The jury, comprising the rector, five staff members, an alumnus and a student, has the challenging tasks to evaluate and choose the winner. During his

stay in Delft, Dr. Okurut took part in various activities held at the Institute, and he had the opportunity to share his experiences with all current students.

Nominate an alumnus for 2015

The UNESCO-IHE alumni award is given annually to an alumnus who shows an outstanding contribution to water management and proves to be a role model for peers. Nominate someone else or yourself for the 2015 Alumni Award:

www.unesco-ihe.org/alumni-award

The Santa Cruz Declaration on the Global Water Crisis

Contesting Water Injustice

“At least one billion people around the world struggle with insufficient access to water. However, the global water crisis is not, as some suggest, primarily driven by water scarcity. Although limited water supply and inadequate institutions are indeed part of the problem, we assert that the global water crisis is fundamentally one of injustice and inequality.”

This statement forms the starting point of the Santa Cruz Declaration on the Global Water Crisis. The Declaration draws upon the work of participants in an NSF-supported workshop on Equitable Water Governance held at the University of California at Santa Cruz in February 2013. Comments, both critical and supportive, from a range of prominent water researchers and practitioners were published with the Declaration.

The Declaration stems from concerns about how prevailing ways of framing water problems prevent sufficient recognition of their distributional dimensions. The global policy consensus

treats the water crisis either in terms of natural scarcities, or as the consequence of normal and inevitable processes of economic development and population growth. Proposed solutions tend to consist of new or better technologies; often in combination with policy reforms (such as uniform and transferable water rights) intended to stimulate water to be used where its marginal returns are highest. Irrespective of their accuracy or effectiveness, what these water narratives have in common is their neglect of the more difficult political questions of allocation and distribution: these are either simply ignored, or conveniently delegated to quasi-anonymous markets.

These narratives, for instance, make the cultivation of asparagus on the desert coast of Peru seem perfectly justifiable. This asparagus is intended for consumers in the UK and the Netherlands who do not want the satisfaction of their culinary desires to be compromised by seasonality. Producing asparagus is a profit-making enterprise of large agro-business companies. The crops are irrigated with water that

would otherwise have been used for the production of domestic crops grown by local farmers. As part of market-led growth strategies, and justified on the grounds of efficiency and productivity, agro-business companies are welcomed to make use of this water at relatively low cost, even though its availability is premised on enormous public investments and regardless of the fact that its use leads to the irrevocable depletion of the resource. The profits of asparagus production mostly flow to these companies, whereas the costs and risks are borne by people living in the area, and by future generations.

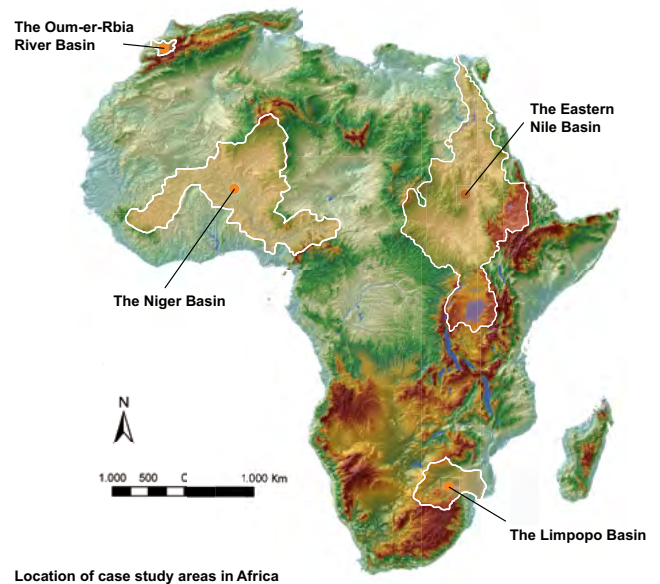
The Santa Cruz Declaration is a plea for bringing dimensions of water related to distribution and justice much more explicitly into research and policy domains, opening them up for reflection and dialogue. In this way the Declaration also hopes to provide inspiration and support for new forms of action on a range of water deprivations.

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Drought forecasting in Africa



Drought is a natural hazard that has a huge impact on people and the environment and is one of the largest water-related disasters in Africa. For the DEWFORA project which was completed last year, UNESCO-IHE worked in a large consortium to develop a framework for monitoring, predicting, giving timely warnings and responding to droughts applicable within the institutional context of African countries. Micha Werner, Associate Professor of Hydraulic Engineering, Shreedhar Maskey, Associate Professor of Hydrology and Water Resources, and Patricia Trambauer, PhD fellow at UNESCO-IHE, elaborate on the ins and outs of drought forecasting in Africa.

There is a global need for information on droughts and how to manage them. Drought events have resulted in extensive damage to livelihoods, environment and the economy. Recent climate change predictions project an increased frequency and severity of drought in many areas. DEWFORA stands for improved Drought Early Warning and FORecasting to strengthen preparedness and adaptation in Africa.

Micha Werner, the coordinator of the project through Deltares, underlines the relevance of the research: "Flood forecasting has advanced much more than drought forecasting. Now we see that drought forecasting is getting increasing attention, within the scientific world and beyond. During a high-level policy meeting hosted by the World Meteorological Organization (WMO) in March 2013, several drought management strategies were adopted, which clearly identified forecasting and warning as key."

Nineteen partners collaborated in the project in a large consortium involving complementary expertise in forecasting and drought management. "In a big consortium like this, success involves having a clear and complementary role for each partner. Previous collaboration also helps. One of the strengths of UNESCO-IHE is its broad network. Partners like WaterNet and NBCBN-RE were established in partnership with UNESCO-IHE, so they are obvious collaboration partners on projects like these," says Shreedhar Maskey.

Ready-to-use framework for policy making

The objective was to study and establish a framework on how to develop drought forecasting in order to contribute to policy. A secondary aim was to do science. The team developed a protocol for drought forecasting and warning that demonstrates a strong emphasis on science, but also on outreach and capacity development. A clear example is the online course that is now offered by organizations such as the UNCCD (the UN Convention for Combating Desertification), which can be followed by anyone interested in the subject.

Using hydrological models for drought problems

Shreedhar Maskey: "UNESCO-IHE contributed to the project from a hydrological modelling perspective. In drought forecasting, we start with meteorological forecasting; the next phase is hydrological forecasting. One of the things we emphasized is that hydrological models are usually not used for drought problems, but do have great potential to provide useful information on drought conditions. A hydrological model gives us data on evaporation, soil moisture, river runoff and even changes in reservoir storage, which are directly relevant for drought management. Our goal was to show the added value of the model and to strengthen UNESCO-IHE's position on drought. We have been doing a lot of work on floods so far, but hardly any on droughts." UNESCO-IHE is developing a short course on drought forecasting for next year and is also looking into the potential of offering a refresher course for its alumni.

"Our research scope in DEWFORA was the whole of Africa but we did focus on some case studies, including the Eastern Nile basin, the Limpopo basin and the Inner Niger Delta, as well as the Oum-er-Rbia basin in Morocco. The conclusions found for these basins, such as those for the Limpopo basin, can be transferred effectively to other basins like the adjacent Incomati basin, but also on a global level. I was curious to study if a hydrological model can add something to identifying and forecasting droughts. For example, it might not be a dry year according to the meteorological situation, but antecedent conditions in the soil can also be a factor for a year to be considered dry or wet. I would like to test our hydrological forecast for this coming season to see what actually happens. We were expecting a drought due to the strong El Nino signal a few months ago, but now it seems that El Nino will not be as strong as forecast," explains Patricia Trambauer.

Future plans

The DEWFORA team is currently looking at new calls related to Horizon2020, with a broader focus extended to themes such as water security, supply and sanitation. The team believes it will have a good chance of succeeding, as the project officer of the EU recently earmarked DEWFORA as a very successful project and plans to communicate its impact. In addition, as a result of the project work, UNESCO-IHE and other partners are now involved in the Global Drought Information System (GDIS), and are exploring possibilities to stay involved in that development.

Micha Werner: "It was not our scope to make an operational forecasting system in this project, but that question is still out there. This needs to be discussed among organizations that have a mandate for providing operational drought forecasts. We do not have that mandate, but we do contribute to efforts that can really make that happen."

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An evidence-based framework for designing and implementing drought early warning systems:

- What is the science available?
- What are the societal capacities?
- How can science be translated into policy?
- How can society benefit from the forecast?



AfroMaison

Natural resources are essential for maintaining or improving people's livelihoods, especially in Africa. Although many tools are available, not to mention expertise, local practices and indigenous knowledge, Integrated Natural Resources Management (INRM) could be used more frequently. Adaptive and integrated tools and strategies for managing water and other natural resources in Africa play an important role in addressing poverty reduction and sustainable economic development.

Instituted under the EU 7th Framework Programme, the AfroMaison project set out to contribute to practical application of INRM at the meso-scale in Africa. AfroMaison contributed by providing an operational framework and tools that can be applied in a range of environmental and socio-economic conditions. The strategic approach provides guidelines for natural resources managers, while the toolbox focuses on three groups of tools: strategies for restoration and adaptation, economic tools and incentives for environmental stewardship, and spatial planning tools.

UNESCO-IHE took the lead on tools and processes for spatial planning. This entailed review and analysis of internationally available spatial planning tools and relevant case studies in the context of INRM, spatial mapping of landscape functioning, adaptation and application of selected tools and best practices, and recommendations and guidance for implementation and operational use.

The case study of Drakensberg, South Africa, for example, focused on the application of ecosystem services mapping in the EMF development process. The case study specifically looked at the application of the SITE land-use modelling framework in conjunction with the SWIM hydrological model to generate maps of ecosystem dynamics in Uthukela district. A number of recommendations were produced to optimise the use of spatial planning tools in participatory INRM. These included better communication amongst stakeholders and the use of monitoring and evaluation tools to ensure that sustainability goals are achieved.

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New Brazilian Partnership for Research Science without Borders

The National Science Council of Brazil is sponsoring a massive programme: Science without Borders. Young Brazilian scientists are sent to leading research institutions around the world in an effort to internationalize the country's research community, stimulate innovation, and strengthen national competitiveness. UNESCO-IHE is currently hosting eight of these researchers: four at postdoctoral level and four at PhD level. Most researchers receive additional support from HidroEx, a UNESCO Category II Centre for education, capacity development, and applied water research. HidroEx and UNESCO-IHE have collaborated on several projects in past years, including short courses in Brazil, other countries in Latin America and Portuguese-speaking countries in Africa. This is an uncommon case of UNESCO-IHE staff lecturing in Portuguese and Spanish.

Post-doctoral researchers Dr Livia Sidney and Dr Paulo Corgosinho are investigating new and improved techniques of biomonitoring, including bioassays to determine the uptake and bioaccumulation of toxins by benthic invertebrates and genotoxic effects of organophosphorous insecticides on hyporheic meiofauna. Dr Luana Mattos and Dr Paulo de Almeida are conducting laboratory experiments and mathematical modelling studies of new

water treatment technologies to remove nitrogen from waste waters. Researchers in the Netherlands and at UNESCO-IHE have done pioneering research in the use of ANAMMOX reactor treatment processes, which hold promise to help Brazilian efforts to reduce nitrogen pollution in receiving waters. PhD studies at UNESCO-IHE under the Science without Borders programme include investigations of the development trajectory of the São Francisco River in Brazil by Eva Costa de Barros, and development of satellite-based techniques for hydrological assessment in the Amazon region by Victor da Motta Paca. Sandwich PhD studies have focused on sustainable urban drainage in the city of Curitiba, Brazil, researched by Cesar Medeiros Destro, and the development of an Industrial Hydric Index to assist in assessing sites for future industrial plants on river banks, researched by Marcelo Secron.

Research collaborations within Science without Borders involve numerous research groups at UNESCO-IHE and new partner universities in Brazil. We are looking forward to many more years and research scholars under this programme.

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www.swbholland.org



Research work undertaken in the framework of the Science Without Borders programme.



Sustainable use requires better understanding

Wetlands under threat

UNESCO-IHE has coordinated several projects and activities on African wetlands in the recent past. These included both major research projects and capacity development activities with partners in Africa.

The African continent has shown an average economic growth of over 5% per year since the turn of the millennium, much higher than the global average. This is good news, but there are concerns over the fate of Africa's environment. For example, IUCN reported in 2011 that 21% of about 5000 inland freshwater animal and plant species that were assessed were in fact endangered. This number is expected to increase further as economic development really takes off. Most of these species occur in inland wetlands: marshes and floodplains, rivers and lakes.

Are wetlands important to Africa?

The answer is yes! One reason is their importance for millions of people as sources of food and materials that support their livelihoods. Wetlands supply plant and animal food, both in the form of wild plants and fish but also through agriculture and aquaculture. They also supply water for drinking and for irrigation, as well as materials for construction and crafts, for medicine, and a range of other products.

But there is more to wetlands than these very tangible resources. Wetlands provide other ecosystem services: by storing and evaporating water, they can play a role in local and regional

rainfall and flood control; their vegetation and soils can store and bind nutrients and sediments, thus helping to maintain good water quality; and they provide habitats for important fish and bird species and other biodiversity. Many of these regulating and habitat ecosystem services are not very visible to local wetland users or to national or international decision-makers, and their loss is felt only when it is too late and the wetlands are gone.

Win-win for nature & economy

Many decision-makers seem to think that these regulating services and biodiversity are luxury features that unfortunately cannot be maintained when countries develop economically. This underestimates the huge economic value of these ecosystem services. Economic valuation studies show that the value of intact, sustainably managed wetlands with multiple uses that respect the integrity of the ecosystem is much higher than the value of wetlands that are converted to one single use. Wetland degradation and loss represent enormous economic costs for these countries; the inclusion of wetland protection and sustainable management in economic development plans will be a win-win option for nature and the economy alike.

African wetlands are degrading at alarming rates. A recent review shows that overall wetland loss in Africa was 0.9% per year on average over the last century. We recently estimated the loss of papyrus wetlands at 3% per year over the last 50 years, which means that half of these papyrus wetlands may disappear in the next 25 years. These studies are based on very limited

datasets, and there is a need for much better inventory data on Africa's wetlands. Fortunately, this is one of the aims of the new GlobWetland 3 project of the European Space Agency.

Outputs contribute to awareness

UNESCO-IHE's collaborative research projects on African wetlands have led to several outputs that will contribute to more awareness of the importance of wetlands for Africa's development. In July 2013, a Wetland Forum was organized in Kigali, Rwanda, in collaboration with the Rwanda Environmental Management Authority and the Ramsar Convention Secretariat. Several spin-off activities resulted from this forum, including a training workshop on ecosystem services supported by the TEEB programme (The Economics of Ecosystems and Biodiversity) in November 2013 and a tailor-made training course on ecosystem services in Benin in November 2014. Links between UNESCO-IHE and the Ramsar Convention were strengthened by the appointment of Prof. Max Finlayson as the new Ramsar Chair for the Wise Use of Wetlands, with support from Charles Sturt University in Australia where Prof. Finlayson heads the Institute for Land, Water and Society. UNESCO-IHE will continue to work with its partners in research and capacity development to further support and strengthen sustainable management of African wetlands, now and in the future.

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“We envision education that is more flexible in terms of content, distance and time”

Vision and ambition of online learning

A taskforce was recently assigned to review the current programmes offered by UNESCO-IHE. Their findings have resulted in new ideas and initiatives regarding online learning.

“Our education should become more flexible in the near future,” says Erwin Ploeger, Head of the Education Bureau at UNESCO-IHE. Ploeger, who led the Online Learning taskforce, foresees a crucial role for online courses in this process.

Prof. Stefan Uhlenbrook, Vice-Rector at the Institute, also sees many opportunities for online learning. “UNESCO-IHE’s comparative strength is in offering specialized e-learning courses with a focus on water and sustainability,” says Uhlenbrook. “We envision education that is more flexible in terms of content, distance and time,” says Ploeger. From that perspective, online learning could indeed play an important role, because it allows participants to follow courses in their own country at their own pace.

Life-long learning

“Main online products will be specialized modules of the MSc programme that will be used in both the MSc and the life-long learning programme,” states Professor Uhlenbrook. “Specialized High-quality online courses can contribute to life-long learning as well.” Ploeger assures that online courses will enable professionals to keep on developing new skills. Moreover, since distance learning can be the ideal alternative for those who prefer to learn on the job, UNESCO-IHE could have a huge impact on a bigger scale with its online courses. “Online courses can even be a great tool for our alumni to create an enabling environment for themselves.” After graduation, many UNESCO-IHE MSc and PhD alumni experience difficulties when they attempt to implement their newly mastered skills and knowledge, because their environment is not yet ready to adopt new methods and approaches. “In those situations, online courses can be the solution to train many employees at once.”

Online courses will also be used as preparation for the MSc courses. “By offering online preparatory courses, we can assure that all students will have the same level upon arrival

in the Netherlands,” says Erwin Ploeger. “This enables our professors to go in-depth right from the start of the MSc Programme at our Institute, so we give the participants the chance to benefit from their professors’ knowledge as much as possible.” Since these preparatory courses will serve as an introduction to more specialized topics, and will not cover highly specific material in depth, it’s likely that UNESCO-IHE will use pre-existing OpenCourseWare modules, perhaps reformatted to serve the Institute’s needs.

Mission and vision

Considering its mission and vision, OpenCourseWare will become increasingly important for the Institute. “Since UNESCO-IHE relies on public funding, we believe that we have the responsibility to serve our society as well,” states Ploeger. UNESCO-IHE aims to make all of its modules available as OpenCourseWare by 2017. By that time all the relevant educational materials, including lectures and supporting materials such as exercises, models and public domain software will be freely available for self-study and self-assessment.

Giving individual attention

Nevertheless, although Ploeger values the importance of OpenCourseWare, he doesn’t think UNESCO-IHE will soon offer Massive Open Online Courses. “Our strength is our relevance for developing countries and countries in transition,” he says. “Unlike other universities that do offer these MOOCs, UNESCO-IHE works in a ‘water and sustainability’ niche market focusing on very specific in-depth topics. In addition, one of our core values is to have a student-centered approach training professionals in relatively small groups, which enables us to give each individual the attention he or she deserves. I therefore think that our education is less suitable for a MOOC setting than for example MIT’s.”

However, UNESCO-IHE will be looking for suitable partners on the basis of complementary content development, especially in terms of didactical and technical expertise and infrastructure. The Institute already has such partnerships with e.g. the Technical University of Berlin, but there are far more opportunities to explore.

Online Learning Trends

MOOCs

Ten years after OpenCourseWare was introduced, Harvard University and MIT decided to join forces and take the next step towards open access to education by founding edX. This online platform offers both interactive classes and Massive Open Online Courses (MOOCs). These MOOCs deliver learning content online to everyone who would like to take a course, without any limits on attendance.

Blended Learning

Blended learning, also known as ‘hybrid learning’, is basically a combination of the conventional classroom approach and online learning. This approach intends to take the best of both methods and create a student-centred approach. Blended learning is mainly provided by institutions that used to only offer full-time face-to-face classroom courses, but are now integrating online modules into their programmes.

These blended programmes can be an interesting alternatives for foreign students that would like to follow a specific programme, but are unable to follow full-time studies due to work. UNESCO-IHE recently partnered with universities in Thailand, Ghana and Columbia to offer its first blended learning scheme: the Hybrid Master Specialization in Sanitation and Sanitary Engineering. This master’s programme enables its participants to carry out their studies in a part-time arrangement, completing their thesis research in Delft or at one of the three partner institutions.

OpenCourseWare

Another global trend is the rise of Open Courseware (OCW), which consists of entire courses or single lessons that have been created by renowned institutes. These courses are being published and shared online, without any fees or restrictions.

In 2003, the Massachusetts Institute of Technology (MIT) was one of the pioneers that launched its OpenCourseWare concept with 500 courses. “Other universities may be striving to market their courses to the Internet masses in hopes of dot-com wealth. But the Massachusetts Institute of Technology has chosen the opposite path: to post virtually all its course materials on the Web, free to everybody,” The New York Times stated on its cover after MIT launched its OCW.

In that NYT article David Brady, Vice Provost for learning technologies at Stanford University, predicted that other universities would be more reluctant to embrace this new initiative. “I think everybody else besides M.I.T. is in the position of being more cautious and watching to see what Internet strategy works best,” he said. However, in the first month after the official launch, over 300,000 people visited the OCW section of the MIT website; several universities decided to join this open access movement shortly after.



A decade of online learning

In January 2005, UNESCO-IHE initiated its very first online course. This initial venture into online learning was on Integrated River Basin Management. Over 2,100 participants have followed an online course at the Institute since then, resulting in around 1,500 graduates. During these ten years of distance learning, the online courses evolved from a pilot to an advanced online classroom environment.

The early days

Although online learning may seem to be a relatively new learning scheme, its development dates back to the early 1980s. Even though internet as we know it today had not even been invented yet and such approaches were only used on a very small scale, some companies already trained their staff using computer-based programmes in an attempt to reduce costs. However, distance learning rapidly increased in popularity once internet access became widely available. Large companies that had multiple offices seized this opportunity to train many employees living in different regions using online training. It quickly became clear to those companies that online learning on a big scale cut costs, because the development of an online programme was only a one-time investment, while the costs of hiring trainers involved recurring fixed expenses. This corporate interest

brought a significant momentum to the early development of online learning programmes.

Online learning gained a stronger foothold in the early 1990s, becoming popular among private users. Around the same time, several online universities made their way onto the scene, starting to provide courses, although many of the universities offering these courses were not yet fully accredited institutions. When the Jones International University was accredited by the Higher Learning Commission, the first fully online university to gain official recognition, this opened doors for others to focus on providing online education. This further increased the popularity of online learning.

Online learning at UNESCO-IHE

The online course in Integrated River Basin Management given in 2005 was the first online course offered by UNESCO-IHE. In the ten years that followed, online learning became a substantial part of the Institute's range of educational opportunities. Starting with seven courses in 2007, the number of short courses rapidly grew, as did the range of topics dealt with in these courses. In the past ten years, UNESCO-IHE has offered 163 online courses attracting participants from 149 different countries. In that decade of online learning at UNESCO-IHE, just under 1,500 participants

successfully completed their UNESCO-IHE online course.

In addition to its regular online courses, UNESCO-IHE has also developed an OpenCourseWare section. This platform, launched in 2013, offers a selection of open-access course materials. Since UNESCO-IHE strives to solve the world water crisis by educating the future generation of water leaders, this OCW platform could be a next step towards accomplishing this goal. Every year, the Institute experiences that the demand for its education far exceeds the number of students that can be trained with the current capacity of the Institute.

By making some of its courseware freely accessible, UNESCO-IHE aims to bridge this gap. In addition, the majority of the participants enjoying their education at the Institute come from developing countries and countries in transition. OCW allows even people who are lacking the resources to finance their studies to follow a high-quality course, developing skills that will help them further their career.

Online courses planned at UNESCO-IHE in the coming months are listed on the inside of the back cover of this UPDATE magazine.

“We sometimes forget the thousands of miles between us”

The online course on Solid Waste Management currently has 31 participants (11 Europeans, 7 Africans, 9 Asians/ Australians and 4 Americans), with 27 active contributors. The course runs from September to early January, is being held for the eighth time and has been fully booked on a number of occasions, including the one currently running.

What is the SWM course about?

It is a four-month, fully online course that introduces basic technologies and touches on financing, planning and stakeholder participation principles. The emphasis is on waste management for developing countries. It is meant for staff involved in various aspects of solid waste management, such as local and national government officials, staff from consulting firms and international agencies, but also hands-on staff working in collection and recycling.

Addressing a huge problem

A sizeable percentage of those attending are citizens who have a personal stake in or concern about the topic. The latter reflects the fact that solid waste forms a huge problem in many countries, as there is often no consistent system in place to collect solid waste and carry it out of the urbanized areas. The problem is so immense that the people who engage in the topic are not limited to professional staff, but also include individuals, many of whom envisage setting up an NGO-based organization that could be instrumental in solving the issue.

What are similarities and differences between this course and the three-week, full-time course which is held each year at UNESCO-IHE?

The learning objectives, the syllabi and the five ECTS credits after successful completion are similar in both courses. The main difference lies in the interaction between teachers and participants and amongst the participants themselves.

In the three weeks of full-time classes, we're rubbing shoulders every day; we discuss, go on field trips, share case studies, do role-playing games and have a dinner party. In the online course, we have forum discussions and spend time in our virtual meeting room, listen to each other, listen to presentations, engage in discussions, participate in polls on statements, etc. Although time zone differences are challenging, experiences have been positive; we sometimes forget the thousands of miles between us.

In a recent survey among some 80 online course participants with nearly 40 respondents, participants indicated the importance of this virtual shoulder-rubbing: the personal touch was more than just appreciated, it was considered essential and offered major encouragement to continue feeling motivated. That's why we spend quite some time in the first two weeks of the course to remove communication barriers, to ban the sense of "alone-lieness" usually associated with online learning.

The field trip is the only part that we cannot offer in the online form - or rather, not yet. Nevertheless, with a bit of planning it's quite possible to have short videos from visits in the three weeks of full-time classes and to make these available in the four-month online course.

What happens after the course?

Nearly four eight years ago I started a LinkedIn group on Sustainable Resource Management/ Solid Waste Management. Ever since, SWM course participants are invited to join and share experiences and material. Once the group was opened to others, it took off and has grown into an active community with over 600 members.

Comparing the first edition with the one now running, what are the major changes?

When starting, we dutifully taught the key topics in waste management, based on the material that had been inherited from previous SWM courses. Although in principle it was probably quite okay, there was no clear unifying theme running through the course. Now, in the first two weeks, the participants are asked to research and give a presentation on "Waste Management in my City". This personalized data is then used as the baseline for further discussion. Subsequently, each of the waste management topics presented in the course is assessed in the context of a potential improvement option for "my City". From that cocktail of options, at the end of the course the participants have to present a conceptual "Master Plan on waste management in my City". This requires each participant to integrate the course materials into their own familiar conditions immediately.

All presentations given in the course are recorded and made available to all participants to maximize the effect of learning from each other.

Need for partnering

High-quality online education, defined as education using high-level materials and methods and allowing for the individual learning abilities and objectives of the participants, is very time-consuming. Therefore, I feel lucky to partner with Prof. Susanne Rotter and her staff in the Solid Waste Management group at the Technical University of Berlin, Germany. We not only share the work but also the excitement about the possibilities offered by online education. This allows a level of personal and scientific care to be provided that appears appreciated by and effective for the participants.

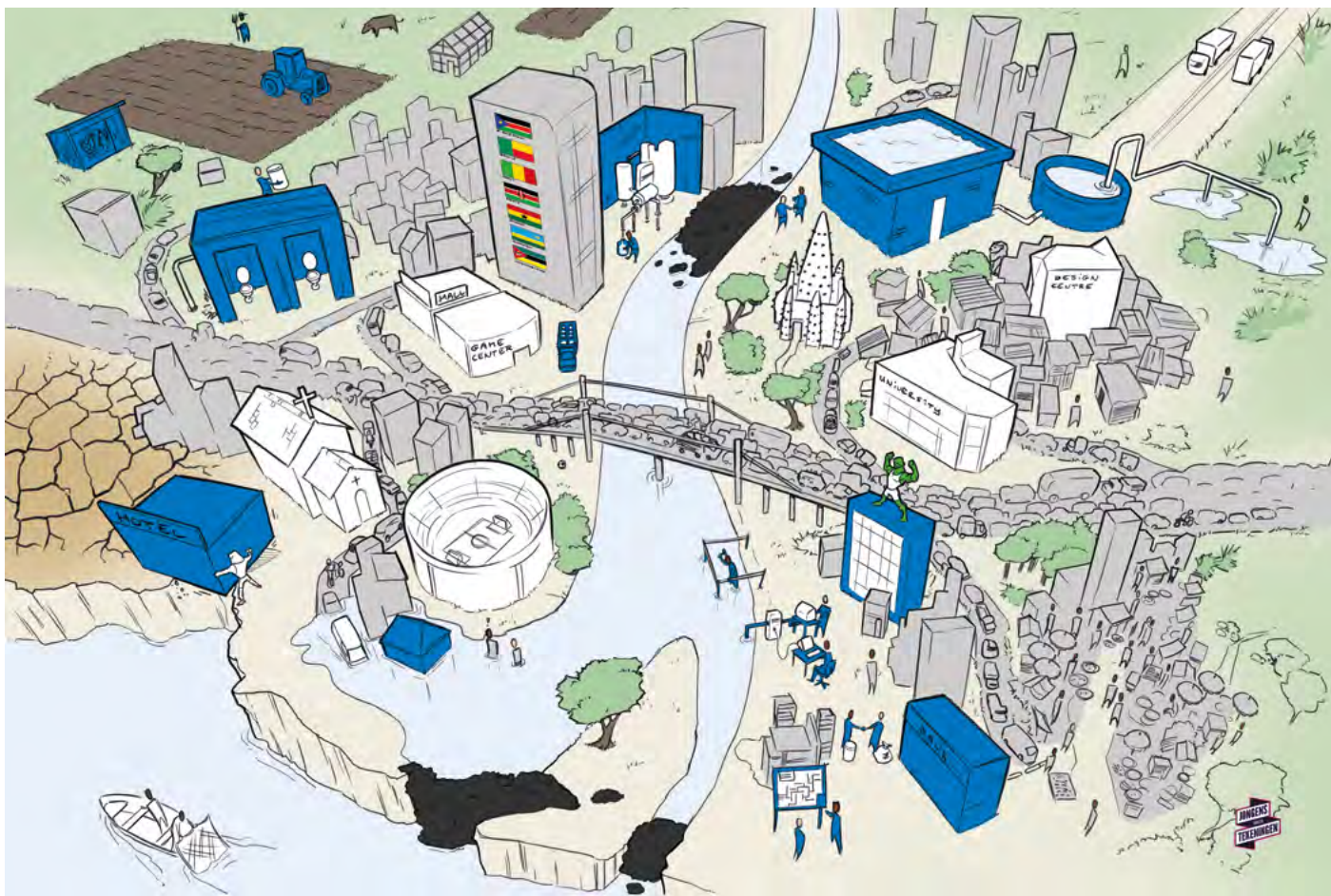
There is no doubt that this partnering is vital in order to teach the online Solid Waste Management course at its present level of excellence.

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 **UNESCO-IHE Sustainable Resource/ Solid Waste Management**

Maarten Siebel,
Coordinator online course on
Solid Waste Management





VIA Water

“In 20 years, African cities are...”

VIA Water recently asked conference attendees to finish this sentence. Our goal was to encourage people to think out of the box, and to get them contemplating unorthodox solutions to current water problems in African cities. The VIA Water programme is about finding those innovations, helping them along the way, and retaining the knowledge that is achieved throughout this process.

VIA Water aims to identify innovative solutions for water problems facing cities in seven African countries: Benin, Ghana, Kenya, Mali, Mozambique, Rwanda and South Sudan. It is funded by the Dutch Ministry of Foreign Affairs and just started operating after a thorough research process to identify the most pressing water needs in African cities. Since the programme is hosted by UNESCO-IHE, VIA Water has a wealth of knowledge right at their home base, and extended this through research into the specific focus countries. All of this culminated into a list of twelve specific pressing needs

to which VIA Water will be directing their attention in the coming years.

Focus without boundaries

Although it was important to narrow down the number of topics it would be focusing on, the objective of the programme has always been to have as few boundaries as possible. The aim is to find the new, out-of-the-ordinary solutions, without imposing too many preconditions and preferably out of Africa itself. To achieve this goal, VIA Water is inviting people from all sectors to participate, since they are aware that the best solutions for water problems might already exist in a different sector.

The core of the programme is building and sharing knowledge. This works in several different ways. First, VIA Water promotes research by facilitating the next step after research: the pilot and or implementation phase of an innovation. However, they also intend to enhance knowledge by having participants share ideas about their innovation, about the process they are going through and about the difficulties they might face. This will lead to better, enriched ideas

and solutions. The (online) community that VIA Water means to facilitate will ensure that knowledge and lessons learned will stay accessible for future projects.

Easy access

To maximize easy access, there will be no formal call for proposals. Instead, people who feel they might be able to contribute to the programme are invited to contact the VIA Water team, so possibilities can be explored together. If the proposal is found to be a good fit, VIA Water - in consultation with the fund manager, Aqua for All - will help participants take the first steps towards launching their idea. Limited financial aid is also available if needed. In exchange, participants are asked to share their knowledge and experiences as well as their failures, so future solutions for water problems in African cities can be made even better.

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Sustainable Water Initiative

Mau Mara Serengeti

UNESCO-IHE is reaching beyond its normal research and capacity development scope to lead an ambitious new development initiative in the Mara River Basin of Kenya, renowned for its highland tropical forests, distinctive Maasai culture, and stunning savanna wildlife. But the basin also faces severe development challenges due to deforestation, degrading farmland and rangelands, and dwindling dry season river flows. If current trends continue, dire consequences are likely in the form of increased poverty, food insecurity, and declining health, with even worse to come for wildlife.

The Mau Mara Serengeti (MaMaSe) Sustainable Water Initiative is a four-year public-private partnership involving more than a dozen Kenyan and international institutions working to achieve structural poverty reduction, sustainable economic growth, and conservation of the Mara's forest and rangeland ecosystems through improved water safety and security. Working closely with local partner WWF Kenya and with major support from the Netherlands Embassy in Nairobi, the MaMaSe Initiative emphasizes Dutch priorities to align development aid and foreign trade.

Supporting local farmers

In the more humid upland areas of the basin, a new Dutch-owned farming company, Mara Farming Ltd., is a key partner, supporting local farms to cultivate valuable and water-friendly crops and helping to connect farmers to markets in the Netherlands and throughout Europe. SNV Netherlands Development Organization and Wageningen University and Research Centre are working with Mara

Farming to reach an even larger network of local farmers to provide technical support, improving crops and value chains and bringing products to market. By increasing the farm-based income of headwater upland communities, the project is also able to reduce pressures on the remaining headwater forests, which harbour unique biodiversity and play an important role in recycling water within the basin.

In the less humid lower areas, efforts focus on supporting Maasai communities to improve cattle and rangeland management for optimal use of water from rainfall and upland rivers. Led by WWF Kenya, these efforts include the promotion of wildlife conservancies that open new economic opportunities to local communities, reducing their dependencies on cattle while providing corridors and expanded grazing lands for wildlife which has seen its habitat continually reduced. Innovative satellite and land-based technologies to monitor the conditions of rangelands and guide management decisions are being developed within the initiative by ITC/TU Twente.

Basin-wide approach

The MaMaSe Initiative takes a basin-wide integrated approach to water resource management, involving the Kenyan Water Resources Management Authority and local Water Resource User Associations. UNESCO-IHE supports these key partners to strengthen operations to better manage and protect water resources in the basin and to allocate available resources according to best practices. Other supporting partners include the Dutch-based Brabantse Delta Regional Water Authority and the German development organization GIZ, which is also

responsible for leading a component focused on developing new financial mechanisms for longer-term sustainability of basin water management.

While the prime focus is on development and conservation, knowledge and learning naturally feature prominently under the leadership of UNESCO-IHE. The unique collection of partners and range of advanced social and technical approaches provide an extraordinary opportunity for further learning and adaptation of project outputs for application in other parts of Kenya and East Africa. The MaMaSe Initiative is also setting up a Knowledge Exchange Centre in cooperation with Egerton University, Masai Mara University, and the Deltares knowledge institute. We are experimenting with new technologies, data exchange, and computer models to support sustainable water development. We are also engaging Dutch and Kenyan graduate students to host their studies within the initiative, further expanding the technical depth and dissemination of the initiatives outputs.

Full implementation ahead

The MaMaSe Initiative has completed inception and is now moving into full implementation. There will be much to report and many new opportunities for cooperation as the initiative progresses over the coming years. There will also be many lessons for UNESCO-IHE as it leads such a complex development initiative.

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KULTURisk

Risk prevention superior to post-disaster recovery

Potential flood losses can be drastically reduced by prevention measures. This is one of the main outcomes of KULTURisk, a 7th Framework Programme research project to assess and disseminate the benefits of prevention measures compared to traditional post-disaster recovery measures in reducing the impact of water-related disasters.

The project, which ran from January 2011 until December 2013, was executed by a consortium composed of eleven partners from six European countries and led by UNESCO-IHE. KULTURisk examined diverse European case studies to evaluate the social and economic benefits of risk prevention, which aims at reducing risks to an acceptable level. The method applied in these case studies accounts for intangible costs, such as death, psychological trauma, loss of working hours, diminished quality of environment and loss of cultural heritage, as well as indirect damages resulting from loss of services, etc.

Among other outcomes, the project demonstrated that the implementation of early warning systems can reduce potential flood damage in the Danube river basin countries by as much as 30-40%. In France, it was shown that a combination of structural and non-structural prevention measures can remarkably reduce the potential impact of flooding (70% less for people, 84% for buildings, 77% for infrastructures, 91% for agriculture). In Switzerland, prevention measures would reduce the potential damage caused by extreme flood events by 50%, while additional prevention options in Zurich (e.g. discharge tunnels) were found to potentially reduce flood losses to near-zero, achieving benefits more than 10 times higher than the costs of prevention measures.

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Project findings disseminated at key events in 2013

At the Global Platform for DRR, in Geneva, Switzerland in May 2013, Pierpaolo Campostrini gave a presentation on the risk evaluation methodology to assess both tangible and intangible aspects, such as cultural heritage. Three key proposed innovations of the methodology are the inclusion of social capacity in risk reduction, going beyond the estimation of direct tangible costs, and provision of an operational solution to assess risks, impacts and benefits of risk reduction measures.

At a high-level expert meeting of the OECD on risk prevention and mitigation in September 2013, Dr Leonardo Alfonso gave the kick-off presentation entitled 'Why Prevention Pays', which formally opened the discussion sessions. These sessions included risk prevention and mitigation in

times of fiscal constraints, engagement of the private sector in risk prevention and mitigation, the roles of sub-national governments in risk prevention and mitigation as well as the role of international collaboration. One of the main conclusions of the meeting was that the long-term nature of the benefits related to risk prevention and mitigation makes them seem unappealing to some governments.

Activities in the past year also included the third KULTURisk workshop in Venice in September 2013, presenting the Risk Assessment methodology developed within the KULTURisk project and to facilitating discussions with the main national and European stakeholders and experts working on different aspects of natural hazards. In addition, the final KULTURisk

conference was held in December 2013 in Barcelonnette, Ubaye Valley, France, which was one of the project case study sites. Achievements and key project conclusions were presented at the conference, which included accountable prevention strategies, the need for a more robust and conscious decision-making process for risk assessment that includes economic, social, cultural and environmental receptors, and the importance of two-way risk communication in establishing a comprehensive culture of risk prevention.

The Policy Briefs of the project are available from the project's website in English, Spanish and Chinese, as are the public reports, educational materials, posters and scientific publications produced within the project.



Dr. Neno Kukurić

Assessing the world's groundwater

After he graduated from the Institute, alumnus Neno Kukurić started his international career as a groundwater consultant, researcher and finally a manager. Twenty-one years later he is leading IGRAC, the International Groundwater Resources Assessment Centre, which is coincidentally located in the same building as 'his old institute'.

When looking back at his time at UNESCO-IHE, Dr. Kukurić still holds warm feelings towards the Institute. "It was much more difficult to say goodbye to IHE than to embrace it," he recalls. Neno, who graduated in 1993, still remembers how Professor Bella Petry used to call IHE a melting pot, although he would personally rather compare it with a fish pond full of exotic species. "Once in the pond, you first looked around with eyes wide open, absorbing all these new colours and forms. But very soon you would start to swim around cheerfully as if you had always been there."

Nowadays, Neno is leading IGRAC, which is a UNESCO and WMO global groundwater centre that facilitates and promotes sharing of the information and knowledge required for sustainable development and management of groundwater resources. As director of this centre, Neno is working to increase general knowledge and awareness of groundwater resources. "It is very difficult to make a case for something that you cannot see. Therefore, my dream is to make invisible groundwater visible." Neno has been at IGRAC since 2003, when it was set up as a long-term project at TNO. In 2011, Neno was entrusted to transform IGRAC into an independent foundation. In that same year, IGRAC became a UNESCO Category II centre

and has been growing rapidly since then, both in staff and impact. "My main goal is a continuous increase in IGRAC activities and their impact. It is about enlargement of the centre, but equally about the effectiveness of our activities."

Neno emphasises that his MSc Programme in Hydrological Engineering at UNESCO-IHE, then known as IHE Delft, had a major impact on his career. "The successful completion of this programme increased my ambitions and gave me the confidence that I had a solid basic knowledge to embark on further research and address practical problems." Neno quickly recognized the value of a diploma from the Institute: "The UNESCO-IHE MSc diploma (with distinction) was an important part of an admission ticket to some renowned institutions I joined after my graduation from IHE." After graduation, Neno worked at IWACO (presently Royal Haskoning) as a consultant until he returned to UNESCO-IHE in 1995 to do his PhD. Subsequently he joined the Netherlands Organisation for Applied Scientific Research (TNO), where he worked as a knowledge manager at IGRAC and on other national and international projects. In 2010, after restructuring of the public water expertise sector in the Netherlands, IGRAC and Neno joined a newly founded institute: Deltares. A year later, IGRAC became a UNESCO centre and moved to the UNESCO-IHE building. "It was like coming back home," Neno says. "This building keeps the dreams of generations."

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Alumni community on social media



Launched last March during the International Women's Day 2014, the LinkedIn group for female alumni aims to strengthen the communication between female alumni by leveraging knowledge, resources and contacts to achieve their goals.

UNESCO-IHE alumni groups per country on LinkedIn continue to be an important tool to strengthen the network among UNESCO-IHE alumni and students in a specific country, as well as between them and the Institute. All members are invited and expected to actively participate in discussions and share water & environment-related events, vacancies, best practices, research and projects. In the last month, the groups for Mexico, Central America and Bolivia were launched. Are you an alumnus and do you want to start your own alumni group on Facebook or LinkedIn? Or are you interested in getting in touch with our alumni? Please get in touch with Alumni Officer, Ms. Maria Laura Sorrentino, email m.sorrentino@unesco-ihe.org.



Special Prize for Innovation won by Temesgen

Dr. Melesse Temesgen from Ethiopia, 2006 PhD alumnus, is the winner of the Special Prize for Innovation with the Highest Social Impact, awarded by the African Innovation Foundation. His innovation, the Aybar Broad Based Furrow Maker (BBM), promises to have the greatest social impact. It is estimated that the income of farmers will more than triple as a result of using this technology.

The Aybar BBM is a low-cost farming device used to easily drain excess water from waterlogged fields. It is the only known effective device capable of creating drainage furrows for excess water while building a broad bed for planting. Up to 5 million hectares of land in Ethiopia and a much larger area in Africa are not available for farming because they are waterlogged. Using the Aybar BBM restores availability of this abandoned land, thus improving food production. Building on Ethiopian farming technology dating back two millennia, the Aybar BBM is easy to use and very cost-effective. Over 44,000 units have been sold in Ethiopia alone to date.

The Innovation Prize for Africa is an initiative of the African Innovation Foundation (AIF) that started in 2011. IPA honours and encourages innovative achievements that contribute toward developing new products, increasing efficiency or saving costs in Africa.



Hope Mwanake awarded the Washington Fellowship for Young African Leaders

MSc alumna Hope Wakio Mwanake won the Washington Fellowship for Young African Leaders, an initiative of President of the United States Barack Obama. Hope is a dynamic environmentalist with a passion for addressing emerging environmental problems at the community level. She is a co-founder and project leader for environmental conservation at TRACE Kenya, a community-based organization working with young people addressing environmental issues in Nakuru County. Through partnerships with UNHabitat, Hope has led the way for TRACE Kenya to utilize a specially designed, eco-friendly, garbage-collecting miniature tractor. Hope lectures part-time at Egerton and is an expert member of the Eastern Africa Water Association. Hope will represent Kenya during the course, broaden her networking opportunities and build her capacity to address emerging environmental problems.



First Sudan UNESCO-IHE alumni association

The Association was launched during an alumni event held at the premises of the Ministry of Water Resources and Electricity in Khartoum, Sudan, attended by more than 50 alumni. Since the start of the Institute, more than 220 Sudanese have completed their graduate studies in fields related to water (hydrology, hydraulics, irrigation, river basin, sanitation, and water supply). The Association will coordinate activities of the Sudan alumni, and strengthen ties to UNESCO-IHE.

Mr. Htwe Myint

The man who turned the tide for food

Mr. Htwe Myint graduated from the Institute in 1957. He was one of the first students to take the Hydraulic Engineering course, and the first-ever student from Myanmar. He has been instrumental in the efforts made to improve water management for agriculture in Myanmar.

When Myint graduated more than fifty years ago, he had a dream to reclaim the virgin land of Nyaundone Island, in the Ayeyarwaddy Delta of Myanmar, for paddy production. He was familiar with the land, as he had once served as an assistant engineer there. When he returned to the island with the hopes of realizing his dream, his trip was tainted by the insurgency and rebellion that was rife in those troubled times. In 2000, when he had just retired from government service; his dream finally came true and a project was ready to be implemented. Myint led the project, joined by junior engineers from the Irrigation Department. Myanmar's monsoon seasons are harsh on the paddy lands, but the stark contrast of the dry seasons complicates efforts to introduce a total water management system. He therefore designed the sluices as the first of its kind in Myanmar for the dual purpose of drainage and irrigation by installing double sluice gates on both sides of the structure, operating according to the tides and seasons. This project was the largest one in Myanmar

after polder projects financed by the World Bank in the 1980s. He most ardently changed the tide for food.

Historically, UNESCO-IHE has had quite a number of MSc students from Myanmar, particularly between 1957 and 1997. This was followed by a period of inactivity due to political reasons. In recent years, however, due partly to its continuing contact with Myanmar alumni, UNESCO-IHE has started a number of projects with Myanmar. The first activity, held in 2013, was funded by the Netherlands Ministry of Infrastructure and Environment and was a Delta Planning training workshop on Asian deltas for alumni from Myanmar. The most recent training course, held in October 2014, is a Nuffic-funded refresher course for Myanmar alumni and their colleagues, entitled Recent Developments in IWRM. The Institute was also involved in the large-scale strategic study on IWRM in Myanmar, funded by the Netherlands Ministry of Economic Affairs and led by Royal Haskoning DHV. For the Netherlands Directorate of Public Works and Water Management (Rijkswaterstaat), UNESCO-IHE also organized and facilitated a high-level dialogue meeting and workshop on IWRM. For the Netherlands Enterprise Agency, a workshop was held on future perspectives in IWRM.



Refresher Courses

Four refresher courses were organized in Africa and Asia in 2014. These courses offer alumni the opportunity to update their knowledge and exchange professional experiences with peers in their region. On the closing day of most of the courses, an alumni gathering was organized together with other alumni from the host country. Refresher courses given by UNESCO-IHE in 2015 will be announced in May of that year.

- Yogyakarta, Indonesia | Water Integrity
- Cape Town, South Africa | Management of Faecal Sludge
- Bago, Myanmar | Recent Developments in Integrated Water Resources Management
- Dhaka, Bangladesh | Regional training in delta management

eSOS® smart toilets

The next generation of toilets for emergencies



The innovative eSOS® (emergency Sanitation Operation System) concept provides a sustainable, innovative, holistic and affordable sanitation solution for emergencies before, during and after disasters. eSOS® not only reinvents toilet and treatment facilities for standard and emergency purposes, but uses existing information and communication technology to bring innovation and potential cost savings to the entire sanitation operation and management chain, and most importantly, is expected to improve the quality of life of people in need. eSOS® smart toilet development is funded by the Bill & Melinda Gates Foundation and the Asian Development Bank. Field testing of the eSOS® smart toilet is expected by the end of 2014 in Tacloban City, Philippines.

Emergency sanitation

Emergency sanitation intervention is a means of promoting best management practices in order to create a safer environment and minimize the spread of disease in disaster-affected areas, and of controlling and managing excreta, wastewater, solid waste, medical waste, and dead bodies. The idea of eSOS emerged as a response to shortcomings in emergency sanitation relief as identified by key players in emergency relief, with the aim of providing sustainable, innovative, holistic and affordable sanitation solutions for emergencies (such as floods, tsunamis, volcanic eruptions, earthquakes, wars, etc.) before, during and after disasters. The eSOS is based on different system components

integrated into an easily-deployable emergency sanitation kit consisting of hardware and software components, such as eSOS smart toilets, intelligent excreta collection vehicle tracking systems, decentralized excreta treatment facilities, emergency sanitation coordination centres, and integrated eSOS communication and management systems.

eSOS® smart toilet

Sanitation facilities usually provided by relief agencies and armies have additional specifications and requirements in comparison to those regularly used in other settings. The eSOS toilet meets all these criteria (see box). Besides smart data collection and communication, the eSOS toilet is subject to technological innovations from the sanitary engineering perspective. It is a urine diversion toilet with separate collection (and treatment) of urine and faeces, with both 'dry' and 'wet' sanitation options. It is important to note that the eSOS toilet is not designed as an on-site treatment unit due to its high-frequency use and limited storage capacity. Due to specific emergency requirements, its innovative lightweight, stackable toilet structure is proposed to be made of recycled biodegradable materials (like bio-plastic made from potato skins). Options for both on-site and centralized treatment (and their combination) of urine and faecal sludge is also investigated.

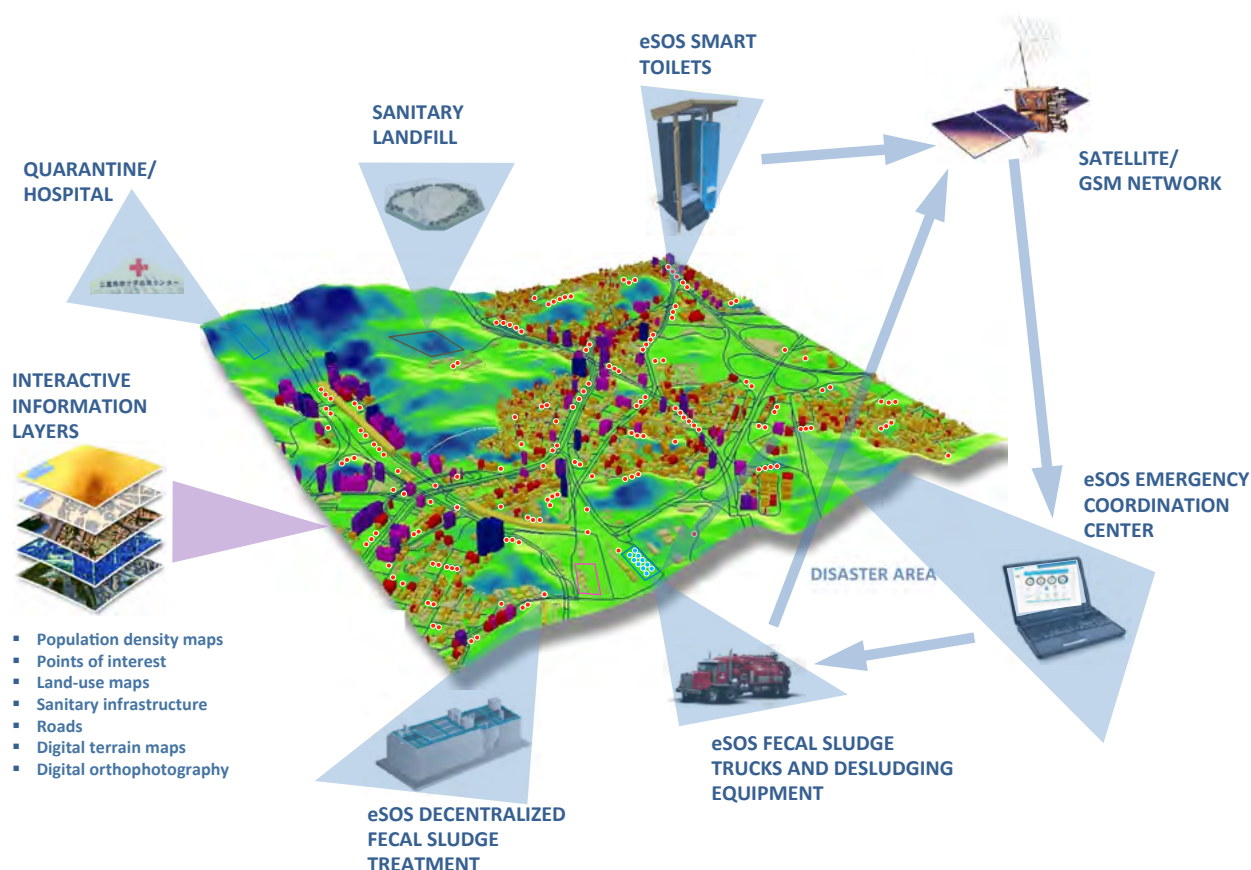
Packed, a complete toilet kit occupies a volume of 2 m³ which will allow for compact and cheaper shipping (a toilet fits on one standard pallet). Due to its modular set-up, it will be possible to quickly and simply install

Advantages

- Stackable and lightweight
- Fits a Euro-size pallet
- Made of durable materials
- Easy to wash and clean
- Easy to empty
- Requires minimum maintenance
- Raised above the ground
- Does not require any excavation to install
- Allows more frequent use
- Provides excellent value for money
- Easy and safe to use
- Provides privacy
- Easily deployable
- Gives users a sense of dignity
- Looks great and invite usage

Built-in features and optional add-ons

- Interchangeable squatting pans or sitting toilet
- Urine diversion dry toilet or flush toilet
- Safe and easy-to-empty storage of urine and faeces
- Fully solar-powered with up to 7 days energy independence
- GSM-based communication
- GPS-based tracking
- Real-time information on:
 - occupancy
 - volume of urine collected
 - volume of service water and greywater
 - UV interior disinfection
- Nano-coated interior
- Smart card reader entry system
- SOS panic button
- Smart software for monitoring
- Data collection and optimization
- Built-in treatment of service water



the toilet on the spot. Simplified instructions on how to install and use the toilet will be provided with the kit. Each part of the toilet is unique and can only be assembled in one way so as to avoid confusion. In the near future, possibilities to produce toilets locally will be explored, also using local materials. However, in general it will not be possible to produce these toilets at the disaster location. The present version of the toilet allows for use by children and adults, both women and men. In addition, several variations on the eSOS toilet will be produced in a later stage of development to account for different settings and conditions and user groups, including elderly citizens, people with disabilities and the injured. During several months of field testing, an extensive research program is expected to reveal novel information on the use of a toilet in an emergency setting and to generate useful information that can be further correlated and used (in combination with additional sensors) for medical/health services.

Applicability and relevance

The eSOS smart toilet is globally applicable to a wide spectrum of emergency situations where external aid is needed for sanitation. With minor adaptations, it can be made equally suitable for (although not limited to) sanitation management under challenging conditions usually prevailing in urban-poor areas, such as slums and informal settlements, and sanitation provision for visitors to major open-air events such as concerts, fairs, religious gatherings etc.

So far, initial constructive and overall encouraging feedback has already been received from several parties, including

UNICEF, UNHCR, the Red Cross, Oxfam, Save the Children, MSF and OFID. The fate of eSOS in a post-disaster period will also be considered. If life returns to 'normal' and original infrastructure is recovered, the eSOS smart toilet can be cleaned, dismantled and reused elsewhere. Where new, organized or semi-organized settlements are created, like refugee camps, the eSOS toilets may remain there, given that a proper governance system and the business case are in place to make it sustainable, giving the eSOS sanitation a more permanent character. Where the eSOS toilet is used for non-emergency situations (events etc.), it will be reused. In situations where these toilets are used in informal settlements or slums, the facilities will be permanent. Present design takes care as much as possible that the system is theft-proof (commentary regarding theft and the costs of eSOS came up often in social media). The potential clients/end-users are relief agencies, municipalities, water and sewerage companies, solid waste companies, army, police, fire brigades, as well as private sector companies and water supply and sanitation vendors. The primary goal of eSOS toilets is to save lives by providing an efficient and effective sanitation service during and after emergencies by minimizing the risk to public health for the most vulnerable members of society. The secondary goal is to reduce the investment, operation and maintenance costs of emergency sanitation facilities and service as a prerequisite for sustainable solutions, especially in the post-emergency period.

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The eSOS® concept is an invention of UNESCO-IHE Institute for Water Education. The eSOS® smart toilet design concept is a joint effort of UNESCO-IHE, FLEX/the INNOVATIONLAB and SYSTECH.

The eSOS® smart toilet was covered extensively in the media. An impression:

Reuters
<http://ow.ly/EdjpD>

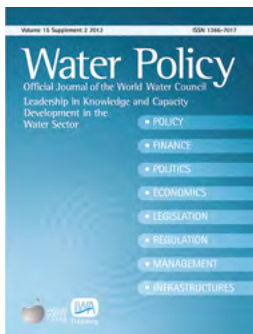
Voice of America
<http://ow.ly/EdkrQ>



Special issue of Wetlands Ecology and Management

A recently published Special issue of Wetlands Ecology and Management documents the trend of the diminishing papyrus wetlands in central and eastern Africa. The eight papers explore the complexity of papyrus wetland ecosystems and the multidisciplinary approach needed to support wetland governance and wise use.

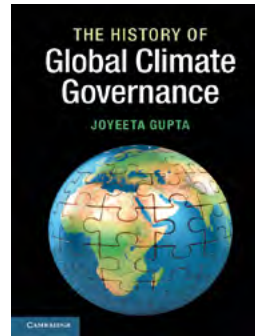
<http://ow.ly/ERsTw>



Special issue of Water Policy on Knowledge and Capacity Development

The Special Issue on Leadership in Knowledge and Capacity Development in the Water Sector in the journal Water Policy was launched in October at the IWA congress in Kenya by guest editors Dr. Uta Wehn de Montalvo and Professor Guy Alaerts. Collectively, the contributions examine knowledge and capacity development in both, the water services and the water resources sub-sectors. All 15 papers in this issue are open access, and are available online:

www.iwaponline.com/wp/015S2/S2/



The History of Global Climate Governance

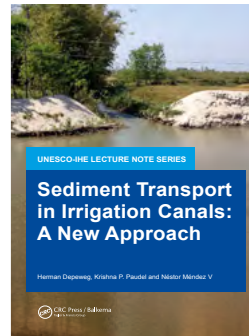
In February, Joyeeta Gupta, Professor of Law and Policy in Water Resources and Environment, launched her new book published by Cambridge University Press. She takes you back in time to the 1980's to the present and discusses the evolution of the climate change negotiations at a global level. What has happened globally on the climate change issue? How have countries' positions differed over time, and why? How are problems and politics developing on an increasingly globalised planet, and can we find a solution? This book explores these questions and more, explaining the key underlying issues of the conflicts between international blocs.



Room for the River

High water level protection for the four million inhabitants of the river catchments in the Netherlands, this is the goal of the Room for the River programme which will be completed in 2015. The programme is considered a national and international example for integrated flood risk management and multi-level governance.

Download:
www.unesco-ihe.org/room-river-booklet



Sediment Transport in Irrigation Canals: A New Approach

Sediment transport in irrigation canals influences to a great extent the sustainability of an irrigation system. Unwanted erosion or deposition will not only increase maintenance costs, but may also lead to unfair, unreliable and unequitable distribution of irrigation water to the end users. Proper knowledge of the characteristics, including behaviour and transport of sediment will help to design irrigation systems, plan efficient and reliable water delivery schedules, to have a controlled deposition of sediments, to estimate and arrange maintenance activities, etc. The main aim of these lecture notes, by Herman Depeweg, Krishna P. Paudel and Néstor Méndez is to present a detailed analysis and physical and mathematical descriptions of sediment transport in irrigation canals and to describe the mathematical model SETRIC that predicts the sediment transport, deposition and entrainment rate as function of time and place for various flow conditions and sediment inputs.

PhD publications

Full text versions of most of the UNESCO-IHE PhD dissertations are available through NARCIS. NARCIS provides access to full-text publications and research output from all Dutch universities, KNAW, NWO and a number of scientific institutes:
<http://ow.ly/EhevB>

Alternatively you can also purchase the dissertations from www.crcpress.com

Algal blooms and Membrane Based Desalination Technology
Loreen Villacorte, Philippines

Assessing the Impacts of Environmental Changes on the Water Resources of the Upper Mara, Lake Victoria Basin
Fidelis Kilongo, Kenya

Delivering Integrated Flood Risk Management, Governance for collaboration, learning and adaptation
Sebastiaan van Herk, The Netherlands

Delivering change. Towards fit-for-purpose governance of adaptation to flooding and drought
Jeroen Rijke, The Netherlands

Networked Environments for Stakeholder Participation in Water Resources and Flood Management
Adrian Delos Santos Almoradie, Philippines

Space-time variation of hydrological processes and water resources in Rwanda, focus on the Migina catchment
Omar Munyaneza, Rwanda

Coagulation and Ultrafiltration in Seawater Reverse Osmosis Pretreatment
Assiyeh Tabatabai, Islamic Republic of Iran

Soil Aquifer Treatment: Assessment and Applicability of Primary Effluent Reuse in Developing Countries
Chol Abel, South Sudan

Water Tower of the Yellow River in a Changing Climate, Towards an Integrated Assessment
Yurung Hu, China

Fate and Transport of Nutrients in Groundwater and Surface Water in an Urban Slum Catchment, Kampala, Uganda
Philip Nyenje, Uganda

Unstructured Cellular Automata in Ecohydraulics Modelling
Yueqing Lin, China

Effects of erosion control practices in the upper Blue Nile Basin on downstream sedimentation rates
Yasir Salih Ahmed Ali, Sudan

Refining the committee approach and uncertainty prediction in hydrological modelling
Nagendra Kayastha, Nepal



UNESCO-IHE celebrates World Water Day

The Development Goals featured prominently in UNESCO-IHE's World Water Day activities. In Rector Szollosi-Nagy's introductory keynote, he spoke about the progress after the Millennium Development Goals, and looked forward to seeing how the Sustainable Development Goals will focus on turning the globe into a sustainable earth system: "The challenge is to put water in the minds

of people and to mainstream water in the political area, as water is a political issue. This requires people who know how to do research and know how to take on responsibility. We need professionals who recognize early on that developing countries have the power to deal with their problems." Prof. van Dijk's held his valedictory address on 'Achieving the SDGs: public good with private money?' as a part of the activities. He explained how his studies of the MDGs focused on drinking water and then sanitation, leading to research on the economics of private drinking water facilities and self-built or shared toilets. "I got interested in the economics of sanitation: what does it cost to build, to maintain, to operate a toilet? Is there a cost recovery system in place and does it function?" Van Dijk mused. He concluded by setting out a few conditions for successful intervention of the private sector in water-related activities.

50th International Port Seminar

The 50th edition of the International Port Seminar was held at UNESCO-IHE from mid-April to the beginning of May. Since the 1st edition in 1965, more than a thousand people have taken part in the annual event. The results of an alumni survey on the demand and scope for graduate training in the port sector were presented during the opening session. An exhibition showed the development of the seminar over the years, covering its shift from general organization and management of ports to planning and engineering aspects. Throughout this period, UNESCO-IHE was supported by the Port Authorities of Rotterdam and Amsterdam, as well as seaports in Belgium and France when participants took field trips.

The more theory-oriented part of the seminar is taught at UNESCO-IHE by lecturers



recruited from port authorities, terminal operators, universities, knowledge institutions and international consultants. These hands-on experts present their broad, state-of-the-art knowledge, supplemented by work visits to the rich and varied array of ports along the northwest coast of Europe. In addition, the seminar offers a platform where participants can share their specific experiences and problems and develop mutual social and business contacts.

UNESCO-IHE students linked to Dutch water sector



On April 10, more than thirty water sector organizations and around 200 of UNESCO-IHE's international MSc students attended the Second Water Sector Meets Future Water Leaders market. The proceedings were opened by Hans Huis in 't Veld, the Chairman of Topsector Water - a collective project of the Dutch government working with corporations and research institutes to promote and support the national and international water sector. The Water Sector Market provided an opportunity for the private and public water sector to get acquainted with the international student population at UNESCO-IHE. The senior students were in the final stages of finishing their MSc programme, with the majority returning to their home countries soon after graduation. This event gave them the opportunity to meet up with the water sector operating from the Netherlands, making contacts that could benefit them in their careers after they return home. The Institute's graduates can play a key role in providing linkages between the Dutch water sector and international partners. This event was an ideal opportunity for the water sector to proactively generate interesting business opportunities for the future with the mid-career water professionals studying at the Institute.

Planning for action on water integrity

In February, UNESCO-IHE hosted a two-day Knowledge Sharing and Planning workshop on integrity in the water sector. About forty water sector stakeholders from Mozambique, Ethiopia, Bangladesh, Benin, and The Netherlands attended the workshop, as did a number of resource representatives persons from international initiatives. The workshop was organized by the Water Integrity Network (WIN) together with the Association of Regional Water Authorities and the Water Governance Centre, Deltares, UNESCO-IHE, IRC and Vitens-Evides International. The workshop elaborated on the 'Delft statement' which was adopted at the Water Integrity Forum, also hosted by UNESCO-IHE in June 2013. In an interactive setup, participants were encouraged to share knowledge on existing tools and methods and to plan actions to mainstream integrity in current and future water projects and programmes. Representatives of participating organizations expressed their ambitions to work towards improved water integrity in their projects, programmes and organizations. WIN committed to help connect and position interested countries in joint learning, policy processes and practical action.

www.waterintegritynetwork.net

Margreet Zwarteveen Professor of Water Governance

In March, Margreet Zwarteveen started working as Professor of Water Governance at UNESCO-IHE. She is an irrigation engineer and social scientist who had previously been an Associate Professor at the Centre for Water and Climate at Wageningen University, also assuming responsibilities for coordinating gender studies education at the university.

Zwarteveen studies water allocation policies and practices, focusing on questions of equity and justice. Her research includes the study of different modalities of regulating water flows and of ways to understand or legitimize them. She uses an interdisciplinary approach, seeing water allocation as the outcome of interactions between nature, technologies and society.

“Drip irrigation is perceived in many countries as a way to use water more efficiently in agriculture, but whether this is really the case is not certain. Where does the saved water go? What looks like a water saving may turn out to be a re-allocation, and I am interested in understanding these, for instance re-allocations from agriculture and rural areas to cities and industries. How do these happen, what are the effects, who benefits and who loses, and how are they legitimized in policies and knowledge? Re-allocation is a political issue, but technologies and discourses of efficiency may work to make it seem merely technical. With our research we demonstrate that some people benefit from it and others don't, in sometimes paradoxical ways. This happens through re-distributing water and water-related benefits, but also through changing cultural possibilities.”

The relation between power and water is central in the work of Zwarteveen, with explicit attention to gender. Zwarteveen approaches questions of gender through the lens of justice, recognizing that gender intersects with other differences to produce waterscapes that are highly uneven in terms of people's rights, powers and voice. Zwarteveen thinks it is important to create more space to recognize and discuss the justice and gender dimensions of water, something that is importantly predicated upon questioning and challenging normal scientific and governance cultures and identities.



© Dirk Gillissen

Rector András Szöllösi-Nagy retired

After five years of dedicated involvement, Prof. András Szöllösi-Nagy retired on 7 November 2014. He was nominated to serve as Rector of the Institute by the Director-General of UNESCO as per September 2009. Since 2010, he was also Professor of Stochastic Hydrology at Delft University of Technology. Prior to his appointment in Delft, he had been Director of the Division of Water, Secretary of the International Hydrological Programme, and Deputy Assistant Director-General of the Natural Sciences Sector at UNESCO.

UNESCO appointed Prof. Stefan Uhlenbrook, currently Vice Rector of Academic and Student Affairs, as Officer-in-Charge of UNESCO-IHE starting 10 November 2014. He will take up this position until a new Rector is appointed.



Vice Rector to serve on Global Agenda Council on Water

Prof. Stefan Uhlenbrook, Vice Rector of UNESCO-IHE, will serve on the World Economic Forum's Global Agenda Council on Water 2014-2016. The World Economic Forum is an independent, impartial, not-for-profit foundation committed to improving the state of the world. Since its inception in 1971, the Forum has become the world's foremost multi-stakeholder organization. It has been a driver for reconciliation efforts in different parts of the world, as well as a catalyst in numerous public-private partnerships and international initiatives.

The provision of water services is a core development issue that needs the appropriate political and financial attention. Although progress has been made towards the Millennium Development Goals, 783 million people still do not have access to clean water and almost 2.5 billion do not have access to adequate sanitation. The Global Agenda Council on Water will build on the wealth of existing knowledge and studies that have already been undertaken on the topic. It will add an innovative dimension to the discourse, with the aim of designing a new model that can close the water services investment gap in both developed and developing countries.

<http://ow.ly/ERuq8>



Jan Luijendijk

Jan Luijendijk, Associate Professor of Land and Water Management, retired in 2014 after a 38-year career, 10 years of which were spent at Delft University of Technology, followed by 28 years at UNESCO-IHE. In 1989, he was appointed Head of the Hydraulics and Hydrology Department and became Vice-Rector of the Institute. He also served the Institute for ten years as head of the Hydroinformatics and Knowledge Management Department. In addition to his academic career, he was an influential figure in international knowledge and capacity development for decades. He lived and worked in Indonesia on lowland development from 1985-1988. Until his retirement, he remained involved in a variety of capacity development activities with Indonesian ministries and universities.

Over the years, he became increasingly active in developing larger, long-term capacity building projects worldwide, in such countries as Yemen, China, Bangladesh, Egypt, Ethiopia, Sudan, Rwanda and all the other countries of the Nile Basin. His latest activities were as capacity development specialist to manage the unique ADB-UNESCO-IHE Knowledge Partnership and to advise Indonesia on the development of a National Capacity Development Strategy for the water resources sector and in particular for the development of the north coast of Jakarta (NCICD program).

Jan was a true networker, connecting the Dutch water sector with parties abroad. He initiated several of UNESCO-IHE's successful knowledge and capacity development networks in the Nile region, Indonesia and in the Asia-Pacific region. He was also one of the driving forces behind the five international Delft Symposia on Capacity Development for the Water Sector. When Jan was asked what advice he has for future networkers in the water sector, he answered: "Not knowledge itself, but the sharing of knowledge develops capacity!". During his farewell speech, Jan emphasized his gratefulness for the trust and the opportunities he had been given by the Institute and by his many professional partners all over the world with whom he will definitely stay in touch.

Partnerships

Partnerships add value to many of UNESCO-IHE's activities and are essential for linking global knowledge to local sector agendas, and for improving North-South and South-South collaboration. Since the last issue of UPDATE Magazine was published in January 2014, twelve new partnership agreements have been signed with organizations across the globe. The existing agreements with the International Centre for Water Hazard and Risk Management (ICHARM) and with Rotary International have also been renewed.

August 2013

Universidad Nacional Autónoma de México, Institute of Engineering (UNAM)

Goals: Promotion of research and increased capacity in the field of water resources; academic exchange; development of technical activities that are of mutual interest; establishment of a network of scientists; transfer of information, knowledge and technology.
Contact: Gerald Corzo,
g.corzo@unesco-ihe.org

September 2013

King's College London, University of London

Goals: Staff exchange for the purpose of lecturing or consultation and to explore further collaborative activities.
Contact: Klaas Schwartz,
k.schwartz@unesco-ihe.org

December 2013

Hong Kong University of Science and Technology (HKUST)

Goals: Collaboration on ongoing EuropeAid project in Cuba; promotion of a joint post-graduate programme in water and the environment, a joint educational and training centre for water professionals, and a joint research centre on sustainable water infrastructure; exchanges of staff, students and academic findings.
Contact: Carlos Lopez,
c.lopezvazquez@unesco-ihe.org

March 2014

Ministry of Water Resources, Iraq

Goals: Contribution to human resources; institutional development of the Ministry; MSc and PhD education and tailor-made training courses.
Contact: Yassir Mohamed,
y.mohamed@unesco-ihe.org

March 2014

National Central University, Taiwan

Goals: Joint initiation and execution of research on (urban) drought, flood resilience and flood-related disaster management.
Contact: Chris Zevenbergen,
c.zevenbergen@unesco-ihe.org

April 2014

Water and Environmental Studies Institute (WESI), Palestine

Goals: Review, development and implementation of education curricula at WESI; work towards establishment of joint academic programmes; joint project submissions and training courses.
Contact: Raymond Venneker,
r.venneker@unesco-ihe.org

July 2014

Food and Agriculture Organization (FAO)

Goals: Information exchange, joint projects and capacity development activities around three themes: water accounting and auditing, assessment and reduction of land and water productivity gaps, and irrigation modernization.
Contact: Pieter van der Zaag,
p.vanderzaag@unesco-ihe.org

July 2014

University of Twente

Goals: Staff exchange; joint research and shared education activities. The agreement also includes financial arrangements for PhD supervision.
Contact: Jaap Evers,
j.evers@unesco-ihe.org

July 2014

University of Zagreb, Croatia

Goals: Thesis supervision; capacity building; technology and knowledge transfer and adaptation; joint research on water science and technology, wastewater treatment technologies, risk assessment, environmental consultancy, monitoring and risk mapping.
Contact: Hector Garcia,
h.garcia@unesco-ihe.org

September 2014

American University of Technology, Lebanon

Goals: Training provided by IHE to AUT students, including MSc education; staff exchange; joint organization of the annual Economics of Water Resources Management Symposium. In addition, Prof. van der Zaag will be joining the Advisory Board for the Water Resources & Geo-Environmental Sciences Department at AUT.
Contact: Pieter van der Zaag,
p.vanderzaag@unesco-ihe.org

September 2014

Global Water Partnership (GWP)

Goals: Implementation of a yearly seminar at IHE on GWP network activities, toolbox, and technical committee publications; contribution of IHE staff and students to studies by GWP technical committee; contribution to GWP regional water partnerships.
Contact: Zaki Shubber,
z.shubber@unesco-ihe.org

November 2014

Vietnam Maritime University (VMU)

Goals: Training of VMU students and staff; exploration of options for developing a double degree MSc programme in Coastal Engineering and port development; other joint activities in research and education.
Contact: Han Ligtering,



Water Development for Food Production

Water Development for Food Production will be the new name of the programme that is currently known as Hydraulic Engineering - Land and Water Development. The new name better reflects the curriculum, which over the years has focused more on water for food production. Modules in the programme include Water Management Systems and Agronomy, Management of Irrigation Systems, and Aspects of Irrigation and Drainage.



New corporate film launched

In August, the Institute launched its new corporate film. The film showcases the Institute's three pillars of activity - education, research and capacity development - and was made on location in Colombia, Vietnam, Palestine and Kenya, and on the Institute's premises in Delft. These locations were chosen to represent the continents where UNESCO-IHE activities take place, and where diverse, location-specific water related issues play a role.

It was decided to have a new film produced professionally, and a reputable film producer was found to illustrate the Institute's main activities and show its impact, with a specific focus on developing countries and countries in transition. Mark Whatmore from Yoho Media was chosen to produce due to his unique and fresh approach to the film. When Mark was on location, he was "impressed by the professionalism of these people, all around the world, working under incredibly different circumstances in incredibly different circumstances but somehow all united by UNESCO-IHE."

UNESCO-IHE's corporate film can be viewed on our website.



First Annual Women's Day conference

On the occasion of International Women's Day, UNESCO-IHE organized its first-ever annual Women's Day conference, this year on tapping into the unlocked potential of women in emergencies. The conference was a valuable and unique opportunity for the community of disaster risk reduction and emergency professionals to exchange ideas and debate key issues pertaining to the role of women in emergencies. The conference featured professionals from NGOs, the United Nations, European Union, the private sector, governments and academia. Speakers from across the disaster risk reduction

and emergency response sector addressed a range of issues related to how the empowerment of women in disaster risk reduction can help save lives in the short and long term and presented their vision on how this could be achieved. The day was moderated by two passionate MSc students - Ms Salingay from the Philippines and Mr Ogol from Kenya - who shared their personal experiences in combatting natural and humanitarian disasters in their countries.

The event was recorded and can be viewed on our website and youtube channel.

150 graduates at award ceremony

In April, 150 MSc students from 48 different countries received their degree at the award ceremony for the class of 2012-2014.

Rector Szöllösi-Nagy's welcoming words were followed by the graduation address of Dr Fritz Holzwarth, Chairman of UNESCO-IHE's Governing Board. "UNESCO-IHE mobilizes education, creates cultural understanding, enhances scientific cooperation and stands for sustainable management of the environment," said Dr Holzwarth.

The first class of Rotary-sponsored students graduated on this day, as well as the first group from the joint MSc degree in Limnology and Wetland Management.

During the programme, the Honorary Fellow Award was given to Emeritus Professor Brian Moss. At the ceremony, the third UNESCO-IHE Best Sanitary Engineering MSc Thesis Award was presented to Mr Grover Hector Mamani Casilla from Bolivia.

All graduates are now proud members of the UNESCO-IHE alumni community, which has now reached nearly 15,000 water professionals.

Innovative learning at the UNESCO-IHE Institute for Water Education equips professionals with the research, managerial and technical skills needed to deal with challenges in the fields of water and the environment in their countries.

For the latest information on the above courses, including content, dates, duration and tuition fees, please see our website: www.unesco-ihe.org/education.

MSc PROGRAMMES	
MSc PROGRAMME IN ENVIRONMENTAL SCIENCE	
Environmental Planning and Management	Db
Environmental Science and Technology	J Db
Environmental Technology and Engineering	EM
Environmental Technology for Sustainable Development	J
Limnology and Wetland Ecosystems	J
Water Quality Management	Db
MSc PROGRAMME IN URBAN WATER AND SANITATION	
Sanitary Engineering	J Db
Urban Water Engineering and Management	J
Water Supply Engineering	J Db
MSc PROGRAMME IN WATER MANAGEMENT	
Water Cooperation and Peace	J
THEMATIC PROFILES	
Water Conflict Management	Db
Water Resources Management	
Water Services Management	
Water Quality Management	
MSc PROGRAMME IN WATER SCIENCE AND ENGINEERING	
Ecohydrology	EM
Flood Risk Management	EM
Hydraulic Engineering and River Basin Development	J Db
Hydraulic Engineering - Coastal Engineering and Port Development	J Db
Hydroinformatics - Modelling and Information Systems for Water Management	J Db
Hydrology and Water Resources	J Db
Land and Water Development for Food Security	J Db
Db	Delft-based MSc specialization
J	Joint programme
EM	Erasmus Mundus programme

ONLINE COURSES 2015	Start date
Biological Wastewater Treatment: Principles, Modelling and Design	05/Jan/15
Urban Drainage and Sewerage	05/Jan/15
Flood Modelling for Management	01/Mar/15
Integrated Coastal Zone Management	01/Mar/15
Service Oriented Management of Irrigation Systems	02/Mar/15
Industrial Resource Management and Cleaner Production	04/May/15
Ecological Sanitation	04/May/15
Faecal Sludge Management	04/May/15
Grey Water Management, Treatment and Use	04/May/15
Modelling Sanitation Systems	04/May/15
Water and Environmental Law and Policy	27/Jul/15
Constructed Wetlands for Wastewater Treatment	01/Sep/15
Environmental Flows	01/Sep/15
Solid Waste Management	01/Sep/15
Water Quality Assessment	01/Sep/15
Industrial Effluent Treatment	01/Sep/15
Governance of Decentralised Sanitation	01/Sep/15
Partnerships for Water Supply and Sanitation	01/Sep/15
Decision Support Systems in River Basin Management	14/Sep/15
Water Transport and Distribution	18/Sep/15

SHORT COURSES 2015	Start date
ENVIRONMENTAL SCIENCE	
Industrial Resource Management and Cleaner Production	09/Feb/15
Water Quality Assessment	02/Mar/15
Constructed Wetlands for Wastewater Treatment	30/Mar/15
Environmental Engineering	30/Mar/15
Nanotechnology for Water and Wastewater Treatment	30/Mar/15
Water and Environmental Policy Making	30/Mar/15
Environmental Monitoring and Modelling	20/Apr/15
Environmental Planning and Implementation	20/Apr/15
Data Analysis and Modelling for Aquatic Ecosystems	18/May/15
Aquatic Ecosystems: Processes and Applications	08/Jun/15
Environmental Assessment for Water/related Policies and Developments	08/Jun/15
IWRM as a Tool for Adaptation to Climate Change	29/Jun/15
Solid Waste Management	29/Jun/15
Watershed and River Basin Management	29/Jun/15
Wetlands for Livelihoods and Conservation	29/Jun/15
URBAN WATER AND SANITATION	
Surface Water Treatment I (previously known as 'Conventional Water Treatment')	12/Jan/15
Urban Drainage and Sewerage	12/Jan/15
Conventional Wastewater Treatment	09/Feb/15
Surface Water Treatment II	09/Feb/15
Anaerobic Wastewater Treatment	02/Mar/15
Groundwater Resources and Treatment	02/Mar/15
Resource Oriented Wastewater Treatment and Sanitation	02/Mar/15
Wastewater Treatment Plants Design and Engineering	30/Mar/15
Water Transport and Distribution	30/Mar/15
Advanced Water Treatment and Re/use	20/Apr/15
Modelling Wastewater Treatment Processes and Plants	20/Apr/15
Industrial Effluent Treatment and Residuals Management	08/Jun/15
Water Treatment Processes and Plants	08/Jun/15
Advanced Water Transport and Distribution	29/Jun/15
Decentralised Water Supply and Sanitation	29/Jun/15
Faecal Sludge Management	29/Jun/15
Membrane Technology in Drinking and Industrial Water Treatment	28/Sep/15
WATER MANAGEMENT	
Water Economics	12/Jan/15
Water and Environmental Law	09/Feb/15
Water Conflict Management I	02/Mar/15
Water Resources Assessment	02/Mar/15
Managing Water Organizations	30/Mar/15
Water Conflict Management II	30/Mar/15
Financial Management of Water Organisations	20/Apr/15
Water Resources Planning	20/Apr/15
Partnerships for Water Supply and Sanitation	08/Jun/15
Urban Water Governance	29/Jun/15
WATER SCIENCE AND ENGINEERING	
Coastal Systems	12/Jan/15
Port Planning and Infrastructure Design	09/Feb/15
Coastal and Port Structures	02/Mar/15
Data Driven Modelling and Real Time Control of Water Systems	02/Mar/15
Tracer Hydrology and Flow Systems Analysis	02/Mar/15
Groundwater Data Collection and Interpretation	30/Mar/15
Hydrological Data Collection and Processing	30/Mar/15
Management of Irrigation Systems	30/Mar/15
River Basin Modelling	30/Mar/15
Integrated Coastal Zone Management	20/Apr/15
Integrated Hydrological and River Modelling	20/Apr/15
International Port Seminar	20/Apr/15
Introduction to River Flood Modelling	20/Apr/15
Urban Flood Management and Disaster Risk Mitigation	20/Apr/15
Applied Groundwater Modelling	08/Jun/15
Flood Risk Management	08/Jun/15
Urban Water Systems	08/Jun/15
Design of Hydropower Schemes	22/Jun/15
Water Resilient Cities	29/Jun/15
Flood-based Farming Systems and Water Harvesting for Food Security	07/Sep/15
Small Hydropower Development	07/Sep/15
Data Acquisition, Preprocessing and Modelling using HEC-RAS	14/Sep/15
Data Acquisition, Preprocessing and Modelling using PCRaster Python	14/Sep/15
Data Acquisition, Preprocessing and Modelling using SWAT	14/Sep/15
Morphological Modeling Using Delft3D	14/Sep/15
Open Source Software for Preprocessing GIS data for Hydrological Models	14/Sep/15
Environmental Modelling using PCRaster	21/Sep/15
River Basin Modelling using HEC-RAS	21/Sep/15
River Basin Modelling using SWAT	21/Sep/15
GIS and Remote Sensing Applications for the Water Sector	26/Oct/15
Where there is little data: How to estimate design variables in poorly gauged basins	02/Nov/15



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