

Issue 02 / 2010

THE waterleader

Voices from the Water Week

Asian Water Governance Index

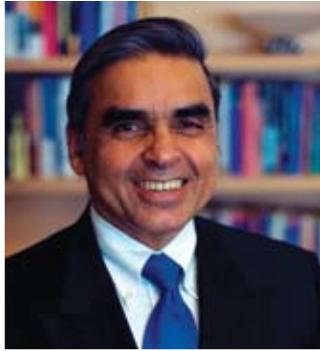
PPPs for Urban Water

Regulatory Independence
for Metro Manila



Message from the Dean

The Institute of Water Policy (IWP) was launched at the Lee Kuan Yew School of Public Policy (LKYSPP), National University of Singapore, in 2008. It has through research, teaching and outreach efforts, diligently pursuing its mission to promote good governance and good management of water resources. This year, IWP once again played a very important role in the organisation of the Singapore International Water Week (SIWW).



SIWW 2010 successfully brought together international water experts to debate and develop solutions for better water management. IWP, in partnership with SIWW helped shape the content of the event's Water Leaders Summit and facilitated the inaugural Asia Pacific Water Forum Ministerial Roundtable. IWP also worked with PUB, Singapore's national water agency and its strategic partner, to publish the post-SIWW Blue Paper. Finally, as part of the SIWW, IWP hosted the first-ever BBC World Debate on the subject of water; an expert discussion on critical water issues that was broadcast to millions of people across the world.

In June this year IWP published its debut book, *Index of Drinking Water Adequacy (IDWA)*, which provides an assessment of the drinking water situation in different countries. In addition, it also launched *Developing Living Cities: from Analysis to Action*, a joint publication with NUS Global Asia Institute and the Centre for Livable Cities.

As water adequacy continues to be one of the most pressing issues facing humanity in the 21st century, good public policies and good governance hold the key to sustainable management of this most precious resource. In this regard, the LKYSPP is confident that the IWP will continue to make research and teaching contributions on this important topic as well as build a strong global water policy network. We hope that the work done at IWP will make a positive difference to the lives of people who are deprived of the basic right to have access to clean drinking water and sanitation.

Kishore Mahbubani

Dean

Lee Kuan Yew School of Public Policy

Message from the Chief Executive, PUB

It gives me great pleasure to share my thoughts in this second issue of *The Water Leader*, a joint publication of the Institute of Water Policy (IWP), and the Singapore International Water Week (SIWW).



A global platform for water solutions, SIWW held together with the World Cities Summit in June this year, brought more than 14,000 policymakers, industry leaders and experts from 112 countries/regions to address challenges, showcase technologies, discover opportunities and celebrate achievements. Since the time that Lee Kuan Yew School of Public Policy launched the Institute of Water Policy (IWP) alongside the inaugural Water Week in 2008, IWP has been playing a vital role in nurturing water policy makers and leaders, and providing the thought leadership for SIWW. IWP is also a strategic partner of SIWW and has played a major role in the content development of the Water Leaders Summit, a key pillar event of the Water Week.

Moving forward, major global trends such as urbanisation and climate change will have a significant impact on our natural resources, in particular, water. This presents both challenges, as well as a myriad of opportunities for solutions aimed at creating a balance between economic growth and sustainable development.

SIWW, in conjunction with IWP, will present a unique platform for the exchange and exploration of sustainable water solutions. The Water Leaders Summit, in particular, will discuss key water governance and management solutions to overcome some of the imminent water challenges. It is in this spirit that the next Singapore International Water Week in 2011, themed "Sustainable Water Solutions for a Changing Urban Environment" will address the latest and most pertinent water issues confronting our rapidly changing world.

We look forward to closer collaboration with the IWP and I hope that this newsletter will be an inspiration to all current and future water leaders.

Khoo Teng Chye

Chief Executive

PUB, the National Water Agency

About the Institute of Water Policy

The Institute of Water Policy was launched on 24th June 2008 by the Prime Minister of Singapore at the inaugural Singapore International Water Week. It is established by the Lee Kuan Yew School of Public Policy to undertake research on water policies and governance within Singapore and the region, as part of the School's mission to raise standard of governance and improve lives of people in the region.

The Institute aims to be a leading research centre in Asia for effective water policies, to build and strengthen a water policy research network in the region and to increase the profile of water issues in national policy agenda.

IWP is overseen by an International Advisory Board comprising internationally renowned water sector experts, chaired by Mr. Tan Gee Paw, PUB Chairman. It is also a Centre of Excellence for Water Governance under the Asia Pacific Water Forum's network of Regional Water Knowledge Hubs.

Please visit www.lkyspp.nus.edu.sg/iwp for more information. **TWL**



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THE waterleader

An IWP-SIWW Initiative

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Singapore International Water Week 2010 – A Round-Up

SIWW 2010 was one of the largest and most successful of recent water conventions with participation by local and international industry leaders, policymakers, and water professionals. In the spotlight were policies, investments, and innovative solutions to address critical water issues throughout the region.

By Loit Batac

02



Focused on the theme “Sustainable Cities – Clean & Affordable Water” and held in conjunction with the World Cities Summit, SIWW 2010 underscored the importance of adequate, clean, and affordable water for domestic and industrial use. It comprised of five flagship programmes which included the prestigious Lee Kuan Yew Water Prize, Water Leaders Summit, Water Convention, Water Expo, and Business Forums, providing participants with opportunities to engage in dialogues on key issues relevant to sustainable water solutions, policies, governance, finance, and research.

Water Leaders Summit

As a solutions-oriented dialogue, the annual Water Leaders Summit convened high-level government officials, industry leaders, heads of international organisations, and renowned academics and practitioners to discuss pressing issues pertaining to global water governance, technology, and business. This year’s meeting had three roundtable discussions on key themes of high importance.

Chaired by Professor Michael Rouse, the First Roundtable Discussion on *Good Governance for Water Sustainability* was

led by a distinguished panel of experts composed of Erna Witoelar, Vice Chair, Governing Council, Asia Pacific Water Forum; Professor Theo Toonen, Dean of the Faculty of Technology, Policy, Governance & Management at Delft University of Technology; Montazar Muhalhal of the National Water Company, Saudi Arabia; Philip Fletcher, Chairman of the Office of Water Services of the Government of United Kingdom; and Umesh Narayan Panjiar, Union Secretary of the Ministry of Water Resources in India.

The dialogue highlighted the importance of sustainable delivery of water and sanitation services, holistic planning and effective coordination across government agencies, political will at all levels of government, and participatory approaches to policy formulation and implementation. Furthermore, clarity and transparency of the roles of different organisations, of procedures and legal provisions, and strategies for demand and supply management were called for.

Meanwhile, the Second Roundtable Discussions chaired by Lord Ronald Oxburgh, Member, House of Lords of the United Kingdom focused on

Innovative Technology: Clean Solutions for Green Growth. Experts in the panel include Leon Awerbuch, President of Leading Edge Technologies Limited and Programme Chairman of the International Desalination Association; Gretchen McClain, Senior Vice President ITT Corporation and President of ITT Fluid and Motion Control; Charles Gordon, President and CEO of Siemens Water Technologies; Kenji Matsumoto, Director-Board Member and Senior Corporate Vice President, Nitto Denko Corporation; and Andrew Benedek, Chairman and CEO of Benedek, Inc.

Key issues raised in the discussions centered on the increasing importance of the water-energy nexus and the immense opportunity in developing technological solutions that encourage the efficient use of scarce natural resources. The role of government and development agencies was also highlighted in facilitating private sector participation in providing clean and affordable water through innovations that are cost-effective, energy-efficient, and environmentally safe. Moreover, repackaging technologies was identified to be increasingly essential to suit market needs in developing economies.

However, encouraging customers to look at the lifecycle cost rather than just the upfront capital cost remains the key challenge in developing technologies that bring value to the lives of many.

Finally, the Third Roundtable Discussion on *Sound Financing to Ensure Affordable and Sustainable Infrastructure*, stressed that financial sustainability of water utilities is central to encouraging private sector participation in the delivery of efficient and reliable water services at affordable cost-covering price. The discussion was chaired by Christopher Gasson, Publisher of the *Global Water Intelligence* and the expert panel composed of Luis Juan Oreta, Chief Finance Office of Manila Water; Steve Bolze, President of GE Power & Water; Bindu Lohani, Vice President of the Asian Development Bank; Olivia Lum, Group CEO and President of Hyflux; and Hiroshi Watanabe, President and CEO of the Japan Bank for International Cooperation.

To achieve financial sustainability, water utilities, including those managed by public sector agencies, should be entitled to make profitable returns on investments. Clarified several times by Summit Chairperson Professor Tommy Koh during the dialogue was the misconception that the poor are not willing to pay for water, whereas the reality on the ground shows that low income groups are actually paying more. For instance, water tariffs imposed by Manila Water remain below 3% of average household income, which is ten times cheaper than what is charged by water vendors. Furthermore, the role of multilateral agencies was highlighted as a viable source of financing for water and sewerage projects.

In conclusion of the roundtable discussions, Minister for the Environment and Water Resources, Yaacob Ibrahim stressed the importance of rethinking current perceptions on the key challenges in terms of governance, technology, and financing. He emphasised the need for strong leadership and clear vision in achieving water sustainability and security.

Water Convention

The Water Convention proved to be one of the leading global platforms for dialogue for industry experts, regulators, academics to network and share ideas on emerging trends, challenges and solutions in the water sector in East Asia, Asia-Pacific, South Asia and the Middle East. More than 1,000 delegates from diverse areas of specialisation participated this year, showcasing 160 oral posters and 80 poster presentations. Exploring practical application of policy and technology, the 2010 Water Convention focused on a range of themes covering *Solutions for Water System Efficiency and Effectiveness*, *Planning for Sustainable Water Solutions*, *Water Quality and Health*, and *Governance and Finance*.

Water Expo

As a major trade show in the region, the 2010 Water Expo featured 26 new products and innovative technological applications addressing current water challenges the world faces today. More than 510 participating trade exhibitors from over 39 countries occupied as much as 15,000 m² of exhibition space at the Suntec Singapore International Convention & Exhibition Centre. To facilitate business engagement the online portal *Connect@SIWW* was launched, allowing trade attendees and exhibitors to network with the water community and create cross-industry business opportunities.

This year, the total value of announcements for projects awarded, tenders, investments into Singapore and R&D MOUs exceeded S\$2.8 billion, up by 27% from last year's S\$2.2 billion. Home-grown companies such as Moya Dayen Limited and Sembcorp Industries bagged large business deals, while several collaborative agreements were forged with Singapore's PUB during the event.

These included the S\$ 69 million business deal clinched by Moya Dayen Limited with Phnom Penh Water Supply Authority in Cambodia for supply, delivery, and construction work for Phase I of the Niroth Water Production Facilities Project, one of the largest water treatment facilities in the city. SembCorp also signed a Memorandum of Understanding to expand the seawater desalination capacity in the United Arab Emirates. Meanwhile, PUB announced its joint research and technology testing programmes on real time sensor technology with Optiqua Technologies, a subsidiary of Dutch optical sensor company Optisense, and with ITT Corporation on energy-efficient water and wastewater treatment solutions.

Business Forums

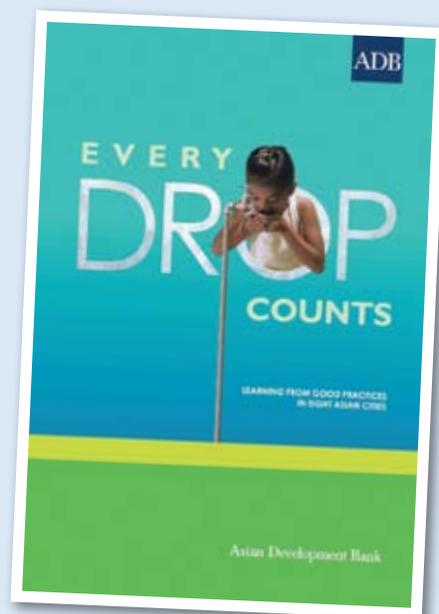
The Business Forums at SIWW 2010 provided a dynamic platform for industry leaders to network and forge partnerships that present lucrative opportunities across eight markets that include the Americas, Australia, China, Europe, India, Japan, Middle-East & North Africa and Southeast Asia. Attracting more than 1,700 delegates from all over the world, more than 100 government ministers and chief executives from the private sector and multilateral agencies participated as speakers of the various forums. **TWL**

Launch of 'Every Drop Counts' at SIWW 2010

In keeping with the mission to address challenges in the provision of safe and reliable water and sanitation services, the Institute of Water Policy and the Asian Development Bank launched "Every Drop Counts: Learning from Good Practices in Eight Asian Cities," featuring eight case studies that highlight good water policies and sustainable water management that yielded impressive outcomes in urban centres in developing Asia.

The studies explored practices in Bangkok, Thailand; Colombo, Sri Lanka; Jamshedpur, India; Kuala Lumpur, Malaysia; Manila, Philippines; Phnom Penh, Cambodia; Shenzhen, People's Republic of China; and Singapore by assessing constraints and corresponding solutions these cities employed in addressing the most pressing water issues.

Some of the challenges identified in the report include the inadequate coverage of the urban population, rapid urbanisation, interrupted supplies, high non-revenue water, poor quality of water, lack of asset management, and low tariffs that hamper connections for the poor. The report may be accessed online at <http://www.adb.org/documents/reports/every-drop-counts/>. **TWL**



Voices

from the Water Leaders Summit

The Water Leader caught up with some of the luminaries of the water sector during the Water Leaders Summit. Here are some insights.

04



■ * Anna Tibaijuka, Executive Director of UN-HABITAT

TWL: Do you think it is important to work closely with the private sector?

Anna Tibaijuka: In many cities, the water utilities are being privatised. Urbanisation means that water has become an engineering activity. Cities are becoming too big for people to manage their water themselves. Rainwater harvesting is fine for small rural communities but for big cities, the scope is very little. So public-private partnerships are very important.

We have been partnering with Coca-Cola. Companies like Coca-Cola which can be efficient and also recognise their social responsibility will have a big impact. So the private sector is absolutely important.

Perceptions are changing. The private sector has a network that we don't have. We can't deny that. So, why not we take advantage? Why not turn things around? I must say that talking to the CEO of Coca-Cola, I found him very progressive. It is a business of course, but even government needs businesses to get taxation. So let us have a positive attitude and see what we can do with them.

Of course the private sector must be regulated. If you don't regulate, they will take advantage. That's why we are in governance. If the government has no idea what to do, how can the private sector play a positive role?

We are keen to improve the capacity of the governments to regulate utilities; after all they are natural monopolies.

We have also seen utilities supplying services very well. Privatisation is not a panacea. We have to take it on a case by case basis and it depends on good regulation. There has to be a public oversight.

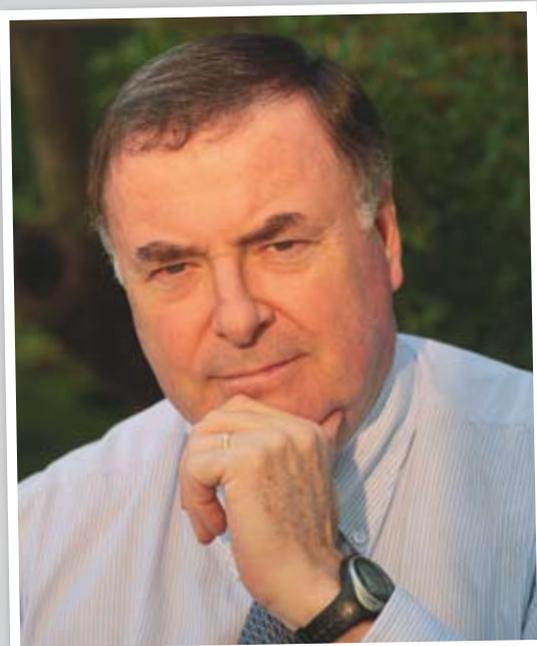
We also ensure that the local private sector plays an effective role. The small scale independent vendors are also private sector and can play an important role in adding capacity. It's not about Veolia coming into a village and providing water. It may be a local engineering firm.

TWL: Do you think there is a tendency for governments to focus excessively on centralised methods of delivery of water and sanitation?

Anna Tibaijuka: There is merit in both centralisation and decentralisation depending on local circumstances. Imagine a city with five million people living in 700 square kilometres like Singapore. If you do not have proper sanitation, you are going to pollute water sources. So we must look at the reality of the environment. There are some constraints imposed by the size of cities. Imagine 1,800 apartments; if you don't have a proper source, and sufficient pressure, there will be problems. We should resist from idealising the situation. It really depends on the circumstances, on the size of settlements, on urbanisation itself. If you have huge conglomerates, you limit the prospect of small-scale provision of services. This applies to energy grid also. The scope of rainwater harvesting is also limited in big cities.

That's why we are recommending policies such that secondary towns are not allowed to become such huge metropolises. There should be a decentralisation of settlements.

* Anna Tibaijuka will assume a new role as Chair of the Water Supply and Sanitation Collaborative Council from March 2011.



■ Loïc Fauchon, President, World Water Council

TWL: Given that political will is the foremost requirement for improving water and sanitation, why are the World Water Fora not able to bring together the most important heads of state and ministers to discuss the imperatives of water?

Loïc Fauchon: For the first time in the World Water Forum's history, a Heads of State meeting was organized during the 5th World Water Forum in Istanbul in March 2009. Heads of State from eleven countries met and launched a broad-based Appeal for Action that seeks water security and international solidarity through more strategic use of water. 169 country delegations also took part in the Ministerial Conference, including 85 Ministers.

We hope that the 6th World Water Forum to be held in Marseille in March 2012 will be an opportunity for bringing together more Heads of States and Ministers to discuss the imperatives of water. We want the next Forum to be a political milestone.

TWL: Can the activities of the World Water Council (WWC) have any impact on the provincial/local water authorities of the world, considering they are the ones who are actually the decision-makers?

Loïc Fauchon: The activities of the WWC do have an impact on local water authorities. For instance, our Council promotes the Istanbul Water Consensus which is a new compact that emerged from the 5th World Water Forum in 2009. It encourages local authorities from around the world to improve water and sanitation delivery and to address urgent challenges such as wastewater management and climate adaptation. To date, more than 650 cities from around the world have signed the IWC and will report back on the progress made at the 6th World Water Forum to be held in Marseille, France in 2012.



■ Imad Makhzoumi (right), President and Leon Awerbuch (left), Director of International Desalination Association

TWL: Are you happy with the progress made in reducing energy usage in the desalination process?

Imad Makhzoumi: Yes, over the years, there are different kinds of technologies for making desalinated water less energy-intensive. There is the reverse osmosis or the RO process. There is Multi-Effect Distillation (MED) and the Multi-Stage Flash (MSF), and they are all having their own merits. For example, MED is less energy-hungry as opposed to MSF and RO is the least.

So, yes we are happy. Every country has its own requirements. For example when you talk about large scale of desalination plant, then you can talk about MSF. That's what you need to produce the volume of millions of gallons of water. We are quite pleased with the progress.

Leon Awerbuch: It is dramatically improving. One of the things that the IDA is concerned about is the amount of energy used. It is dramatically improving this time. We brought ideas and novel technologies like energy recovering devices which improved the energy recovery from 75% to 98%. This is for reverse osmosis.

Our concern is to minimize energy consumption, not that it is extremely high even now. For example today, desalination is using about 3.5 to 4 kWh/m³ per thousand litres. So it's really like switching on a 100W bulb and producing 6 gallons of water per hour. That's the level of energy we are consuming. But in term of processes, we have reduced the energy by 50% and soon we'll reduce the energy by 100% compared to the traditional way. So the association is particularly trying to minimise the use of fossil energy but also to bring in alternative energy like solar.



TWL: Could you tell us about your role as Commissioner of the Delta Programme?

Wim Kuijken: In the Netherlands we have had some serious problems with water. We had a big flood in 1953 and after that we built our delta works to secure the country from the sea. Now we know that climate is changing, the sea levels are rising, our soil is subsiding. We want to prepare our country for this century – for the future. We do not want to wait for a new disaster to happen and then start a new delta works.

Also, not to forget that apart from flooding, we are having drier summers. In the Netherlands, we normally have a dominant western wind from the sea. But in the future our scenarios show it can be more and more an eastern wind. Then we will have a drier situation, especially in the part where we have invested so much money in the west. Our western part is our economic centre. That part is below sea level. So in the future we have to protect our cities from the sea and rivers and also

take care there is enough freshwater to drink.

The Government of Netherlands made a Delta Act. They started a Delta Programme. The legislation is now in parliament. It just started in February this year. I am responsible for this programme. All the parties in Netherlands, ministers, municipalities, provinces, water boards, advocacy groups everyone has joined on the road to the safe country in the future. I have to make big decisions in the coming years.

TWL: So the post of Government Commissioner has just been created?

Wim Kuijken: Yes, it has been recently created. I am the first Government Commissioner and I will hold this post for seven years. Our government decided to make it non-political. This is an innovative way of organising our country on this specific item of water management. And by doing this we can try to decide on measures that are also attractive in the way of spatial planning and natural values.

For example, when you have rivers with high discharges, you can do two things – build higher dikes along the river or you can give widen up the river by building the dikes a little behind. Then you give room to the river and some times of the year or decade, the river will take that space. You can even build houses there but you must keep in mind that water will come up to a certain level so you can have construction which takes care of that. All these things we can do before a disaster and make it safe.

Another example – at the coast line, you can build high dikes or you can add sand to the coast line. We add large amounts of sand to our coast annually, to protect our coastline. In the future, we will increase that amount, so the sandy part of our coast will grow in unison with the rising sea level. This also gives a new area for recreation since our beaches are enlarged.

There are many parties all with their own interests – like ministers, municipalities, etc. I have the responsibility to bind everyone onto this goal and reach towards it. **TWL**



■ Wim Kuijken, Government Commissioner for the Delta Programme, The Netherlands

Driving Excellence in Water Utilities



The third Executive Programme on Leadership in Water Governance held from 21-27 June, 2010 brought together twelve policymakers and leaders from local governments and national water utilities in Oman, India, China, Philippines, Sri Lanka and Singapore. The programme was organised by IWP on behalf of the Lee Kuan Yew School of Public Policy and supported by Singapore's PUB as well as Asian Development Bank.

As part of the programme, participants visited the city-state's water facilities to better appreciate the combination of governance and technological innovations that has brought international acclaim to Singapore's water management. Senior executives from PUB, Chan Yoon Kum, Assistant Chief Executive* and Harry Seah, Director, Technology, Water Quality Office shared the experiences and journey of Singapore in becoming a water leader.

During the week-long workshop, participants were exposed to varied

examples of public policies, regulation, financing and service-delivery in the water sector. The elements of a successful public-private partnership and lessons learned from both successful and failed projects were presented in a highly interactive classroom style.

The lead faculty who executed the programme were Professors Wu Xun and Seetharam Kallidaikurichi, and they were ably assisted by IWP Professors Eduardo Araral and Dodo Thampapillai, International Associate of IWP Ashwin Mahalingam, Distinguished Visiting Professor Asit Biswas and Asian Development Bank expert Anand Chiplunkar.

Dr. Seetharam called for corporatisation of utilities in order to ensure better accountability. Citing examples from Singapore, Cambodia and Manila, he made it clear that there were many routes to achieve excellence but creating an empowered and highly motivated staff was central to the cause.

Prof. Biswas stressed on the need to build a community of good practices in water management and document it meticulously; an aspect which has been largely neglected. "No one knows which are the ten best utilities in the world," he pointed out. "Unlike academicians who produce papers, water operators and practitioners – even the well-performing ones do not record their work, their challenges or how they solve their problems," he said.

A rich kaleidoscope of project experiences were presented to emphasise that different circumstances necessitate tailored solutions; a project design that works in Singapore may not work in Manila or Muscat while one that worked in an Indian state might have to be substantially tweaked for it to work in another Indian state.

During an interactive role-playing session, participants took on the roles of utilities, government departments, financial organisations and community leaders in order to solve a localised water supply problem. The roles chosen for each participant in the game were deliberately kept different from their real-life roles. In the process of role-play, the players came to understand the motivations and constraints of different water-related organisations.

Participants worked enthusiastically to complete and present their assignments before an expert panel. Most of them mentioned that the workshop was highly stimulating and practical in approach.

Following the completion of the Executive Programme, a few of the participants stayed back to attend the Singapore International Water Week 2010. **TWL**



* With effect from 1 July, 2010, Chan Yoon Kum is the Deputy Chief Executive of PUB.

The BBC World Debate – Are We Running Out of Water?

The first-ever BBC World Debate on water was one of the highlights of the Singapore International Water Week 2010. Organised by the Institute of Water Policy, the TV debate was moderated by well-known BBC presenter Nic Gowing who drew attention to pressing water issues around the world and generated a lively discussion. Here we present some excerpts.



■ **Gidon Bromberg** of Friends of the Earth, Middle East



■ **Gerard Payen**, President of AQUAFED, the international federation of private water operators



■ **Professor Asit Biswas** from the Third World Centre for Water Management



■ **Erna Witoelar**, former Indonesian minister for human settlements



■ **Tan Gee Paw**, chairman of PUB, Singapore's national water agency

Q Question: Statistics suggest that by 2020 water supplies will only satisfy 60 per cent of global demand. Are we running out of water?

Erna Witoelar: Yes...but it is also because of a lot of mismanagement, misuse and mistreatment of the water...

Gerard Payen: No. I disagree. There's plenty of water on this planet. The real issue is management of water. The time of easy water is over.

Asit Biswas: The statement is absolute nonsense. We are not running out of water. There is plenty of water. The problem is we have mismanaged water in the past, we are continuing to mismanage water, and if we continue this way, we will have a problem.

Gidon Bromberg: Absolutely not. It's an equity issue. Some people have a great deal of water, while others have very little.

A highly debated issue in water management today, this is a question in which its answer can affect policy, laws and people's behaviour. If water is actually running out, then there needs to be more effort in finding newer sources and using technology to get more out of water treatment.

On the other hand, if there is adequate supply of water, then more strict and efficient management holds the key to meeting the needs of the growing global population. The two scenarios can have profound impacts on economic, financial and governance considerations as well as social, political and environmental consequences.

Q Question: Water use is said to be growing twice as fast as population. Do you agree?

Tan Gee Paw: When you talk about urban water, if you are able to use the same drop of water repeatedly, it doesn't matter

how much water you consume, because you can always repeat that process again.

There needs to be a mindset shift as people move into cities. A mindset shift from buying water to borrowing water. In other words, water is not to be sold, water is out there to be loaned out to the people. After using they must return it back to the supplier.

Gidon Bromberg: We should be reducing our water consumption...but by approaching the solution through these expensive technologies such as desalination, mostly led by the private sector, we are actually creating a disincentive to conserve.

Another question, another dilemma. For advocates of technology, the pace of technological development, especially in developed countries, can promote a sense of complacency on the need to conserve water, as newer technologies make it easier for people to get water easily. More importantly, expensive technologies, like desalination and membrane technology, can seldom be afforded by poorer nations.

Question: Is water a human right or commodity?

Gerard Payen: Access to water is a human right. People have to pay something that is affordable.

Erna Witoelar: Human right, yes. But it can have value if it needs processes to make it clean.

Asit Biswas: Whether you call water a human right or not is irrelevant. Yes, people should have access to water but they have to pay for it or somebody has to pay for it.

Tan Gee Paw: Before I talk about water as a human right, I must also talk about man's responsibility to water. In other words, man must always return back to the environment water in its pristine condition. Only then can we talk about water as man's right. And to be able to do so, it costs money to clean up that water. There is a cost that has to be attached to the return of wastewater back to the environment in its cleaned up form. And therefore to be sustainable, water must come at a cost.

A burning issue that has divided academia, bureaucrats and politicians. If water is to be priced to ensure smooth and safe supply, then will the poorest sections of society get access to this precious resource? If the provision for water is made free, then there is the question of who will pay for the supply infrastructure and treatment facilities that help to deliver safe water.

Question: Should water be supplied by the public sector or private sector or a mix?

Gidon Bromberg: We need government leadership...Water is a sustenance for a whole ecosystem. So water cannot be treated like another commodity. By having the private sector lead the management of water resources, we can fail to properly manage those extra services that water provides. In many municipalities, governments have done a very good job, in some cases they have done a poor job. It doesn't mean water should be privatised. Water is a public good. In order to maintain that public interest, the government needs to be involved, the government needs to be accountable. By bringing in the private sector, we lose that accountability, we lose the ability of the public to fully participate and protect the resources.

Erna Witoelar: The main responsibility is still with the government. They can assign the private sector, but they still have to have some sort of control - for example in the pricing, so that it just does not keep increasing the price, and making it less and less affordable.

Asit Biswas: I don't care if it's private sector or public sector. Can they deliver the goods at a reasonable price to the people efficiently? That is the main issue. Instead, for the last 10-15 years, we have been wasting our time and energy on which is better - private sector or public sector? The main question we should be arguing is - how do we make the public sector more efficient, which is going to provide in 20-30 years time, still about 90% of water to the people?

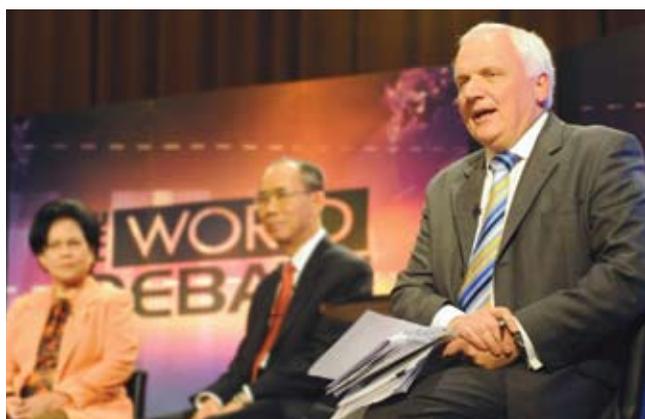
Since all are entitled to access to safe water, the government has a pressing responsibility to ensure that water is supplied to all its citizens. When governments fail due to lack of good governance, lack of resources or infrastructure, the private sector can contribute through innovation, technology and human resource expertise. A balanced relationship between the government and private sector along with strong regulation, can help to better manage water resources and supply water to all.

Question: Can technology and innovation solve water problems?

Asit Biswas: There are better alternatives to technology in most parts of the world. Before going to advanced technology - all over the world - price the water right. The question is not only innovation, and innovation not only comes from the private sector...it comes from research, academia and a whole variety of areas. The question is - are we doing work in the right areas, are we coming out with innovations which can be adopted by the poorer countries? Just innovating new ideas does not necessarily mean that they will be adopted.

Gidon Bromberg: The response of the international financial institutions are quite typically supply side. It's all about increasing the pie rather than managing the resource...We should be promoting sustainable levels of consumption rather than constantly increasing the pie, which in the end just further aggravates issues such as climate change, CO2 emissions.

Technology can be an interesting paradox for the water sector. While bringing in solutions that improve water access and make water safer, it can also increase carbon footprints and have environmental impacts. Over-dependence on technology might result in complacency towards water conservation. **TWL**



An Index to Measure Water Governance in Asia

By Eduardo Araral and David Yu



There is now a growing consensus that water scarcity is a problem that can be overcome with a combination of technology, economics and good governance. Much is known about recent developments in water technology such as water reuse. Much is also known about water economics – especially the importance of valuing water as scarce good and using principles of cost recovery and marginal pricing. However, little is known about water governance, particularly how developing countries in Asia organise their water laws, policies and administration and how these affect the performance of the water sector.

As an initial step to improve our understanding of water governance in Asia, the Institute of Water Policy recently launched the Asia Water Governance

Index (AWGI) with Professor Elinor Ostrom, 2009 Economics Nobel Laureate, as a guest of honor.

The AWGI – which has been selected as one of three finalists in the 2010 Suez Water for All Competition - aims to help water policy makers in Asia learn from one another in terms of water laws, policies and administration. Building on the pioneering work of Professors Saleth and Dinar, the index is based on a survey of 102 water experts from 20 countries in Asia. The survey was undertaken by Dr. Eduardo Araral and David Yu, research associates at the Institute of Water Policy. The Index, as it is, remains a work in progress – a sort of wiki water – a collaborative project among water professionals and scholars in Asia.

In its current form, the Index compares

20 Asia-Pacific countries on three main indicators and 20 sub-indicators of water governance such as water rights, pricing policy and cost recovery, user participation, private sector participation, decentralisation, accountability of water officials, integrated treatment of water resources, linkages between water law and other policies such as agriculture, industry, land use, among others and how water projects are selected.

It is hoped that the AWGI would help focus attention on important issues of water governance, spur further research and discussion, and eventually encourage reform initiatives. **TWL**

Dr. Eduardo Araral and David Yu are members of the AWGI research team at IWP.

Overall Governance Index



Government-Corporate-Society Framework in Water Provision and Distribution

How do the power relations among the government, private sector and people affect water justice?

By Rita Padawangi and Chong Su Li

Although individual water connections were available in the homes of Muara Baru RT 12 in North Jakarta, they have not had clean water flowing through their taps constantly for the past eight years. All around the neighbourhood, water meter boxes were visible, but as the residents opened the boxes, many of them showed very low numbers: one meter showed 20 cubic metres for the past three years; another was 3 cubic metres for the past three years; and one was zero since its installment in 2010. Many of the meters were already submerged in dirty water.

“Just now, the water flowed,” said one woman at her front porch. “But it was so dirty, we couldn’t use it. Now it is off again.”

In another neighbourhood in Muara Baru, brand new connections had just begun in 2009. Despite the low water pressure, 257 households obtained access to piped water by the Global Partnership for Output-Based Aid (GPOBA) program through PALYJA, one of the two private water providers in Jakarta.

Water provision and distribution is often a challenge in the cities of Southeast Asia. There are various narratives of mitigation efforts to water supply issues, especially for the urban poor. In these cases, it is a fact that civil society groups and non-governmental organizations (NGOs) often play important roles in water provision and distribution.

The GPOBA programme, for example, subsidised water connections for selected urban poor areas in Manila and Jakarta, and the process of implementing these connections took time and involvement of NGOs and community groups in mediating between the private sector water provider, the government, and the people as the residents in the communities.

The wide range of participatory roles of the people in urban water provision and distribution could span from collaboration, negotiation, to confrontation. These patterns define the relationship within

the three sectors in water provision: the government or the public sector, the corporation, and the people. Meanwhile, there are also many levels of participation. Since 1969, the concept of the “ladder of citizen participation” (Arnstein 1969) related the various levels of participation to the power structure in the city or in the country, from non-participation to tokenism and to citizen power.

The social and cultural notions of water make it a strategic point to revisit the literature and theories on participatory governance and critically analyse how the power relations among the government, the private sector, and the people affect water justice in the city. Analysing good practices as well as challenging ones would determine the extent to which popular and community participation in the city are sustainable and meaningfully impactful.

Various patterns and practices of public participation in the Government-Corporate-Society Framework in Urban Water Management will offer a baseline to start developing water equality in the city. Starting from cities in Southeast Asia, the work would be faced with existing intricate problems such as the ‘water mafia’ who take advantage of the vulnerability of the poor; not only in Jakarta’s Muara Baru, but also in other urban neighbourhoods across the region. **TWL**

Dr. Rita Padawangi and Chong Su Li are members of the Government-Corporate-Society research team at IWP.



Our Concession is Not Just a Legal Contract but also a Social Contract

Perry Rivera, Group Director, Manila Water shares his views on various aspects of water supply and management with *The Water Leader*.



TWL: Would you agree that the access to water should be regarded as a human right?

PR: Water is a basic human right, and access should ideally be accorded to all. This has been Manila Water's position since the start of its concession, and this is the underlying principle of its sustainability initiatives and corporate social responsibility programmes. With this in mind, Manila Water has shown strong bias for the poor by making available to them the same high level of service it provides its other customer segments, only at more affordable costs.

While it is true that access to potable water is a human right, water should also be recognised as an economic good, taking into account the costs involved in water supply provision. The challenge lies in the manner by which this right is to be implemented, and ultimately, if it is to be financially sustainable. A balance should be attained between improving coverage and service quality, while ensuring the continued viability of the service.

TWL: Do you see a conflict between cost-recovery and affordability of water services?

PR: Cost-recovery and affordability will not be an issue when a company employs a sustainable model for water service delivery, even for marginalised communities. Manila Water has been successful in finding the perfect intersection between its business objectives and its social / environmental goals in its Water for the Poor programme. Through this, Manila Water provides potable and affordable water to beneficiary communities at a tariff rate of only US\$0.20/m³, compared to the previous cost of vended water at more than US\$1.00/m³.

Manila Water continues to fine-tune this model and make water services more sustainable and affordable to low-income communities. In 1997, Manila Water partnered with the World Bank through its Global Partnership for Output-Based Aid to subsidise the connection charge borne by customers. Moreover, Manila Water implemented a scheme to bring down connection charges for low-income communities, wherein two-thirds of the connection charge is subsidised by the company. Thus, the cost of connection markedly decreased from about US\$ 150 to US\$ 46.

Since the launch of the programme about 13 years ago, more than 1.6 million people from poor communities have benefited from 24/7 access to safe drinking water, significant financial savings, as well as better health and sanitation. Similarly, Manila Water has realised the positive impacts of the programme on its bottomline through reduced Non-Revenue Water (NRW), 100% collection efficiency, significant increase in customer base, and strong grassroots linkages – all of which ensure significant recovery on assets invested for this programme.

TWL: How does Manila Water handle defaulters of bills? Are the services cut off?

PR: The Concession Agreement of Manila Water with the Metropolitan Waterworks and Sewerage System (MWSS) provides that customers having arrears 60 days after the due date are disconnected from the system. While Manila Water accordingly adheres to this provision, its Territory Teams proactively engage in customer counseling well before the disconnection date to remind them to pay their bills on time. This enhanced focus has instilled discipline among customers, and has helped them avoid the inconvenience of discontinued water service.

TWL: How has Manila Water evolved over the years in terms of its relationship with the regulatory authorities?

PR: Manila Water has fortunately been successful in establishing a relationship with the MWSS Regulatory Office that is professional and transparent, but at the same time dynamic. Through the years, the organisation has endeavored not only to comply with regulatory and service requirements, but also to establish a working environment which encourages open dialogue and continuous learning. This has enabled Manila Water to consistently attain, and at times, outperform its regulatory commitments, as well as successfully complete two rate rebasing exercises which were both supported by all its stakeholders.

TWL: What is the key to getting the people to be supportive towards a privately managed water supply?

PR: Manila Water has always regarded its concession agreement not merely as a legal contract, but also a social contract. By the very nature of water service provision being a capital-intensive undertaking, it must be essential that resources spent for assets directly translate to good, reliable service.

From Manila Water's experience through the years, it has seen that it is exactly this philosophy that enables the garnering of positive feedback and support from customers. During the last Rate Rebasing Exercise with the MWSS Regulatory Office in 2008, the regulator sought the feedback from various communities regarding Manila Water's past performance, and to give inputs on the proposed service improvement and expansion plans. It was quite heartening to see that in these consultations, customers expressed their full support for our proposed plans, as they had experienced firsthand how water service had improved through Manila Water's efforts.

Moreover, we make it a point to involve the communities in all stages of a project's lifecycle – from conceptualisation and development, implementation, and even after completion.

TWL: To what extent is wastewater being treated by Manila Water? Are the costs being recovered?

PR: As a concessionaire of MWSS, Manila Water is mandated to provide domestic wastewater and sanitation (septage management) services to customers in the East Zone of Metro Manila. The cost for providing this service is recovered through the tariff, largely determined as a percentage of water consumption. We have invested approximately US\$45 million in the construction of wastewater facilities, and in the expansion of wastewater network and services. This has enabled the installation of over 30,000 new sewer connections as of 2010. Moving forward, Manila Water looks to invest an additional US\$1.2 billion in order to attain 100% wastewater coverage of the East Zone by 2018. Through the 'bundled' tariff structure provided for in the concession agreement, Manila Water is able to maintain an 'all-inclusive' tariff which is affordable, but at the same time, allows for significant recovery of investments and the fulfillment of service obligations. **TWL**

Water Governance:

An Evaluation of Alternative Architectures

Since water is becoming a scarce resource, the effectiveness of governance is emerging as an important issue. In May 2010, a research project was launched to study the governance mechanisms for urban water supply and to propose alternative architectures.

By Asanga Gunawansa, Lovleen Bhullar, Priyanka Anand



Pprivate sector participation to finance, develop and manage water infrastructure facilities is increasingly being considered as an attractive option in the water sector. Water was regarded as a public product before the emergence of private finance initiatives (PFI) and public-private partnerships (PPP) in the early 1980s. However, as in the case of other public infrastructure projects, not all PFIs and PPPs in the water sector have been successful.

Whilst project failures have been noted amongst developing countries for several reasons, varying from country specific risks such as political instability to more global risks such as the financial crisis, the project has identified an interesting recent trend of re-municipalisation of water facilities in some developed countries. It is of particular interest that this trend has been noted in countries such as France, which has a long history of private sector participation in water infrastructure projects, and in the Netherlands, a country that had very successful PPPs in the water sector until the year 2005, when a new law was introduced implementing public control of water facilities. Therefore, the project will examine this trend to identify the key reasons that led to this shift and whether it was avoidable.

Private sector engagement in infrastructure facilities has remained a controversial issue in developing countries due to the public fear that commercialisation of public services may adversely impact their rights to public goods previously enjoyed at heavily subsidised rates. Nevertheless, water privatisation has spread over the last decade. However, given the recent trend of re-municipalisation in some countries in the West, an issue that needs consideration is whether developing countries might develop similar doubts

concerning the effectiveness of engaging the private sector in water governance.

Another point that needs consideration is whether the controlled use of private sector engagement with effective public sector control and management, as in the case of Singapore, is a better model for infrastructure. Given their size, the lack of financial power, and technological and management expertise to match Singapore, most developing countries may be unable to employ the Singapore architecture for water governance 'as is'. Thus, the Singapore model may be considered as an alternative model with the caveat that it may require significant adjustments in order to suit local conditions.

The key aim of the research project is to undertake a general study of regional trends in water infrastructure financing, development and management and a detailed study of selected countries, which offer unique case studies of successful and failed water infrastructure projects and to analyse the key factors for success or failure. While it is easy to hypothesise that governance architectures depend on the peculiarities of the country/ region/ city, the research project will collect sufficient data and information to identify appropriate and efficient architectures for different contexts. Thus, the study will be data intensive. It will also comprehensively analyse the existing information. The final intended outcome of the project is to identify feasible water governance and infrastructure development models that also lead to win-win outcomes for all stakeholders. The project also seeks to highlight the factors that influence the success or failure of water governance models in a particular context.

The research is conducted by a team of three researchers with diverse

backgrounds and expertise in the fields of law, economics and policy. It is intended that the research analysis, findings and the final propositions will integrate these three essential elements of good governance.

As a preliminary initiative, a consolidated database of urban water supply projects involving private sector participation in five regions - Africa, Americas, Asia and the Pacific, Europe, and Middle East and North Africa - has been prepared. In addition, a comprehensive list of the available literature on private sector participation in urban water supply in different jurisdictions has also been compiled.

During the first phase, the project will identify key issues based on the literature review and the evaluation of the selected projects and develop a set of indicators relating inter alia to project design and development (internal factors), as well as the applicable legal and policy framework and the prevailing socio-economic and political conditions (external factors).

In addition, a detailed survey questionnaire will be used for Delphi research involving several experts from relevant fields. The purpose of the Delphi research is to gather expert opinions, debate them, and in closed-door work sessions, to reach consensus on alternative architectures for effective and efficient water governance. **TWL**

Dr. Asanga Gunawansa, Lovleen Bhullar and Priyanka Anand are members of the Water Governance-Evaluation of Alternative Architecture research team at IWP.

Pressures

on the Regulatory Process in Metro Manila

By Wu Xun



Priate sector investments in urban water utilities have been declining in recent years. The World Bank's Private Participation in Infrastructure (PPI) database shows that the number of new private sector participation (PSP) projects in urban water utilities in 2009 was the lowest since 1995. More important in the present context, the rate of decline for concessions, accounting for nearly 80% of all PSP projects in urban water utilities from 1990 through 2005, has been much more rapid than rates for other forms of PSP, such as management contracts, leases, and Greenfield projects. An assessment of major regulatory decisions during the ten years after the privatization of water supply and sanitation services in Metro Manila in 1997 demonstrated clearly that the challenges facing regulatory agencies in enforcing the concession contracts have often been grossly underestimated by policy-makers and analysts alike.

A regulatory office (RO) was established as a part of the concession agreements between Metro Manila Water and Sanitation Service (MWSS) and two private concessionaires, and its regulatory role envisioned at the inception of privatization was quite straightforward—to monitor the enforcement of concession agreements—and thus required limited discretionary power, as mechanisms for tariff adjustments were supposedly clearly specified in the contracts. However, the effectiveness of RO has been handicapped by several systematic flaws from the very beginning. First, institutional arrangements, along with rules and guidelines for contract negotiations, were not specified, which resulted in confusion in regulatory responsibilities, inconsistency in regulatory decisions, and opportunistic behaviors by the concessionaires. Second, the RO's regulatory independence was not structured carefully in light of the political environment in which the regulatory system was situated. Rushed by the need to complete the privatization process in one year, framers of the regulatory system made compromises that deprived the RO of statutory independence and crippled the ability of the regulatory system to protect consumer interests against the

potential abuse of political and corporate power. Third, the complexities of shifting regulatory roles over time were not given sufficient attention, which resulted in large gaps between the RO's regulatory capacity and its increased regulatory discretion after the first rate rebasing.

Against the backdrop of these systematic flaws in the design of the regulatory system, the RO's overall effectiveness as a guardian of the concession agreements in the initial years after water privatization was respectable. The case against Manila Water regarding determination of the appropriate discount rate (ADR) demonstrated the RO's strong commitment to protecting the integrity of the concession contracts. The collapse of Maynilad, cited by opponents as evidence of the failure of water privatization in Metro Manila, can in rebuttal be interpreted as a success for the RO in weeding an inefficient operator from the system. The substantial disallowances handed down to the concessionaires in the first rate rebasing exercise demonstrated the RO's strong will and ability to hold concessionaires accountable for the commitments made in their original bids.

In comparison, RO's performance in recent years points to an urgent need to reexamine its regulatory mechanisms and capacities as the regulatory system has tacitly shifted toward discretionary regulation. Although the RO and MWSS have proclaimed the second rate rebasing exercise to be a general success, the regulatory mechanisms employed may entail high risks of regulatory capture. The second rate rebasing's reliance on a system of key performance indicators (KPIs) and business efficiency measure (BEMs) as the dominant regulatory mechanism, along with the RO's failure to apply intensive scrutiny to the target KPIs and BEMs proposed by the concessionaires, raises concerns about the agency's effectiveness

in exerting pressures on concessionaires to improve efficiency by harnessing the potential of discretionary regulation.

A recent decision to extend concession contracts without a rebidding process further demonstrated the shortcomings in the design of the regulatory system regarding protection of long-term public interests from opportunistic behaviors on the part of politicians and concessionaires. Holding the public hostage in their fear of rate increases, the concessionaires and political forces then in power were able to work together to advance their respective agendas at long-term expense to the public in an area in which political risk of interference might be low due to its highly technical nature. The RO's regulatory expertise could have played a more decisive role in averting such an outcome had the agency been endowed with more regulatory independence.

The predicaments facing the RO in Metro Manila are not unique to regulatory agencies tasked with regulating privatized water utilities under concession agreements in other countries. Our examination of these failures points to two intrinsic conflicts in the regulation of privatized water utilities under concession agreements. First, although concession agreements constrain the discretionary power of regulatory agencies, contract incompleteness, widespread and unavoidable in the water sector, calls for more extensive use of discretionary power. Second, although contract renegotiations may undermine the efficiency gains achieved through competitive bidding processes, the economic costs and political risks of terminating concession contracts can be prohibitively high. The ability of regulatory systems to navigate these conflicts plays a central role in determining the success or failure of concessions in urban water utilities. **TWL**

This is an excerpt from "Regulatory Independence and Contract Incompleteness: Assessing Regulatory Effectiveness in Water Privatization in Metro Manila" by Wu Xun, Loit Batac and Nepomuceno Malaluan, in *Infrastructure Regulation: What Works, Why and How do we Know it?* by Eduardo Araral, Daryl Jarvis, M Ramesh, and Wu Xun (eds). Forthcoming by World Scientific.

APWF Takes on Water Security Challenges

Out of collective concern for action on water security, ministers from the Asia-Pacific region founded the Asia-Pacific Water Forum (APWF) in 2006.

The APWF's objectives are: (i) to provide the Asia-Pacific region with a common platform in articulating the region's strategies and solving water problems, including meeting the necessary investments; and (ii) to showcase leadership in decision-making, excellence in practice and innovation, and results that have had a substantial impact at the grassroots level.

A driving ambition of APWF has been to ensure that water policy, reform, investment and performance are high on the minds of the region's leaders. This led to the hosting of the 1st Asia-Pacific Water Summit in Beppu, Japan in December 2007 – a path-breaking event which highlighted the region's water security needs and served as a rallying point for focussing action on water.

The diagnosis of the region's water security challenges and their prescriptions were encapsulated in the APWF 2007 Policy Brief, issued at Beppu. The points made then still merit urgent attention:

- Water problems of developing countries are manageable. However, to formulate and implement solutions in a timely and cost-effective manner, it will require significant additional investment, strong political will, and appropriate capacity development.
- The principal challenges are not technological, but rather the soft issues of governance, financing and institutional capacity.
- A regional investment of just US\$8 billion a year would ensure that the Asia-Pacific meets the MDG Target on water and sanitation and continues to expand coverage beyond 2015, if it is targeted towards basic systems that serve the needs of the currently unserved.
- Additional investments are required for agricultural productivity, ecosystems, climate change adaptation, and capacity

development, which would go a long way towards meeting the objectives of development, poverty reduction and economic growth in the region.

- Reaching these goals is not a matter of possibility but a matter of will.

As one of APWF's major initiatives, a task of the APWF Steering Group on Water and Climate Change is to identify the incremental negative impacts of climate change, especially floods and droughts, in the Asia-Pacific region. Another task is to raise awareness about combining both structural and non-structural measures in the early stages of infrastructure development. To this end, scientists and practitioners are working together.

Currently, the Steering Group is developing guidelines for climate change adaptation. These guidelines are expected to be adopted as the standards for the Asia-Pacific region by regional governments and various development funding agencies, including the Asian Development Bank (ADB). **TWL**



Fast pace of urban development in Singapore resulted in continuously decreasing greenery, especially during the 1980s. In an essay published in *Singapore Soil: A Completely Different Organization of Space* in 2000, John Phillips indicated that the development pace in the 1980s reached 800 ha per annum for industrial, residential, and commercial functions, resulting in deforestation and tree loss of 44,000 per year. Koh Kheng Lian in 2003 wrote that Singapore adopted the "Garden City" approach in 1968 to integrate environment and development, on the assumption that a green city would be conducive for the physical and mental well-being of the people. Nevertheless, Philips wrote, the 'greening up' programme that imported small sums of trees from all over the world to be grown in Singapore, was admittedly 'a sophisticated cosmetic touch designed to make an increasingly urbanised society feel a bit more comfortable'.

Furthermore, Philips wrote, public spaces in Singapore's post-independent development were built as a negation of the natural

Singapore's ABC of Water

By Rita Padawangi, Lim Weida, Joost Buurman

environment. Shopping centres, for which the 'shopping paradise' island is famous for in the tourism industry, dominated the public landscapes. These immense, air-conditioned buildings occupy prime property spaces in the city, transport nodes like the train station, and housing estates. Forests and plantations were cleared to give way to tree-lined boulevards and massive developments. Although several scholars such as Clive Briffett and Richard Corlett in the same edited volume have suggested on integrating natural habitats with accessible public spaces, soaring property prices have paved ways for developing the built environment of bricks and mortar.

With water being an essential resource, PUB's approach in the past was to protect water resources as much as possible, making lakes, reservoirs and waterways difficult to access for the public. However, with the closing of the water loop and the development of a diversified portfolio of water resources, known as the Four National Taps (local catchment water, imported water, reclaimed water and desalination) the approach towards protecting water resources has shifted from keeping people away from water to engaging the public in keeping the water

clean and water conservation. Water is pervasive in Singapore's environment and it should be an integrated part of the people's living environment. Hence the ABC Waters programme has been designed to bring people closer to the water.

The Institute of Water Policy is undertaking an evaluation study of several ABC Waters sites with the support of PUB Singapore. Featuring examinations of project design process and design elements as well as comparative analysis between socio-economic conditions before and after the development of selected ABC Waters sites, the study will measure how successful the ABC Waters programme has been in bringing people "closer" to water. At the same time, the study plays a part in the larger discourse of defining the relationship between people and the built environment, by looking at how environmental landscapes contribute to social awareness. This study aims to significantly contribute to environmental enhancement programmes for socio-economic advancement. **TWL**

Dr. Rita Padawangi and Lim Weida are members of the research team at IWP while Dr. Joost Buurman works for Singapore-Delft Water Alliance.

NEW PUBLICATIONS FROM IWP

Title: Index of Drinking Water Adequacy (IDWA)

 Edited by Seetharam Kallidaikurichi E. and Bhanoji Rao

The Institute of Water Policy emphasises adequacy of drinking water in terms of quantity and quality. Achieving these will mean sufficient resources in terms of water as well as a fairly decent level of income. These ideas and the combination of five components, namely resource availability, access to improved water sources, capacity to buy water, water quality and water use, are integrated into the Index of Drinking Water Adequacy (IDWA). The substantive papers in the book comprise international (144 economies) and intra-national (China and India) explorations based on IDWA estimates.

The book was launched on 30 June, 2010 at the Water Policy Dialogue, Singapore International Water Week. It is available at all major bookstores.



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Title: Developing Living Cities: From Analysis to Action

 Edited by Seetharam Kallidaikurichi E. and Belinda Yuen

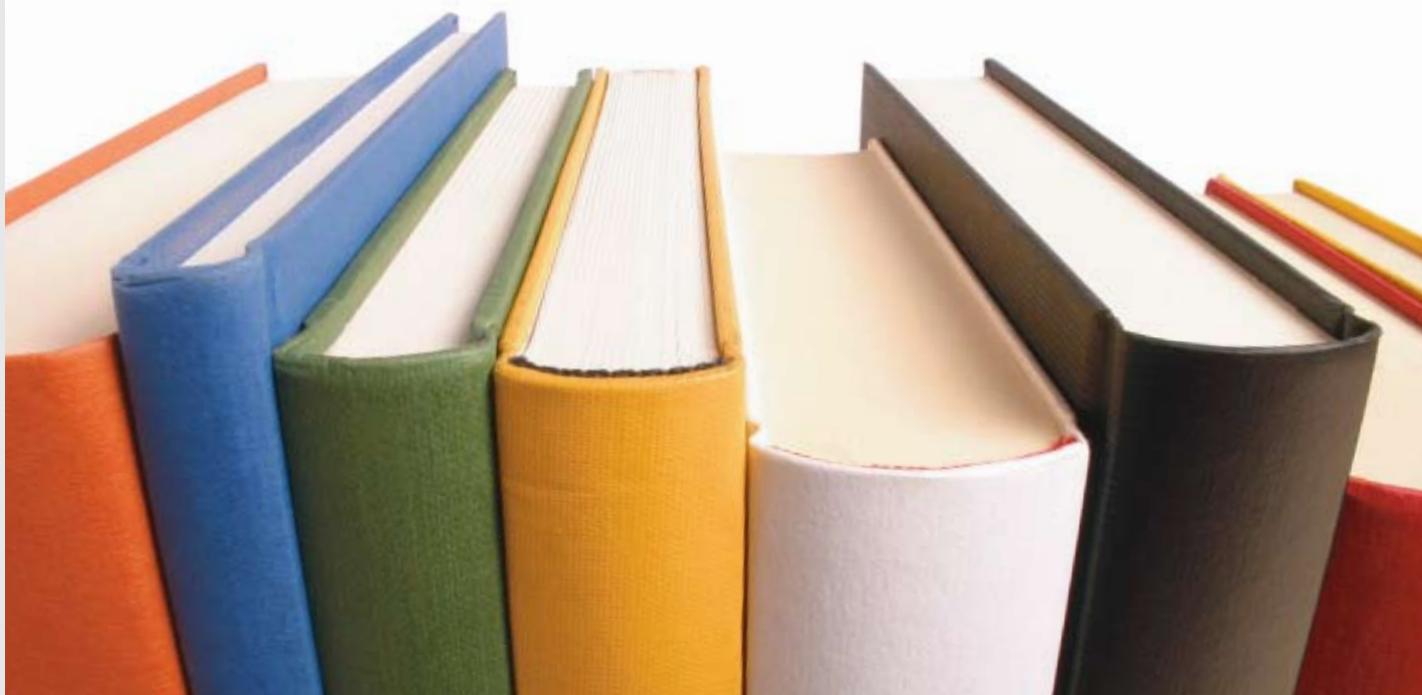
The book was released by the Institute of Water Policy on 24 June, 2010. The book attempts to provide a unique perspective on creating and sustaining "living cities". By developing the framework of a "living city", the book provides key attributes of a city that are vital for it to become a sustained centre of growth and development. The next steps in this project will be developing an index of "living cities" based on available databases to help in benchmarking and guiding the evolution of existing and newly forming cities.

To purchase a copy of the book please contact World Scientific with your mailing address and credit card details. **TWL**



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The Water-Energy Nexus in Governance

By Shahnila Islam, Asit Biswas and Cecilia Tortajada

The Institute of Water Policy is presently exploring the inter-connectivity between water and energy, under the purview of the "Future of Global Water Beyond 2020" project. The paper aims to determine where gaps in research exist within the water-energy nexus, in order to provide insight on how public policy can best address the co-management of both water and energy.

Although water and energy share an inextricable link, historically, each resource has been managed and governed separately. For instance, in India, water resources are governed by the Ministry of Water Resources and energy falls within the Ministry of Power and in Thailand jurisdiction of water and energy fall within the Ministry of Natural Resources and Environment (Department of Water Resources) and the Ministry of Energy, respectively.

The independent assessment of water and energy resources have led to the development of energy production plans without taking the water requirement into account and planning increases in water supply without taking the energy requirements into account. Some examples include biofuel production mandates in the US that do not consider water needs and the energy requirement of projects to transfer water from the south to the north of China where it is scarce. With increasing scarcity in both water and energy coupled with growing populations and urbanization, the issues that arise from the nexus must be addressed. This is especially important in developing countries that are behind in creating policies that can tackle the problems arising in water and energy.

The current research focuses on the various ways in which water is used in producing energy. These include electricity generation and the production of fossil fuel and biofuel. It also describes energy used in providing clean water such as pumping, transportation, desalination and recycling/reclamation. A comparative analysis between developed and developing countries is also included as means of assessing the most relevant solutions for developing countries.

Moving forward, the research will explore the effect of the water-energy nexus on areas such as agriculture, the environment and climate change. Overall, there is undoubtedly an increasing need for policies to be formulated dynamically for adaptability in both the immediate term and the future. **TWL**

Professors Asit Biswas and Cecilia Tortajada, and Shahnila Islam are members of the Future of Global Water Beyond 2020 research team at IWP.

Singapore International Water Week 2011 – Sustainable Water Solutions for a Changing Urban Environment

The Singapore International Water Week 2011 will be held from 4 - 8 July at the Suntec Singapore International Convention & Exhibition Centre.

Themed Sustainable Water Solutions for a Changing Urban Environment, the 2011 event reinforces Water Week as a platform for solutions to address the latest and most pertinent water issues amidst a rapidly changing world. It also reflects a broader focus beyond urban water solutions and other issues that affect the urban environment, such as

climate change and the management of watersheds and river basins.

More than half of the earth's population already live in cities. The UN projects that by the year 2050, the world's population will reach about 9 billion, with 70% living in cities. Increasing global population, rapid urbanisation and emerging economies continue to put a strain on resources such as water, food and energy. Yet, this translates into immense market opportunities for solutions that can overcome constraints to achieve sustainable growth.

As urbanisation and industrialisation gain momentum, it becomes more important for urban planning and water management to work in tandem and to address the stress on the increasingly scarce water resources.

Through its flagship events, Water Week 2011 continues to deliver value to delegates, trade visitors and exhibitors alike, with refreshing opportunities to promote practical and sustainable water solutions to the water industry as well as water users in other sectors. **TWL**



Sustainable Water Solutions for a Changing Urban Environment

4 – 8 July 2011, Singapore



The global platform for water solutions, Singapore International Water Week brings policymakers, industry leaders, experts and practitioners together to address challenges, showcase technologies, discover opportunities and celebrate achievements in the water world.

A wellspring of exciting technologies and business opportunities awaits at Water Week 2011. Visit www.siww.com.sg for more information.



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