

Tapping ideas for the global water crisis_

With current rates of urban growth, it is estimated that half the world's population will be living under severe water stress by 2030, and the implications for global economic security are severe. Despite these realities, today's smart thinkers, new innovations and a collective, global motivation can help turn the tides. In this round of the Singapore Sessions, leading thinkers in diverse fields were asked to offer their thoughts on what can be done to solve this imminent crisis.



Olivia Lum
Group CEO and
President
Hyflux

Leverage technological breakthroughs on a large scale. On the supply management side, urban communities will have to seek innovative solutions to their water needs by leveraging on technology and by tapping on non-traditional sources of water such as seawater and wastewater. Increasingly membrane technology has proven to be

cost-effective for seawater desalination and is used in water treatment and recycling. The adoption of membrane systems also yields other environmental benefits, such as energy efficiency, lower use of chemicals in the treatment process and a smaller footprint required for the plant.



Dr. Val Frenkel
Director
Membrane Technologies
with Kennedy/Jenks
Consultants

The natural trend in human history is that people are moving from the rural to the urban areas. As a result urbanization is a continuous process and it creates many challenges including water supply.

In the cities, clean water is used for drinking water supply, industrial use, and irrigation mainly. Interestingly, that water supply for the drinking purposes is a relatively small fraction of the entire water demand, while all water is supplied to the drinking water quality, e.g. the highest quality comparing to the other consumers. This is why one of the approaches is to split water supply for the different users by the dial-piping system.

An additional new source of the water could be sea/or ocean desalination if that particular city or town has the "luxury" to be located in the reasonable proximity to the sea or ocean. The other concept is water reuse. Water reuse is becoming one of the fastest growing concepts to provide additional water supply to a place where no or limited additional water supplies are available. The current status of the membrane technologies, in particular, the Membrane Bio-Reactor (MBR), allows construct scalping (decentralized) wastewater treatment plant right at the spot where reuse water is in need - parks and/or industrial facilities - significantly reducing or avoiding pumping of the water over long distances.



Dr. Shane Snyder
Research and
Development Project
Manager
Southern Nevada Water
Authority

Burgeoning human population coupled with increased urbanization is straining limited freshwater resources.

Not only have freshwater demands increased dramatically due to urbanization, but increased population also results in concentrated wastestreams and elevated demands for agriculture. Increase agriculture taxes freshwater supplies and also results in water contamination from fertilizers and pesticides. There are many technological breakthroughs that will help augment current water supplies.

I believe that water reuse, that is use of wastewater for potable supply augmentation and for irrigation, has the greatest potential for increasing water sustainability. Wastewater effluents are often discharged into the ocean and/or inland rivers.



Professor Asit Biswas
President
Third World Centre for
Water

By improving water governance and good leadership, both Singapore and Phnom Penh ensured 24-hour supply of water of drinkable quality.

Consumers, rich and poor, pay for the water they receive, and both Singapore and Phnom Penh water utilities are autonomous corporations which are now consistently profitable. Phnom Penh Water Supply reduced its losses from 73% to 6% (a performance better than London, Paris or Los Angeles), within a decade, eliminated corruption completely, its profit has increased each year during the past decade, and consumers pay for its entire operation and maintenance costs.

Reclaiming this water and utilizing it locally has tremendous advantages.

Moreover, the technology clear exists to convert wastewater to safe and sustainable drinking water. One key to making reuse sustainable is decentralized reuse plants, where water is reused closer to the source. By far, the majority of watertreatment costs are related to the energy required to pump and move water. The energy for treatment is generally minute compared to the cost of moving water. Also, as compared to ocean desalination, the treatment of wastewater to potable standards is less energy intensive. An ancillary benefit to water reuse is the avoidance of discharging to sensitive ecosystems where potential harm can occur through eutrophication and/or endocrine disruptive impacts to aquatic wildlife.

Donors are now fighting with each other to have the privilege of providing loans to the Phnom Penh Authority. If Phnom Penh can solve its urban water problems in significantly less than a decade with all its turbulent history, other Asian countries should also be able to provide their urban citizens 24-hours continuous water supply. If they are unable to do so, it could be due to bad management practices and a host of other factors such as physical scarcities of water, lack of investment funds, management and technical capacities, and availability of technology. That said, affluent Asian countries have a responsibility to put in place good water governance.