

Food for Thought

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LETTER TO EDITOR: PLANNING FOR A WATER CRISIS?

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LETTER TO EDITOR - 24 January 2014

PLANNING FOR A WATER CRISIS?

Association of Water and Energy Research Malaysia (AWER) has stressed the need for higher reserve margin of treated water and protection of water catchment areas numerous times. In recent weeks, we can see the impact of weather pattern change to our water resources.

Is There A Lesson To Learn?

Lesson number one: drought or prolonged period without rain or with very little rain is part and parcel of our climate. This is not the first time we face dry season and low levels in our water dams which lead to shortage of water supply.

Lesson number two: since early civilizations, humans have learnt to adapt with changing weather pattern. Construction of dams, huge lake reservoirs and systematic irrigations are living examples of human innovative and adaptive ways to survive.

Lesson number three: a drastic increase in urban and sub-urban areas' population density makes it harder to meet increasing demand for treated water. This is a major phenomenon throughout the world. Water resources are usually far away from demand zones with high population density. Careful planning and safety nets must be put in place to cater increasing water demand in these zones.

Lesson number four: half a century ago (50 years), there were more thick forest cover. Therefore, the impact of drought or dry season was not this severe. The heat waves are kept at check by the forest itself. Massive concentrated developments and mass clearing of forest has given

drought or dry season its "claw" to strike us harder. In undisturbed natural forest, the forest itself controls its local climate up to 90%. When the forest is brought down to make way for development, logging and other activities, this function is dramatically reduced due to reduction of forested areas.

Lesson number five: this is not the end. Advancement in technology and better demand side management will allow us to meet the increasing demand for water. This is however, directly related to how we protect our water catchment areas from now on.

SOLUTION 1: Protecting Water Catchment Areas

Total water consumption is basically divided into domestic, industry (including commercial) and agriculture use which uses 17%, 21% and 62% respectively. However, almost 2/3 of treated water is consumed by domestic sector. This is mainly because many industries and agricultural activities draw water directly from nature for their use.

All state governments must gazette the water catchment areas (including forest, rivers, lakes, etc.) as permanent reserve by end of year 2015. These areas must also take into consideration of future need for raw water. No human activities should be allowed in these gazetted areas including recreational activities. As population grows in number, our demand for water grows as well. This also means the need to gazette more water catchment areas will increase in tandem with population growth to ensure raw water security.

For existing developed areas, the wastewater discharge standards must be upgraded periodically and implemented by the state governments and Department of Environment. In addition to that, pre-treatment facilities can be developed to further improve the quality of raw water. These are common steps taken in many parts of the world to ensure raw water quality is maintained. For example, the recent ammonium pollution is causing two water treatment plants in Selangor to be shut down and lead to water supply disruption in few areas of Hulu Langat and Kuala Langat. By enforcing stricter discharge standard, this type of problems can be avoided during dry season. This is because dry season causes the pollutant concentration to increase due to presence of lesser water in the river.

SOLUTION 2: Raw Water Tariff Based on Raw Water Quality

A raw water quality based raw water tariff should also be in place to ensure the state governments are receiving equitable income by protecting water catchment areas to secure raw water resources including transboundary raw water. AWER sees this as an important milestone to ensure state governments receives continuous income without the need to carry out logging activities or other development projects in water catchment areas. In addition to that, protecting water catchment areas will keep the raw water quality better and reduce cost of treating water which will be translated to equitable and affordable water tariff.

SOLUTION 3: Construction of Dams

Dams can be seen as a very old technical solution for storing water to cater the water demand during dry season. There are single function and

multifunction dams. At the moment, there are flood mitigation dams that are also used as source of raw water for water treatment in Malaysia. Building multifunction dams are cost effective. However, the difference in function may cause more harm during dry season. For example, few areas in southern Peninsular Malaysia faced water shortage during dry season few years ago because the water company used flood mitigation dam's water as source of raw water for water treatment.

A thorough study must be carried out:

- i. to look at the suitability of dams' function as raw water supply;
- ii. to study expansion of existing raw water dams to increase its storage capacity;
- iii. to carry out aeration process to improve the raw water quality in dams which can reduce treatment cost;
- iv. to carry out desiltation and maintenance of dam to ensure the design capacity is well maintained;
- v. to prevent water crisis during dry season due to other functions of a dam superseding raw water supply function. Placing right dams' functions together is vital; and
- vi. to increase raw water security in Malaysia, construction of new dams with additional reserve capacity (50% to 100%) must be carried out.

SOLUTION 4: Water Services Industry Restructuring Must be Completed Immediately

Water services industry restructuring is a must to ensure our water services infrastructure, technology and services are improved. Currently, Selangor, Kedah, Terengganu, Pahang, Kelantan and Labuan have not completed the restructuring process. In addition to that, Sabah and Sarawak must be included in this process so that rakyat benefits from the process directly.

The Water Services Industry Act 2006 (WSIA) was enforced beginning of 1 January 2008 and the restructuring (excluding Sabah and Sarawak) should have been completed by 31 December 2010. Now, this process is entering 4th year of delay and this will give severe impact to development of water services infrastructures as well as dealing with situations like current water crisis due to prolonged dry season.

In addition to that, all water services companies must get approval from Suruhanjaya Perkhidmatan Air Negara (SPAN) before carrying out water rationing. The Emergency Response Plan, Water Rationing Plan and Communication Plan must be comprehensive to ensure treated water consumers are able to follow the steps and plans set by water services companies. AWER would also like to urge SPAN to carry out trial runs during normal season in future to ensure consumers are accustomed to plans during a water crisis situation. This will assist all stakeholders to face emergency situation smoothly.

SOLUTION 5: Boosting Water Supply Infrastructure to Sub-Urban and Rural Areas

The government must also revisit infrastructures of water supply in sub-urban and rural areas that do not have proper service reservoirs. A service reservoir stores minimum 1 day storage for a specified community. Without service reservoirs, these communities are directly impacted due to lack of storage capacity to cater their demand during water supply disruption. During water rationing, these areas will be the worst affected and this is why water tankers are deployed to these locations immediately when there is a water cut. In order to move forward, sub-

urban and rural areas' water services infrastructures must be upgraded via WSIA model.

SOLUTION 6: Demand Side Management - Water Efficiency

Demand side management is vital to ensure sustainable development. This comprises both raw water demand and treated water demand. A comprehensive demand side management for water must be developed to outline steps and procedures to assist domestic, industrial and agriculture sectors to optimise water usage to achieve water efficiency. As a start, AWER has already launched an online tool to assist domestic consumers to be water efficient. This tool which is known as "Catch d' Hydro" can be accessed via www.water.org.my.

Demand side management also include labelling of equipments. For a start, water efficiency labelling should be introduced as voluntary labelling for washing machine, dishwasher, shower heads, taps and toilet flush. This voluntary labelling should be made mandatory in 2 years time with a Minimum Water Efficiency Standard (MWES) imposed. Via MWES, it is possible to stop the sales of products that are not water efficient and indirectly assist consumers to reduce water consumption at home.

Similarly, industrial and agriculture sectors that rely highly on water should also be assisted to be more water efficient via a water footprint benchmark. Water footprint helps us to determine water consumption for many sectors. This is a better demand management and cross-cutting to all sectors. For example, we use 140 liter of water to produce 1 cup of coffee, 184 liter of water for 1kg of tomato, 1000 liter of water for 1 liter of cow milk and 20,000 liter of water to produce 1 laptop. Through these water footprint values, both industrial and agriculture sector can be more water efficient and reduce high dependency on water strategically.

SOLUTION 7: Reduction of Non-Revenue Water (NRW)

AWER would like to thank the Cabinet for approving the formation of National Non-Revenue Water (NRW) Reduction Task Force as suggested by AWER to implement a detailed NRW Reduction Action Plan for Malaysia. Annually, estimated loss of revenue due to NRW is above RM 1.6 billion. While there is slight delay in the NRW Reduction Action Plan that is now almost complete, we hope Suruhanjaya Perkhidmatan Air Negara (SPAN) speeds up its work in this matter. The national NRW target should also be set at 20% in year 2020 as it is becoming more cost effective to carry out NRW reduction compared to the cost of water crisis management.

SOLUTION 8: The NATIONAL WATER GRID Development

AWER has already embarked on studies to determine suitable model to create a National Water Grid (NWG). The primary prerequisite for development of NWG is the improvement of water services companies' performance. This will take a period between 5 to 10 years. During this phase, interconnections between state based supply systems must be developed. Once this is completed, inter-state connections can be developed. This NWG will be governed by a Grid Code to ensure its functions are optimised. NWG will be the ultimate solution to mitigate water crisis challenge. Mere raw water transfer projects are not sufficient due to its connectivity nationwide and raw water security component. Before we reach to this chapter of NWG, Malaysia needs to complete Solution 1 to 7 suggested by AWER first.

CONCLUSION

AWER applauds the Prime Minister's pledge to take action on water crisis issue faced by Malaysians. AWER hopes the government can implement our suggested solutions to ensure water security in Malaysia. The root cause of water crisis is due to lack of planning and capable work force to see through the implementations. Once these primary obstacles are removed, Malaysia will be the leading country globally that is able to manage water holistically.

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President

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