



## **ASIA-PACIFIC WATER MINISTERS' FORUM (APWMF)**

### **Water Security – Challenges and Solutions for the Asia-Pacific**

Jointly organised by Singapore's Ministry of the Environment and Water Resources and PUB, Singapore's national water agency and supported by the Asia Pacific Water Forum (APWF), the Asia-Pacific Water Ministers' Forum 2010 (APWMF 2010) was held in the backdrop of the Singapore International Water Week 2010. The Forum aimed to make water security a high priority on the agenda of countries in the region. Ministers and water leaders from 15 countries in the Asia-Pacific convened in a Ministerial Roundtable to exchange ideas and review policies with the intention of bringing good governance and sustainable water solutions in their respective countries.

Chaired by Professor Tommy Koh, Ambassador-at-Large with Singapore's Ministry of Foreign Affairs and Chair of the Asia Pacific Water Forum Governing Council, the Forum also highlighted the APWF's progress so far. The Forum gave a common platform for the water leaders to articulate the region's most pressing challenges while providing an avenue for potential collaborations.

### **Bridging the Water Divide in the Asia-Pacific**

According to Madam Erna Witoelar, Vice-Chair of the APWF governing council, the water divide remains a critical issue with about 400 million and 1.9 billion people still lacking access to safe water and basic sanitation respectively in the Asia-Pacific. The situation is especially grave as Asians are most affected by water-related diseases, accounting for 46% of the fatalities in recent decades. Exacerbating this sombre reality is the fact that two thirds of the world's poor live in Asia. Meanwhile, fast-changing climatic patterns threaten to permanently alter the livelihood and future prospects of the poor.

In short, the Asia-Pacific is particularly vulnerable to water-related crisis. According to Dr Yaacob Ibrahim, Singapore's Minister for the Environment and Water Resources, most of the challenges faced in Asia have more to do with an uneven distribution, lack of access and the inefficient usage of water resources than the widely held notion of absolute shortage.

Mr Arjun Thapan, Special Senior Advisor to the President on infrastructure and water at the Asian Development Bank noted that there are nine water-stressed countries in Asia, including China and India, representing more than half the world's population. He emphasised that water deficits are likely to grow in Asia over the next 20 years. This ultimately brings forth a potentially worrying demand-supply gap i.e. a stark discrepancy between the supply of water available and the demand for this resource. In India, the demand-supply gap is expected to be 50% by 2030, while in China it is forecast to be 25%.

“Business as usual will not help in mitigating the enormous political, social and economic risks that will arise as a consequence of this scenario,” said Mr Thapan. He urged the ministers to view water as a business and to let water agencies act independently, adding that if Manila, the capital of the Philippines, and Phnom Penh, the capital of Cambodia, can have world-class water systems so can the rest of the region.

The need for concerted action has led to the APWF consensus to establish an effective mechanism for more collaborative efforts on sustainable water management. This is linked to the socio-economic development of the Asia-Pacific region. As Dr Noeleen Heyzer, Under-Secretary General of UNESCAP put it, livelihoods are destroyed due to water scarcity and as a result, human suffering becomes an unnecessary consequence. She highlighted that drinking water and basic sanitation are the pre-requisites for human progress and the catalyst for the fulfillment of the Millennium Development Goals (MDGs) by leading the way towards improved health, education and poverty reduction efforts.

The APWF, launched in 2006, acts as a platform for countries and organisations in the Asia-Pacific region to articulate such concerns and promote the necessary initiatives needed to reform policies in the water sector.

“APWF’s driving ambition has been to ensure that water policy reform, investments and performance are high on the minds of our region’s leaders as well as to showcase leadership in decision-making, excellence in practice and innovation and results that have sustainable impacts at the grassroots level, ” said Madam Witoelar.

The APWF organised the first Asia Pacific Water Summit in 2007 with the theme of “Water Security: Leadership and Commitment”, dedicated to raising awareness on water issues and formulating concrete actions for the resolution of critical water issues. The key messages of the summit held in Beppu included halving the number of people without access to safe drinking water and basic sanitation by 2015 and entirely by 2025, according the highest priority to water and sanitation in national economic and development agendas, and substantially increasing allocation of resources to the water and sanitation sectors. Another key point stressed the need to improve governance, efficiency, transparency and equity in all aspects related to the management of water especially with regard to the poor and marginalised.

These points made during the Beppu summit merit urgent attention as witnessed during the APWMF 2010 Roundtable session moderated by Professor Seetharam KE, Director of the Institute of Water Policy at the Lee Kuan Yew School of Public Policy. During the session, ministers and high-level policymakers assembled to discuss national water concerns and learn from each other’s experiences. With water security as the main agenda, the Forum tied in strategically with the "Minister for Water Security" initiative presented by the APWF at the 5th World Water Forum in Istanbul in 2009.

## **Good Governance for Improved Water Security**

The APWWMF 2010 aimed to raise awareness and facilitate regular dialogues among leaders in government, private sector and civil society on policies, investments and solutions that help address critical water security issues. It also provided a platform for the Asia-Pacific ministers and water leaders to share their views on the importance of good governance in delivering sustainable water solutions to everyone in the region.

Relating the situation in his country, Mr Mohamed Nasheed, President of Maldives emphasised that water management and proper governance is important in ensuring the longevity of sustainable initiatives that will ultimately influence the long-term economic growth of the country. He also outlined his country's current predicament of a shortage of clean drinking water despite being surrounded by the ocean. The President said his country would benefit from better water management practices.

According to Madam Witoelar, the principal challenges are not technological but rather the soft issues of governance, financing and institutional capacities. Dr Heyzer also said that good governance and sustainable solutions go hand-in-hand in ensuring reliable access to enough safe drinking water for a healthy, dignified and productive life.

During the Ministerial Roundtable session, Mr Suwit Khunkitti, Minister for Natural Resources and Environment of Thailand, emphasised that a practical approach towards increasing equity in water use and distribution is an important part of good governance because securing water not only saves water, but also people. According to him, Thailand has implemented the water grid system - a piped water transport system that transports water from one area to another to help local farmers improve productivity.

## **Political Will Needed for Meaningful Change**

Dr Yaacob stressed that political will played an important role in Singapore's success. Without consistent political will, even the most meticulous plan might face insurmountable stumbling blocks. Support from higher echelons of various institutions and national leaders are needed to sustain meaningful changes in the water sector. For example, in addition to outreach programmes, political leaders and an expert panel of local and international experts provided strong public support to foster acceptance of NEWater among the people.

Tuvalu, a country that depends heavily on rainwater as an alternative source of drinking water, enforced rainwater harvesting as means of coping with the contamination of its groundwater. According to Mr Kausea Natano, Minister of Public Utilities and Industries of Tuvalu, the government worked with international partners to build desalination plants in the most affected areas and has distributed a total of 1,100 plastic tanks to all households as means of increasing the volume of available water by 11 million litres.

Mr Yoshiro Mori, President of the Asia Pacific Water Forum expressed his wish for ministers to place water security at the top of their home countries' agendas, while helping to articulate regional concerns and creating sustainable partnerships across the Asia-Pacific region. Unless water security is highlighted as a priority among national leaders, meaningful change to the supply of safe drinking water and proper wastewater treatment will be difficult. More importantly without sufficient interest among national leaders, inter-country collaborations to collectively overcome water issues in the Asia-Pacific region might not be as robust. Meanwhile, Mr Mok Mareth, Cambodia's Senior Minister and Minister of Environment held that integrated management of water resources is a high priority

on the government's strategic policy mandates. He highlighted that the state practices the 3Cs (Clean Air, Clean Land, Clean Water) and the 3Rs (Reduce, Recycle, Reuse). Furthermore, water security will also be integrated into the national committee on green growth's roadmap.

Mr Vincent Pala, India's Minister of State for Water Resources highlighted that much has been done to promote efficiency of water use in irrigation. These efforts include introducing micro-irrigation and facilitating participatory programmes for farmers. The government is also actively working with various sections of the society including the non-governmental organisations and the private sector to promote effective management of water and its sustainable development.

Mr Bal Krishna Khand, Nepal's Minister of Irrigation added that in order to facilitate the proper implementation of the country's Water Resources Strategy, the Sector Water Plan 2005 was approved.

### **Climate Change as a Catalyst for Adaptive Management**

Mr Yoshiro Mori elaborated that the poor, marginalised and those in disaster-prone and ecologically-sensitive areas are at the greatest risk. There is a need to ensure that the management of water becomes more adaptive and responsive to rapidly changing circumstances. As climate change increasingly alters weather patterns, the safety and livelihood of many are threatened.

The effects of climate change are especially worrying in low-lying states such as Samoa, Tuvalu and Maldives. Climate change threatens their future as they struggle to cope with rising sea levels, coastal erosion and erratic monsoon patterns, all of which contribute to unreliable sources of drinking water. "Discussions about the water crisis must include the climate", said Mr Nasheed.

According to Mr Tuisugaletau A Sofaru Aveau, Samoa's Minister of Works, Transport and Infrastructure, the impact of climate change has been especially difficult not least because Samoa is a country with less than 1% of water area. The climate risk profile for Samoa (as reported in its 2<sup>nd</sup> National Communications to the UNFCCC) indicates a 1.2% increase in rainfall, 7% increase in extreme winds events, sea level rise of 32 cm and a 0.7 degree centigrade increase in average maximum temperature by 2050.

The APWF Steering Group on Water and Climate Change has been formed to advise leaders on policies and practices, to serve as a guide for knowledge networking in the region and to provide progress reports and recommendations to leaders in the Asia-Pacific. Members include scientists, practitioners, government, civil society leaders and experts from development funding agencies such as the Asian Development Bank, World Bank and Japan International Cooperation Agency.

In his report on water and climate change, Professor Toshio Koike, chair of the APWF Steering Committee on Water and Climate Change pointed out that the impacts of climate change are already evident in the heavy floods of India and Southern China, the drastic increase of rainfall and drought in most parts of the world as well as the sudden drying out of the Mekong River in 2010. According to Professor Koike, an equilibrium analysis is instrumental when considering climate change impacts because the relationship between water demand and supply depends on economic, social and political behaviour.

Many countries have also begun taking initiative to address climate change issues. Bangladesh has established a Climate Trust Fund to manage such challenges. US\$100 million has been utilised for climate resilience since 2009 and another US\$100 million has been allocated in 2010. Mr Pala highlighted that India has integrated the issue of climate change in its National Water Mission by working to improve water use efficiency by 20%.

The linkage between energy and water security in the climate change debate was also emphasized throughout the session. As a clear example of the commitment to address climate change, Maldives has already started the process of shifting to low-carbon development. Under the Copenhagen Accord, Maldives has pledged to reduce net carbon emission by 100 percent by 2020 in the interest of security and economy.

“Any discussion over security, whether it is water security or national security, must therefore include the climate crisis. In short: we have to start work on building a zero-carbon global economy,” said Mr Nasheed. “Shifting to renewable energy systems means we can rely on natural resources the Maldives has in abundance: the sun, the wind, and the waves. We plan to use and continue environmentally sound technologies to enhance our energy security. I believe we can use the same technologies to improve our water security as well.”

Mr Loic Fauchon, President of the World Water Council mentioned that the production of energy and accessibility of water usually boils down to the same battle with the poorest lacking both. As such, he strongly advocated for the inclusion of water in the energy-climate package, an association that could be reflected in the facilitation of a world fund for scarce resources that promotes the production of energy with a special focus on water.

Mr Thapan further offered another perspective of the nexus between water and energy. He mentioned that energy has to be factored into water reform agendas because alternative sources of energy, such as thermal power and biofuels, are some of the biggest consumers of water.

Climate change has undoubtedly made the management of water all the more unpredictable. The governance of water which is facing an uncertain future caused by climate change has created many variables. As such, there is an increasing urgency for national leaders to acknowledge the need to make water resource management more adaptive and responsive to the rapidly changing situation.

### **Holistic Demand Management**

According to Mr Thapan, the role of urbanisation in water resource management must be understood. While Asian cities are drivers for economic growth, they are also notoriously inefficient in their water usage. Not putting an economic price on water results in a loss of US\$9 billion worth of treated water in Asia each year. He emphasised that the management of urban water demand and the provision of a high quality of service should be adopted as the new paradigm moving forward.

Pehin Dato’ Suyoi Osman, Brunei’s Minister of Development, cited water demand management as one of the biggest challenges faced by the country. Presently, Brunei’s national water management plan integrates both structural and non-structural measures to secure water demand up to the year 2035. Measures range from infrastructure investment and maintenance to reservation of land for water catchments and water conservation awareness programmes.

According to Mrs Carrie Lam, Hong Kong's Secretary of Development, the state practices the Total Water Management Strategy that incorporates water leakage control, public awareness and promotion of water saving/efficiency devices. As part of the effort to conserve water, 80% of toilet flushing in Hong Kong uses seawater. She went on to highlight that as part of public education efforts, the state has encapsulated Hong Kong's 150 years of waterworks heritage in a book called the *Streams of Memories*, in addition to developing water heritage trails for youth and families to explore.

Dr Yaacob mentioned that without proper demand management in public and private sectors, a country can run into many water issues. On the technical front, this involves timely investment in infrastructure renewal and comprehensive metering to reduce losses from leakages and illegal tapping. He also highlighted that engaging the people and the private sector plays an important role in successful demand management.

He then went on to emphasise water pricing as a key strategy in managing demand. In sharing Singapore's experience, he mentioned that Singapore prices water to recover the full cost of producing and supplying it. The higher cost of additional water supplies is also factored in. In addition to the tariff on potable water, the government also levies a water conservation tax that increases with the level of usage.

Dr Heyzer called for financial penalties for those who waste water. She mentioned that progressive pricing policies can result in a higher level of eco-efficiency in water usage among households, industries and agriculturists. "To minimise wastage and increase efficiency in water use, we need to charge the real costs of providing water. We need to introduce progressive pricing policies that on the one hand recognise water as the basic need for human existence and, on the other, progressively charge those who overuse or waste it."

She also mentioned the need to adopt a "polluter pays" principle so as to internalise the cost of water pollution. Wastewater pollution threatens freshwater resources as 85-90% of wastewater discharged contains pollutants and toxic components that destroy groundwater sources.

### **Investment, Partnerships and Innovation**

In times of increasing uncertainty of water security, there is an urgent need to stay committed and be innovative in the solutions presented. While more needs to be done, it is encouraging to note that many countries have already adopted or facilitated various initiatives to address water issues affecting the livelihood and well-being of their people. Many more have formed strategic partnerships as means on leveraging on each other's strengths and expertise.

Many Asian countries face the challenge of aging infrastructure, a problem that can cause significant amount of non-revenue water. Hong Kong has begun investing heavily in infrastructure and asset management - replacing and rehabilitating some 3,000km of pipes at a cost of US\$2.5 billion. Samoa, a country especially vulnerable to water woes, has worked with European Union to replace 84km of old pipes on both the Upolu and Savaii islands of Samoa (through the Water Sector Support Programme/WASSP) and the Asian Development Bank to realign new water pipe networks where possible to avoid hazardous areas. According to Samoa's Minister of Works, Transport and Infrastructure, the WASSP has helped to enable the state to provide 14,000 people in the rural areas of Upolu Island with treated water.

Of late, there has also been a strong focus on developing innovative technologies such as solar-driven desalination among the small Pacific islands such as Samoa, Maldives and Tuvalu, which are experiencing drastic changes in

weather patterns. This reflects the need to develop more cost-effective and less energy-intensive technologies for water security as there are also many countries which cannot afford expensive solutions.

Innovation has also given rise to new technologies that can be potentially applied to both water and wastewater. Dr Heyzer highlighted that wastewater can be a potential resource with market potential if properly managed. She cited that some estimates predict a market potential of between US\$150-700 billion for innovations of this nature. Mr Thapan concurred by highlighting the urgent need for a new model in dealing with wastewater as governments can to treat wastewater like a business and not an investment stalemate without any future.

“We need to adopt a new business model for dealing with Asia’s wastewater. And that means treating it like a business,” said Mr Thapan. “Governments should not consider wastewater management and investment a dead end. There are huge economic benefits. We must encourage private investments and technology to drive a wastewater revolution in Asia,” he said.

Technology and innovation have also been cited by Dr Yaacob as a key driver in the country’s progress. Singapore has adopted advanced membrane technology to successfully reuse water as exemplified by NEWater. This development has played an important role in helping the country progress towards water sustainability. Today, NEWater is supplied to industries and commercial buildings for non-potable use and small amounts are also blended with the raw water in reservoirs for indirect potable use. NEWater presently accounts for 30% of Singapore’s water needs.

Japan has also invested heavily in technology to prepare for disasters such as floods and droughts as a result of climate change. Among the efforts are improvement of disaster control facilities, preparation of hazard maps, development of forecasting warning systems and disaster risk management. The potential for collaboration with other countries were highlighted by Mr Taizo Mikazuki, Japan’s Senior Vice-Minister of Land, Infrastructure, Transport and Tourism. He mentioned that Japan is currently developing technologies such as the Integrated Flood Analysis System and the Global Flood Alert System, and is open to providing such systems and the related training to foreign countries free of charge.

On a separate note, Mr Mareth of Cambodia highlighted that active steps are being taken by the country to bridge the technical and financial gap among water institutions. As part of their long-term plans, the government intends to allow water supply systems to be privately managed through lease or contract via transparent and competitive selection procedures. In addition to water resource projects being meticulously prepared according to relevant data and information, the state will also encourage and facilitate investors, private enterprise and the community to participate in the development and management of water resources.

In Maharashtra, India, the government aims to achieve uninterrupted potable water supply in the state. To achieve this, the technical arm of the state has been working on facilitating the use of advanced innovative technologies for waterworks reforms. To this end, the state has since entered into Memorandum of Understandings with PUB of Singapore and Rnhill of Malaysia to seek technical knowledge in advanced management.

## **Conclusion**

Long-term water security in the Asia-Pacific region is a common concern for Asian countries of diverse backgrounds to collaborate towards a cohesive solution. At the inaugural APWMF 2010, there was a resounding endorsement among the ministers for heightened political commitment and a holistic approach to the management of water in the countries and the region.

The APWWMF 2010 successfully promoted meaningful dialogue among top policymakers and decision-makers in the region. In addition to learning from one another's experiences, the APWWMF 2010 also served as a consultative mechanism in prompting for good governance, adequate investment in sustainable solutions and improved management practices.

Furthermore, strong political will is essential in driving key initiatives to address the impacts of climate change, the heavy floods of India and Southern China, the shortage of clean drinking water in Maldives and the sudden drought of the Mekong River. Ultimately, the poor and the marginalised in disaster-prone and ecologically sensitive areas face the greatest risk of losing their livelihoods and safety. Economic growth and increased urbanisation will lead to exponentially widening water deficits in Asia over the next 20 years. To minimise the likelihood of a detrimental demand-supply gap, the ministers also highlighted a renewed emphasis on holistic demand management concerning all facets of water resource management including the end-to-end production, supply and use of water. This includes equal attention to infrastructure renewal and maintenance as exemplified in Hong Kong's commitment to a Total Water Management Strategy, and water pricing mechanisms, public engagement and educational approaches as practiced by Singapore.

Technology and innovation can also significantly improve performance of water utilities in the delivery of water and its conservation, especially in the context of increasingly erratic rainfall patterns. Moreover, wastewater can become a reliable revenue provider, generating an alternative source of water when properly managed, as demonstrated with NEWater in Singapore.

Overall, the consensus among the ministers on the urgency of water security re-emphasised the need to review good governance practices and foster stronger collaborative partnerships among private sector, academicians, civil society and governments. The APWWMF 2010 concluded on a high note that for Asian countries to grow economically and be environmentally sustainable, the issue of water security will be crucial. "Inaction" is no longer a feasible option for political leaders and policymakers.