STOCKHOLM
WATER FRONT
A FORUM FOR GLOBAL WATER ISSUES

No. 3, NOVEMBER 2012

2012 World Water Week

10 Take Aways

Vietnam

Farming in a Changing Climate

Sanitation

Flush and Forget!

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SUSTAINING OUR MOMENTUM

Photo: Thomas Henrikson

Over one month has passed since I took up my new role as Executive Director of SIWI and I am excited to join the organisation as it continues to expand and develop as a global thought leader on water policy issues, particularly in its thematic focal areas: climate change, transboundary management, water economics, governance, and the Water-Energy-Food nexus. In this issue of the *Stockholm Water Front*, you'll find these themes represented in many ways. Andreas Lindström reviews a book on Water and Energy, Mats Eriksson, Rami Abdelrahman and Nguyen Ngoc Sinh investigate how to build more resilient food production systems in Vietnam to reduce the risks faced under climate change and Alastair Morrison argues why we should not shy away from discussing sanitation within the water community. Furthermore, you'll find a short report from the 2012 World Water Week in Stockholm, which focused mainly on the issue of Water for Food Security, and brought together a wide range of views from different sectors concerned with both policy and practice. Always looking forward, we now shift focus towards the 2013 World Water Week which will be held under the theme of Water Co-operation – a topic you will be reading much about on these pages in the next few months.

Best regards,

Torgny Holmgren
Executive Director
Stockholm International Water Institute

INDEX

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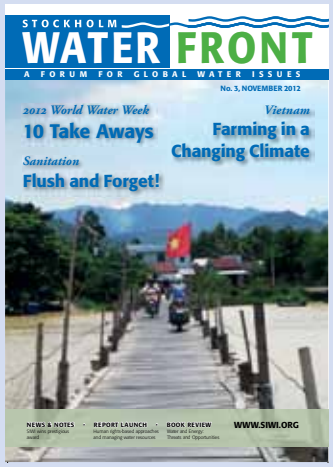

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SIWI

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From left: Mr. Torgny Holmgren, SIWI, H.S.H. Prince Albert II of Monaco, Mr. Jean Jouzel, HCST and Sir David Attenborough

Photo: © Eric Mathon / Palais Princier

SIWI received the Prince Albert II of Monaco Foundation's Water Award in London

SIWI has received the 2012 Prince Albert II of Monaco Foundation's Water Award in recognition of its "high contributions on water issues".

SIWI's Executive Director Togny Holmgren accepted the award at a ceremony in London on behalf of SIWI. SIWI will use the prize money to sponsor the participation of young water professionals from developing countries at future World Water Weeks in Stockholm. The Prince Albert II of Monaco Foundation was established in 2006 to support concrete action to protect the environment and for sustainable development. Since 2008, the Foundation presents annual awards to honour key international figures and organisations for exemplary work in three key areas: climate change, biodiversity and water. Prof. Malin Falkenmark, Senior Scientific Advisor at SIWI, received the the Prince Albert II of Monaco Foundation's Water Award in 2010 for her outstanding contributions to scientific understanding of regional and global water scarcity. SIWI is the first organisation to receive the prize.

Stockholm International Water Institute at WEFTEC

SIWI took part in the WEFTEC conference, held September 29-October 3, in New Orleans. WEFTEC is the Water Environment Federation's Annual Technical Exhibition and Conference that gathers thousands of water quality professionals from around the world. At the conference SIWI was part of the Swedish Trade Councils exhibition and Mr. Torgny Holmgren, Executive Director of SIWI presented the Stockholm Story: How Stockholm developed from one of dirtiest and least healthy cities to become one of the cleanest urban centres in the world in terms of water and sanitation. Furthermore he highlighted how the success of integrated water management was the main inspiration for starting the Stockholm Water Prize and the World Water Week in Stockholm. Also present at the WEFTEC was this year's winners of the Stockholm Junior Water Prize, Mr. Luigi Marshall Cham and Mr. Jun Yong Nicholas Lim from Singapore, who were honoured during the opening session.

Transboundary Water Management: Who does what, where?

A new paper published by the Swedish Water House analyses the findings from the SIWI Transboundary Water Management database. It shows where TWM actors are working, what they are doing and the tools they are promoting. More actors focus on Africa than anywhere else and most activities are located in rivers, while other basin types receive relatively little attention. Activities most commonly aim to enhance water management and efficiency, primarily through technical assistance and capacity building.

For more information please visit: www.swedishwaterhouse.se/transboundarywaters

10 Take Aways from the 2012

More than 2,600 experts, practitioners, decision makers and business innovators from around the globe gathered in the Swedish capital for the 2012 World Water Week in Stockholm. In over 100 sessions, participants debated and showcased solutions to ensure that the planets limited water resources can meet the needs of growing economies and support a healthy global population. Here are ten takeaway messages from the many fruitful discussions that took place during the week.

1 THE "FOOD PARADOX" REMAINS UNSOLVED

Production, overeating, malnourishment and waste are all on the rise. Over the past half-century, dramatic improvements have been made to increase the quantities of food produced. We feed more people than ever before, but we also leave more people hungry and send more food to waste than any time before in our history. Today, over 900 million people suffer from hunger. At the same time, 1.5 billion people overeat and over one-third of all food is lost or wasted. Demand for food and fibre is projected to increase by 60 per cent by mid-century and, without intervention, untenable pressure on water resources in many regions in the world will threaten food and water security. Moving forward, focus must be on resource efficiency, effective distribution to the hungry and sustainable stewardship of water, land, and life-supporting ecosystems.

2 SOLUTIONS TO SUSTAINABLY INTENSIFY AGRICULTURAL PRODUCTION

As food demand grows to feed a larger global population, agriculture will need to produce more within the limits of available land and water resources. In the Stockholm Water Prize Laureate lecture, Dr. Colin Chartres described the required solution as 'sustainable agricultural intensification', which he described as "simply producing more with less". This is possible he argued, but not simple. It requires significant investment in research and development, and effective action to maximise energy efficiency, improve irrigation productivity and expand the safe re-use of water, other resources and nutrients for food production. Farmers also need to receive the necessary support to close the gap between the potential yields their land can bring and the actual harvest they reap.

3 OPPORTUNITIES IN WASTE

At the Opening Plenary, Mr. Torgny Holmgren, Executive Director of SIWI highlighted the cost of food waste to society at large. "More than one-fourth of all the water we use worldwide is taken to grow over one billion tons of food that nobody eats. That water, together with the billions of dollars spent to grow, ship, package and purchase the food, is sent down the drain", he said. "Reducing the waste of food is the smartest and most direct route to relieve pressure on water and land resources. It's an opportunity we cannot afford to overlook." Investments in improved harvesting, storage, transport and cooling infrastructure can reduce losses significantly. This, coupled with efforts to increase local producers' access to better food processing, packaging and new markets, would result in that more food sold and less lost, providing economic and social benefits to both producer and consumer. It would also save large volumes of water that can be allocated to other uses.

7 SCIENTIFIC UNDERSTANDING OF THE WATER-ENERGY-FOOD NEXUS ADVANCES

There is clear agreement that climate, water and energy are intricately linked. Clarifying those linkages and the changing dynamics, interactions and tradeoffs between sectors for policy-makers is a major challenge that has received considerable recent attention from the science community. During the week, new quantitative tools, such as the Water Evaluation and Planning (WEAP) and Long-range Energy Alternatives Planning (LEAP) from the Stockholm Environment Institute (SEI), were presented. Speakers at the week discussed how these tools and other innovations can help theoretical "nexus frameworks" in practice.

8 THE GLOBAL RUSH FOR LAND WILL IMPACT WATER RESOURCES

At the High Level Panel, panelists noted that there are several grey areas in the current regulatory environment that oversee land deals, particularly regarding water. Several speakers pushed for water issues to be more prominently featured within international principles and voluntary guidelines on land deals as these transactions will impact water quantity and quality. Other implications of land acquisition are that the investors will need reliable access to water for irrigation of its crops on the purchased or leased land. More attention is needed to both better safeguard local priorities and customary rights to land of indigenous populations, as well as to ensure the effective and equitable management of both internal and transboundary water resources that will be used on leased lands.

9 INVESTMENTS IN CLEAN WATER, SANITATION AND IMPROVED HYGIENE REDUCE MALNUTRITION

A number of sessions discussed the latest innovations and successful practices to provide clean water and safe sanitation to the over two billion people who live without sustainable access to these basic services. It was also noted that half of the cases of malnutrition worldwide result from illness and infection from dirty water or unhygienic sanitation – meaning that water supply, sanitation and hygiene (WASH) issues are integral components of strategies on food security. Many success stories were shared, including the promising initial results of the Global Sanitation Fund, which supports large-scale sanitation and hygiene work in Cambodia, Ethiopia, India, Madagascar, Malawi, Nepal, Senegal and Uganda. To date, over 750,000 people of a planned 14 million people have access to and are using improved toilets.

World Water Week

PUBLIC-PRIVATE PARTNERSHIPS ARE DEVELOPING AN EXPANDING TOOLBOX FOR WATER STEWARDSHIP

The past five years has seen an emergence of discussions, tools and services attempting to aid companies and investors in understanding water risks and how to mitigate them. Several speakers at seminars throughout the Week noted, however, that productive action taken at the watershed level is still rare as it poses a series of complex challenges. Many new initiatives were launched at the week to facilitate effective collaboration and share experiences on good practice, such as Water Action Hub, which provides an on-line platform to unite companies, governments, NGOs, and other stakeholders on a range of critical water projects in specific river basins, and the UN Global Compact CEO Water Mandate Guide to Water-Related Collective Action.

COLLABORATION IS NEEDED ON ALL FRONTS, WHICH IS WHY IT TOPS THE AGENDA IN 2013

Throughout the week, collaboration – between sectors, actors, public and private interests, regions and disciplines – was the key word that appeared in the take home messages that concluded expert presentations. This will be theme of the 2013 World Water Week in Stockholm, which will focus on Water Cooperation – Building Partnerships, and take place Sept 1-6.

By Mr. Josh Weinberg
Communications Officer, SIWI

EARLY WARNING SYSTEMS AND FLOOD MANAGEMENT BUFFER IMPACTS OF CLIMATE CHANGE

Participants emphasised that protecting against floods is critical to save lives and prevent major economic losses. Over the past half decade, flooding has led to over 170 billion USD in economic and agricultural damages. Innovative technologies, such as those developed by AGT, were presented during the week that can help better predict, prevent and manage floods. Sensor networks, for example, have been developed that allow authorities to monitor and predict water flow and dike movements and are being applied in Asia and Europe. In addition, the importance of improving Early Warning Systems (EWS) to respond to droughts and floods before disaster strikes cannot be overstated. EWS are needed to identify coming shortages of both water and food in various regions of the world, but in many places the institutional linkages need to be strengthened as well. Capacity must also be developed in many national and international agencies to utilise these warnings in order to take often life-saving pre-emptive action.

WATER RESEARCH THRIVES

According to a new report released during the week, *The Water and Food Nexus: Trends and Development of the Research Landscape* produced by Elsevier and SIWI, research into water is growing faster than the average 4 per cent annual growth rate for all research disciplines. The report examined the dynamics of global water research between 2007 and 2011, focusing on two strands of research; water resources research, referring to natural and social science studies on water use, and food and water research focusing on the study of water consumption and recycling to produce food.

Photos: Thomas Henriksson and Mikael Ullén

2012 Winners

Several prestigious prizes, including the Stockholm Water Prize, the Stockholm Junior Water Prize, the Stockholm Industry Water Award, the WASH Media Award and Best Poster were presented during the 2012 World Water Week in Stockholm.

Photo: Cecilia Österberg, Exray

Photo: Cecilia Österberg, Exray

Photo: Cecilia Österberg, Exray

Photo: Mikael Ullén

Photo: Mikael Ullén

1. STOCKHOLM WATER PRIZE: International Water Management Institute (IWMI), respresented by Dr. Colin Chartres, receives the award from H.M. King Carl XVI Gustaf of Sweden. 2. STOCKHOLM JUNIOR WATER PRIZE: Mr. Luigi Marshall Cham, Mr. Jun Yong Nicholas Lim and Ms. Tian Ting Carrie-Anne Ng from Singapore, receives the prize from H.R.H. Crown Princess Victoria. 3. STOCKHOLM INDUSTRY WATER AWARD: PepsiCo Inc., represented by Mr. Sanjeev Chadha, President, Middle East and Africa, receives the award from Peter Forssman, Chair of Stockholm International Water Institute. 4. WASH MEDIA AWARD: Mr. Alain Tossounon (Benin), Ms. Francesca de Châtel (Belgium), Ms. Berta Tilmantaite (Lithuania), Mr. Francis Odupute (Nigeria), Mr. Ketan Trivedi (India) and Mr. Ngala Killian Chimtom (Cameroon) *not pictured.* 5. BEST POSTER AWARD: Dr. Chieko Umetsu receives the award from Prof. Ing-Marie Gren, Scientific Programme Committee.

2012 Young Professionals' Vision

The 2012 World Water Week in Stockholm closed with a "vision" capturing the perspective of the younger generation of water scientists and professionals on the priorities that must be set now in order to achieve water and food security by 2050.

The vision was developed by a group of young professionals who have been interviewing their peers attending the World Water Week and gathering input on social media from those following the conference remotely. The team responsible for the Young Professionals' Vision collected views, suggestions and opinions on how to address current food, water and energy challenges. Together with the ideas that arose from more than 100 sessions, these interviews and written inputs from junior rapporteurs and the young scientific programme committee, the Youth Vision emerged as a consolidated output. According to many who contributed to the formation of this vision, this exercise provided them the opportunity to voice their opinions and present their views on how to solve the water and food security challenge.

Read the full vision in the *Overarching Conclusions* and online, www.worldwaterweek.org

New analysis on water research highlights the role of collaboration in the production of high impact research

Research into water is growing faster than the average 4 per cent annual growth rate for all research disciplines, claims a new report presented by Elsevier and SIWI during the 2012 World Water Week in Stockholm. The report, *The Water and Food Nexus: Trends and Development of the Research Landscape*, analysed the major trends in water and food-related article output at international, national and institutional levels. Elsevier and SIWI worked closely together on creating the report, which is based on the analysis of Scopus citation data by Elsevier's SciVal Analytics team. The growing discrepancy between supply and demand for water is becoming more challenging each year. Developments in water research have the potential to help solve this issue. The report examined the dynamics of global water research between 2007 and 2011, focusing on two strands of research; water resources research, referring to natural and social science studies on water use, and food and water research focusing on the study of water consumption and recycling to produce food. The latter strand is an important theme in this year's World Water Week thematic focus: *Water and Food Security*.

Key findings from the report include:

Exploding research landscape

There has been a dramatic growth of water research, with both strands of research growing above the 4 per cent average for all research disciplines. Water resources research is growing at a rate of 9.2 per cent per year, while research into food and water is growing by 4.7 per cent each year. Research is also becoming more collaborative and interdisciplinary, with a dramatic rise in publications from the fields of computer science and mathematics in water resource research; while research from fields within the social sciences have become the fastest growing fields in the food and water research strand.

United States leads research output, but for how long?

Research output is the highest in the United States in both water resources and food and water research, but growth between 2007 and 2011 is low. On the other hand, China is experiencing ongoing growth in water research output and, if its trajectory continues, it could be the leading producer of water research within the next few years.

Other countries experiencing high growth rates in both water resources and food and water research include Malaysia and Iran.

Collaboration holds the key for high impact research

More than half of all articles published on water research are based on international collaboration. Interestingly, the most impactful research, for this study defined as average citations per paper, did not come from the countries that produced the most research, nor from those with the highest growth rate. Instead, the most impactful papers were found to come from the Netherlands, Switzerland, Denmark and Belgium for water resource research and Sweden, Switzerland, Great Britain, the Netherlands and Denmark for food and water research. In addition, a strong correlation was found between the level of international and interdisciplinary collaboration and the impact, with greater collaboration leading to higher impact research.

Water Governance Facility publishes report on human rights-based approaches and managing water resources

Many governments as well as multilateral organisations are increasingly emphasising human rights-based approaches (HRBA) as critical to mainstream in countries' development policies and donor strategies.

The purpose of this report is to lay out the issues and establish if, how, and under what circumstances taking a HRBA might improve the management of water resources, especially with regard to equity aspects. The focus is on water as a resource for development (for instance, as an input to agriculture or industrial production); the report does not primarily deal with household water supply or the Right to Water.

The report clarifies and disentangles HRBA in relation to governance and explores synergies and disparities with integrated water resources management approaches.

The report concludes that HRBA can be very useful to advance equity aspects of distribution of water rights and nondiscrimination of water resources management and allocation, but we also need more knowledge as well as capacities among water managers to better understand how HRBA can be applied in various socio-economic and legal contexts. The report is the product of interdisciplinary collaboration among water resources management policy-makers and practitioners; lawyers specialising in national and international water law; and international civil servants charged with ensuring that all their programmes take a human rights-based approach.

Though they share a concern for equity in water resources allocation, particularly in support of sustainable, human-centered development, these three groups of stakeholders have divergent perspectives on the utility of the human rights-based approach and speak different "languages."

The report concludes that there is a need for increased knowledge on the applicability of rights-based approaches to water resources management and dialogue to foster cross-disciplinary understanding.

Torgny Holmgren – SIWI's New Executive Director

The Stockholm International Water Institute (SIWI) has appointed Mr. Torgny Holmgren as its new Executive Director. Mr. Holmgren was Ambassador and Head of the Department for Development Policy at the Swedish Ministry for Foreign Affairs, where he was responsible for Swedish policy on global development and has recently served at the United Nations Secretary General's High-level Panel on Global Sustainability. An economist by training, Mr. Holmgren has also previously worked at the Swedish Ministry of Finance, the World Bank, and the Swedish Embassy in Nairobi, Kenya. In this interview, he takes the time to talk to *Stockholm Water Front* about his new role at the helm of SIWI.

One month after starting your new position, how does it feel to be the new Executive Director of SIWI?

The feeling is very good. I have been travelling on different missions since I've started and I am getting the impression that SIWI is well-recognised and highly regarded internationally. I have been welcomed with a good reception at SIWI and throughout meetings with staff in the Stockholm office. I feel at home.

What are your motivations and interests in advancing the water cause in international sustainable development?

Achieving ambitions related to sustainable development entails bringing different actors together to formulate new partnerships and build on existing ones. No organisation can do it on its own, as this rests on common undertakings. Water is a key component in discussions on sustainable development – it is important to be decisive on how we use our common water assets. I think the interest in water and water-related issues is gaining momentum, not least in high-income countries where water has been taken for granted. This would reflect positively on international politics, as water is reaching the top of the agenda even in our part of the world. However, water and sustainable development remain a common challenge of different aspects, one that needs more attention in the years to come.

You have had a long career at the Swedish Ministry for Foreign Affairs and with other Swedish and international institutions. How will this experience reflect on your new position?

In previous jobs I have focused on bridging research and policy-making. It is imperative for policy-makers to have access to quality analysis and research to take good decisions. This is relevant since SIWI is a policy research institution that benefits decision-makers in both the private and the public sector and advocates for wiser water policy across national and international spheres.

What are your thoughts on leadership in the field of sustainable development?

To me leadership is about leading by example. I think the frontrunners are those who inspire others to take courage to make the right choices. The courage that is needed to address future challenges we all face. The key component in making the right decisions is creativity in addressing future challenges based on good knowledge and ideas from various sources. Another important component is partnership: we need to create unconventional partnerships with actors from a wider range of sectors. Cooperation makes you a stronger actor.

What are some of your other hopes and goals for the SIWI?

To build on SIWI's convening power to make partners meet – this is extremely important in forums such as the World Water Week in Stockholm. We need to bring knowledge a step further and create closer linkages between knowledge on one hand and policy and practice on the other hand. We will work to bring new actors to the table – those whose decisions are important for water and water related activities. The finance sector, for example, is an important actor from a water perspective. Addressing water issues relies to a large extent on funding – with decision-makers in the financial sector making the final call. I also look forward to working closer with international organisations to create new linkages and support existing ones between local, national and international actors in our field.

Commenting on the appointment of Mr. Holmgren as the Executive Director for SIWI, Peter Forssman, Chair of the SIWI board, welcomed him to his new position: "We are confident that Mr. Holmgren's proven leadership talents, strong international network and extensive knowledge on water, sustainability and development issues will be a tremendous asset to the to the future success of the organisation."

Interview by
Mr. Rami Abdelrahman
Communications Officer, SIWI

Photo: Thomas Henriksson

Photo: Alastair Morrison, SIWI

Flush and Forget – 2.6 billion People Off Track …

Surely an initiative that creates jobs, saves lives, saves the environment and boosts the economy – all at the same time – would be a "no brainer"? Unfortunately not, if it concerns sanitation.

With sanitation as one of the two most off track Millenium Development Goals – and the most off track goal in sub-Saharan Africa – why does the subject remain hidden and neglected, even amongst water professionals? Why do politicians, professionals and community leaders neglect the sector, and why are practitioners stigmatised?

This neglect costs communities lives, money, and dignity. Unhygienic sanitation increases child mortality; jeopardises maternal health; prevents children from going to school; and worsens gender inequities, poverty, hunger, and water pollution.

The economic case

Sanitation was always considered as just a charitable activity – one that helps women, children and the poor – but had few economic implications. As a result it rarely gained the attention of key decision makers, policy-makers and finance ministries, and sector investment was pitiful. However recent studies, such as the Economics of Sanitation Initiative (WSP, World Bank 2008) have shown some countries to be losing as much as 7 per cent of their GDP each year due to poor sanitation. In India, sanitation related losses equate to a staggering USD 53.8 billion dollars per year.

Losses are not just related to health impacts, although premature deaths, the costs of treating diseases, loss of earning and productive time, and the time lost by caregivers are a considerable burden on poor and middle income countries.

Poor sanitation inflicts a wide range of other costs on society too, including:

- Extra water supply costs – households need to treat water, use bottled water; and utilities need enhanced treatment processes to make safe polluted water. Fetching water from a distance costs both time and money;
- Access time impacts: additional time spent queuing for shared toilets or open defecation sites;
- Children (especially girls) drop out of school due to a lack of dignified, sanitary facilities – losing out on an education and causing a lifelong loss of earnings;
- Tourism is impacted; dirty and insanitary towns and beaches harm a country's image and visitors are less likely to return;
- Poor sanitation destroys aquaculture and fisheries, and a failure to re-use wastewater results in a loss to agricultural production. Livelihoods are lost.

Solving these problems brings tremendous benefits. The average investment in sanitation can yield an economic return of USD 9.1 to USD 1. Sanitation and hygiene is a proven cost-effective investment that will reduce health budget spending and increases economic productivity and education levels. And the money is available, especially in middle income countries where the largest most people lacking sanitation live. 63 per cent of India's households have a phone connection, but only 47 per cent have toilet facilities. Will basic, hygienic latrines costing as little as USD 18 each in Indonesia, sanitation is affordable. The problem is not a lack of money, but a lack of will.

The human cost

Each and every day, 5,000 children die from preventable water and sanitation related diseases. Worldwide there are approximately 2.6 billion people without access to any kind of improved sanitation and 2.2 million deaths are caused by sanitation-related diseases and poor hygiene conditions.

In Indonesia, a study found roughly one in ten people are exposed to open sewers, and more than four in ten to open defecation sites. Poor sanitation creates a host of health hazards as well as a grim visual landscape. Roads are full of mud, puddles, and piles of garbage and debris, not to mention disease-carrying insects, microbes and rodents.

The humanitarian impact is huge, and this neglect takes a tremendous toll on health facilities – half the hospital beds in Kenya are filled with people with sanitation related diseases, preventing the health services address other critical illnesses. Many women and girls risk assault using poorly planned, inferior facilities each time they defecate.

But yet, with present rates of progress, the MDG target could be missed by a staggering 700 million people.

The environment

Our neglect of sanitation damages the environment. With no way to safely dispose of faeces or garbage, around a billion slum dwellers resort to "flying toilets" and defecate in public spaces. In many developing nations, nearly all sewage systems empty into rivers, lakes, and nearby streams that communities use for drinking water.

Untreated sewage pollutes the environment and affects plant and aquatic life.

According to research studies by the United Nations Environment Programme, coastal habitats, fisheries, and marine wildlife are threatened by untreated sewage discharge into coastal waters. In Southeast Asia alone, 13 million tons of faeces are released to inland water sources each year, along with 11 billion m^2 of greywater.

Excess nutrients then enter the marine environment through sewage. Near cities raw sewage tends to be the main source, while agriculture predominates in rural areas. Increased nutrients can lead to eutrophication and algal blooms, limiting amount of sunlight available and deoxygenating the water. When oxygen levels decline, marine animals, coral reefs, seagrass beds and other vital habitats suffer and may die. Algal blooms can be toxic and harm marine life, and cause hundreds of millions of dollars worth of damage to commercial fisheries. It is unfortunate that countries in sensitive regions, such as the Pacific and the Caribbean, still have such poor sanitation coverage.

Even developed countries can have a mixed approach to sanitation. Australia, the UK and Ireland are three countries that discharge to marine outfalls, avoiding or reducing the need for expensive wastewater treatment processes. Any legislation that improves the quality of treatment, (such as the EU Urban Wastewater Treatment Directive) can be highly controversial, supported by environmentalists but criticised by the public for the higher water and sewerage bills that resulted.

Nevertheless reusing waste has many benefits. Conventional sewerage can now be supplemented with ecological sanitation, using technologies that keep dangerous pathogens away from people and the environment, but storing and producing fertiliser from urine and safely composted faeces. Anaerobic digestion of sewage to produce biogas for energy is another option. In China today, 90 per cent of human excreta is used in agriculture.

But why has sanitation been neglected?

If sanitation has so many health, environmental and financial benefits, why has it been so neglected? Why do so many organisations champion water, but do only mention sanitation in passing, if at all?

Perhaps it is because it affects the poor disproportionally. Women, children, ethnic minorities, lower castes and the sick are heavily impacted by a lack of safe sanitary facilities. Decision makers and most of the developed world has good facilities, and take their services for granted.

Maybe the steady, daily death toll of poor children is not newsworthy and gets too little attention from the media? Perhaps it is because the victims are scattered, and have little or no political voice?

Perhaps sanitation is simply too personal – too unglamorous a subject to talk about, hindered by cultural taboos that prevent open discussion. Maybe Public Works departments are too focused on technology, preferring capital intensive sewerage systems over smaller, sustainable community based projects. Maybe much of the investment in sanitation has to come from households themselves – making the sector hard to monitor and prioritise.

Compounding these problems, in many countries, there is no single government agency with overall responsibility for sanitation. This invariably leads to the woeful neglect of the sector. Several different ministries might have a nominal role (eg Health, Education, Public Works, and Environment) but sanitation is not a priority for any of them. There are no clear career paths for professionals in the sector, leading to poor prospects and a huge capacity gap.

Initiatives

For too long the political will has been lacking, and sanitation rarely featured highly on the international development agenda. Interventions could be small and were often emergency based, and quite unsustainable. The governance of sanitation (examining the politics of decision-making, and addressing key systematic problems that afflicted the sector) was rarely examined.

By belatedly adopting sanitation as a key MDG target in 2002, however, the international community has begun to address these issues. The UN's "International Year of Sanitation" in 2008, mobilised considerable resources into the sector. The Sanitation Water for All Initiative has galvanised support amongst politicians, linking sector ministries to finance, and resulting in considerable pledges of resources for WASH that must be honoured.

On a more practical level, organisations like SuSanA promote sanitation systems which take into consideration all the social, environmental and financial aspects of sanitation. With support from the Gates Foundation, amongst others, sustainable technologies have been improved and taken up across more of the developing world.

A focus on sanitation marketing, before physical implementation starts, has also helped. Community Led Total Sanitation has enabled villagers to analyse their sanitation and wastewater situations themselves, and enabled them to topping open defecation through their own efforts and investments.

By Mr. Alastair Morrison
Programme Manager
Goal WASH, SIWI

Photo: Alastair Morrison, SIWI

Ensuring Resilient Food Production in the World's Rice Bowls

Vietnam is one of the most vulnerable countries to the effects of climate change in the World today, especially in the Mekong and Red River Deltas where 43 per cent of the population in the country live.

The potential impact of climate change in Vietnam, and particularly in those deltas, pose risks to food security in both Vietnam and its main export markets. Currently, 80-90 per cent of the population depends on agriculture as its main source of income, producing enough rice to feed Vietnam and secure the country's position as the second largest rice exporter in the world. Thus the well-being of the farmers and their agricultural systems in delta areas where most of the rice production is taking place are of importance not only to local populations, but are likewise critical to Vietnam as a nation and to a large part of the world that depends on their exports.

Climate-related risks that the provinces in the delta areas have to face are primarily related to floods during the monsoon season and drought in other parts of the year. These areas are particularly exposed to sea level rise which will accentuate problems with floods and trigger increased salinity of ground water. Thus, climate change is also intermittently linked to problems with water quality, both of ground- and surface water. The quality of surface water deteriorates during both floods and droughts, where inadequate sanitation is one of the root problems.

In general, climate change adaptation is hampered by a slow track record of providing the basic human rights to clean water and proper sanitation in this region. Very few projects are set in the area to improve resilience and the quality of farmers' livelihoods, despite ambitious governmental plans to sustain the country's current economic growth rate of 7-8 per cent (McKinsey, 2012).

What is now needed is an overview of the capacity needs and local experiences to respond to climate change driven stress factors in this region. For example, farmers are eager to increase the productivity of their farming by planting different kinds of crops that are suited for production in increasingly saline water, as well as with wastewater. Climate change must be studied closer to determine the kind of crops they should focus on in the future, and such information should be spread virally within the farming communities.

Also noticeable: women and children are most vulnerable in this segment of society. They often work in farms or stay at houses close to the water surface, and are exposed to waterborne diseases as they are responsible for cooking and cleaning. In case of devastating floods, they will not be able to escape, mostly because they cannot swim.

Poor water quality of surface water is a severe constraint in the district and improvement of this would increase the resilience of the province to hydro-climatic hazards. Investments in improved sanitation systems and water treatment plants would contribute to such resilience development.

Facing floods and droughts

In the Vietnam delta areas the risk for an increased number of floods and increased flood frequency is possibly the most prominent threat. The devastating floods that hit the Mekong Delta in 2000 and 2001 were some of the worst in living memory. More than 480 people were killed in 2000 and 393 in 2001, the majority children, and in total, 900,000 houses were damaged in 2000, and 350,000 in 200. A similar number of people died in 2001, but lessons were learnt between the two floods and measures were implemented, which ensured that other impacts in 2001 were not as severe as those of the previous year, even though the two floods were very similar.

The policy slogan since then, 'living with the floods', reflects a realisation that ever higher dikes in the Mekong Delta are not the answer to seasonal floods, that fields and forests

Photo: Rami Abdelrahman, SIWI

must store flood water instead, and people must adapt to secure their livelihoods (UNDP Vietnam Human Development Report 2007).

The socio-economy of the province is heavily dependent on a functional rice production resilient to floods and droughts. This in turn is much dependent on a well-maintained canal/dike system and good governance. Investments in the canal system, such as concrete lining, and assessment and adjustment of its governance system would contribute to the resilience of the province. Improving current flood management systems would provide important services both during floods when they help drain excess water, and during drought when they help deliver much needed water to crops in the fields. In the Ha Nam province in the Red River delta, the construction of a canal system made it possible to move from one to two rice yields per year. Currently, the main trunks of the canal system are centrally governed while the smaller branches closer to the fields are governed by local farmers. However, there are reasons to look into the division of responsibilities since the incentive to ensure good governance of this infrastructure is highest with those that benefit most from their proper functioning – the farmers themselves.

In the south of the country, the Mekong Delta floods and droughts are increasing and a higher intensity of rains in the rainy season and intensified dry spells are expected in the future. Rice crops and farmers' livlihoods are vulnerable to these likely impacts. Many mitigation measures are already known and being tried at the farm level (e.g. changing seed varieties and crops, diversifying to non-farm techniques and seasonal migration), community level (e.g. enhancing, protecting common resources such as fish ponds, developing village funds and shared processing facilities) and national level (e.g. infrastructure investments, research and development, strengthened information systems).

One area which needs further development is communication of climate information to farming communities, including warnings for floods and drought. There are no functional climate services and information available to farming communities on climate predictions and potential impacts on agriculture. Development of such a system would improve the resilience of the farming communities. This requires immediate action to improve the chain of information management from data gathering, analysis and communication. It also requires work to ensure that the climate information provided is tailor-made to the end users.

Connecting policy and practice

On the policy level, the government of Vietnam has taken several important steps towards increasing the country's preparedness and resilience to adverse impacts from climate change. The National Target Programme (NTP) to respond to climate change was launched in 2008 is a good example. It has the strategic objective "… to assess climate change impacts on sectors and regions in specific periods and to develop feasible action plans to effectively respond to climate change in the short-term and long-term to ensure sustainable development of Vietnam…" The Prime Minister issued the Decision on December 5, 2011 an approval of the National Strategy on Climate Change (NSCC). This commendable initiative sprung out of the realisation that there is need for better knowledge on all levels regarding climate change impact and how to respond.

Already in 2007 the UNDP Human Development Report for Vietnam highlighted that there is little available knowledge on the potential and economic implications of climate change on Vietnam. The report explains that the concept of climate change, its potential impacts and the need for adaptation are not yet well known in Vietnam beyond a small community of experts and development workers, and some concerned state management agencies. To improve on this requires strengthened communication, and comprehensive research on the possible impacts of climate change on the Vietnamese economy and key development goals, particularly poverty reduction.

A partnership between the Vietnam Association for Conservation of Natural and Environment (VACNE), and the Stockholm International Water Institute (SIWI) has been established to try to contribute in connecting the dots between policy and practice, and to search for innovative approaches to enhance access to information in communities to increase their resilience to climate change.

SIWI-VACNE will provide necessary information for targeting climate change adaptation and response in rural areas, especially in the nation's two major food producing regions – the "rice bowls" of Vietnam.

This project will provide a basis for further work to achieve a long-term goal: to improve the resilience of farmers in the Mekong and Red River deltas to sustain food production in a world subject to changes in environment and climate. The most important direct outcome of the project is to connect decision-makers and public officers at community and district levels with local people, business actors, national and international scientists, and in the process improve the sharing of knowledge on the impact of climate change on the environment and water resources. Ultimately it will highlight possible interventions to address these impacts and contribute to more resilient communities.

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Dr. Nguyen Ngoc Sinh
President Vietnam Association for Conservation of Natural and Environment

Water and Energy: **Threats and Opportunities**

Author: Prof. Gustaf Olsson

In a world where growing populations and economies place increasing pressure on scarce resources, our need to understand the linkages between them and their uses maybe greater than ever before. Among these linkages, the one between water and energy has quickly risen to the forefront of international attention as emerging limitations to both adequate water supplies and conventional energy sources are becoming more evident. This book can be considered one milestone in mapping this not yet well explored relationship.

Reviewed by Andreas Lindström
Programme Officer
Knowledge Services, SIWI

Few people are as well positioned as Prof. Gustaf Olsson (Lund University, Sweden) to guide the reader through the vast and often complex world of water and energy linkages, commonly referred to as the water and energy nexus. Through a career spanning decades of experience obtained from work within the scientific community, the private sector and other fields and in many parts of the world, Olsson offers the reader a colourful, fact filled and exciting read reflecting his broad background.

In five key parts and twenty-two chapters the book provides a logical and structured approach to explore the numerous topics that make up the water and energy nexus, and issues that affect or are affected by different circumstances and behaviours related to it. In the first introductory part the reader is provided with a comprehensive background and overview of some of the issues that are explored in more depth in following chapters. The basic principles of the dependencies between water and energy are explained and the reader is also introduced to key concepts such as water scarcity, perceptions of the value of water, poverty connected to water availability, primary energy sources as well as aspects of national and regional conflicts stemming from competition for water and energy assets. This part of the book also provides a first glimpse of the holistic, integrated approaches the author sees as possible ways to address problematic effects of the nexus.

In the second part of the book the reader is provided with many of the drivers affecting the availability of water and energy resources and risk escalating a looming crisis. Climate change is one of these and many examples of impacts that can be traced to a changing climate are put forward. This chapter also describes the possible strategies that can be employed to curb global warming trends. Population growth is another key driver. Olsson points to the fact that not only the sheer number of people inhabiting the earth in the near future will pose a problem, but also the rising prosperity and subsequent consumption levels, not least in growing urban centres, is a considerable challenge regarding sustainable provisions of vital water and energy services needed to enable continued development and growth. Closely tied to the above mentioned issue is food production and supply in what is normally mentioned as the water-food-energy nexus. Olsson points to the massive water and energy requirements tied to agricultural practises and food production and the reader gets a better understanding of the water volumes in food produce that we cannot see easily by explaining concepts such as "virtual water" and "water footprint" – pointing out that "water rich" countries are often net importers of water from water scarce countries. The increasing competition between usages of crops for food vs. feedstock for bio-fuels is explained, presenting some striking facts such as "the amount of corn needed to fill the tank of a regular car could feed one person for an entire year". The massive water requirements for bio-fuel production are explained in detail in later chapters. There are however opportunities in the many challenges posed by different drivers and the author presents many of them spanning interesting suggestions regarding consumer behaviour, innovative resource management as well as the sometimes complicated issue of water pricing.

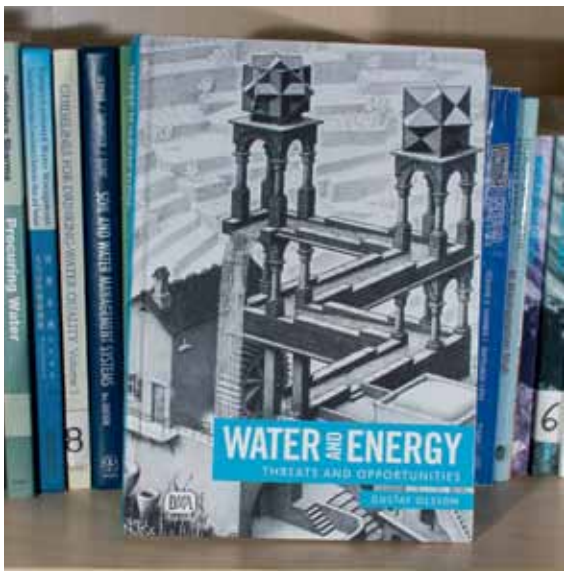

Photo: Peter Tvärberg, SIWI

The two following parts of the book thoroughly dissect the nexus in terms of how water is used for energy production and how energy is required to maintain and operate different water systems. In the "water for energy" part of the book, the reader is provided with a detailed account of how water is used and often consumed in fuel extracting and refining processes when producing fossil and bio-fuels and the water requirements when using different cooling systems for electric power production. The many different aspects of hydropower are also explored. The attractiveness of hydropower in terms of effective power production and the many additional functions of water storage is discussed and compared to its more negative impacts, such as environmental degradation and relatively high water consumption for every MWh produced. The environmental impacts of many of the fuel producing practices is a dimension the author explores in depth and the reader is provided with many case examples that leave lasting impressions. This is also discussed in the "energy for water" part along with the many aspects of energy consumption when moving water, treating wastewater or in desalinisation processes.

At this point the reader might feel slightly disheartened when faced with the many challenges and negative impacts associated with the water and energy nexus. Maybe that is why Olsson saved the part called "opportunities" for last – because there is much hope to turn negative trends around! He sees opportunities in emerging technologies and more efficient use of existing ones when it comes to production and consumption in many sectors. He argues for better education at all levels – to combat "water and energy illiteracy" in order to achieve attitude and behavioural change. Through data gathering and efficient monitoring, it is possible to produce integrated planning that will bring isolated water and energy communities together to generate the solutions capable of bringing a more water and energy wise future.

This book is much more than an account of water and energy links, it is a comprehensive work that educates the reader with essential information on not only water and energy but also global development and many of the issues that affects it. By doing so, it proves how water and energy are closely tied to our current and future development. The ease with which the author moves from describing overarching concepts down to the smallest details of various system components makes this book an attractive read for those new to the subjects as well as the very advanced.

Olsson conveys strong opinions which provoke the reader to activate their own thinking and assess his or her own relationship to issues explored in the book – something that is clearly his intention.

A lasting impression from the book can be summed up in the following phrase:

"Sustainable water and energy use is essential to our survival and development and to achieve this we need to act now and act smart, because saving energy equals saving water".

NEWS FROM COLLABORATORS

AMCOW/GWP's Water, Climate and Development Programme publishes new material

In an effort to address the twin challenges of water security and climate change, the African Ministers Council on Water has produced various publications on Water Security and Climate Resilient Development in English, French and Portuguese. The material has been developed as part of the Water, Climate and Development Programme (WACDEP), an AMCOW programme implemented by Global Water Partnership (GWP). It has evolved through a strong collaborative relationship between AMCOW and its Technical Advisory Committee, GWP and the Climate Development Knowledge Network (CDKN) who funded the work.

► **www.gwp.org/en/WACDEP/RESOURCES/WACDEP-Publications**

FAO launches a report on coping with water scarcity

As part of its project "Coping with Water Scarcity – The role of agriculture", FAO has recently developed a framework programme intended to serve as a basis for the development of effective food security policies in conditions of water scarcity. Rather than 'recipes', the framework highlights a series of principles on the basis of which strategies must be developed, including the need to base decisions on a fair accounting of water resources and uses, and the necessity to look for much better integration between food security and water policies. It stresses the need for a comprehensive approach that considers the whole range of options, from supply enhancement to demand management, all the way to substitution and waste management in the food chain, and suggests the use of a food supply cost curve in developing food security strategies. The report was launched at the World Water Week in Stockholm.

► **www.fao.org/nr/Water**

President Tsakhiagiin Elbegdorj of Mongolia visits GWP in Stockholm

Sending a clear signal of his commitment to the role of water in human development, President Tsakhiagiin Elbegdorj of Mongolia visited the Global Water Partnership (GWP) Global Secretariat on 10 October 2012, as part of his state visit to Sweden. The President, who has taken a lead role in Mongolia on water and environmental issues, identified closely with GWP's vision for water security. "Your organisation is our organisation", the President said, stressing his country's willingness to cooperate with GWP. As a member of the Water Resources Group, the President emphasised his commitment to the environment, particularly water. President Elbegdorj highlighted the threats facing Mongolia such as the fact that 40 per cent of the country is already desert and that 25 per cent of freshwater lakes and rivers are projected to run dry if nothing is done.

► **www.gwp.org**

Online UN Documentation Centre on Water and Sanitation launched

The United Nations Office to support the International Decade 'Water for Life' 2005-2015/UN-Water Decade Programme on Advocacy and Communication (UNW-DPAC) have launched the online UN Documentation Centre on Water and Sanitation (UNDCWS). The centre has been developed by UNW-DPAC with the support of the Municipality of Zaragoza in Spain and provides access to valuable water and sanitation related publications produced by the United Nations system. This virtual library is available in English www.unwaterlibrary.org and in Spanish www.bibliotecaonuagua.org but publications are accessible in different languages when available (including the six official UN languages: Arabic, Chinese, English, French, Russian and Spanish).

► www.unwaterlibrary.org

www.worldwaterweek.org

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