POLICIES AND INCENTIVES FOR RAINWATER HARVESTING IN MALAYSIA

Mohd. Shahwahid H. O.[1]; Suhaimi A. R.[2]; Rasyikah M. K.[3]; Ahmad Jamaluddin S.[4] ; Huang Y.F. [5] and Farah M.S.[6].

INTRODUCTION

Malaysia's capital city, Kuala Lumpur and its industrial state neighbour, Selangor, are working hard to find alternative water supply to cope with the rising demand in water. To this end, they are planning to build the first underground pipe in the country to get water supply from Sungai Bernam in the State of Perak starting 2009. The estimated cost for the project is RM9 billion and will be able to supply one billion liters of water daily to Kuala Lumpur and Selangor. Be that as it may, the need for inter-state supply of water or water rationing may not have arisen should all Malaysians learn from the 1998 draught incident where water was rationed and many had to do without it. Straight after the incident, the Ministry of Housing and Local Government has introduced a guideline on rainwater harvesting in 1999 but it generally passed by without notice. Up till now very few government buildings have used rainwater harvesting. It is not until recently that rainwater harvesting made it to the headlines again. On March 27, 2006, the Prime Minister announced that rainwater harvesting would be made mandatory to large buildings[4]. It remains to be seen whether this motion would be implemented without resistance or reservations. This paper aims to examine the present policies on rainwater harvesting, to identify possible predicament and to provide suggestion for a successful implementation of rainwater harvesting policy in Malaysia.

HISTORICAL DEVELOPMENT FOR RAINWATER HARVESTING POLICY IN MALAYSIA

The 1999 "Guidelines for Installing a Rainwater Collection and Utilization System" can be seen as the initial phase of the rainwater harvesting policy in Malaysia. Introduced after the 1998 drought, it aims at reducing the dependence on treated water and provides a convenient buffer in times of emergency or a shortfall in the water supply. It also

[1] Professor, Faculty of Economics and Management, UPM, Serdang
[2] Lecturer, Faculty of Economics and Management, UPM, Serdang
[3] Lecturer, Faculty of Law, UiTM, Shah Alam
[4] Head, Water Resources Management Division, National Hydraulic Research Institute of Malaysia (NAHRIM).
[5] Senior Researcher, National Hydraulic Research Institute of Malaysia (NAHRIM).
6 Lawyer, Kuala Lumpur
[4] http://www.thestar.com.my/news/story.asp?file=/2007/3/28/nation/17271769&sec=nation&=1 March 28, 2007

proposes the construction of "mini dams" or rainwater tanks in urban areas instead of continuing to build giant dams upstream. This may not only conserve the treated water but can act as urban flood control. Nevertheless the guideline is intended as an "ideal manual" for reference for those who want to install a rainwater collection and utilization system[5]. It generally does not deal with cost and implementation issues. As rainwater harvesting was very alien to many Malaysians then, as well as the fact that most of the system was not available locally, the implementation of the new policy was not really successful.

After five years of the introduction of the Guidelines, the Ministry prepared another cabinet paper to the National Water Resources Council to encourage government buildings to install a rainwater collection and utilization system. The Council has later announced that rainwater utilization is to be encouraged, but not mandatory, in all federal and state government buildings, there is a need for rainwater utilization campaign and to provide a solution for prevention of mosquito breeding.

To date, only two federal government buildings have been equipped with the rainwater harvesting system, namely the Department of Irrigation and Drainage and the Ministry of Energy, Water and Communication. With a few exceptions as in Johore and Penang, many local governments have not implemented rainwater harvesting in their locality. Few councils like in Sandakan and Shah Alam has introduced it in new housing developments. Despite this effort, it is unfortunate to learn that in the Kota Damansara's new housing project, nearly 40% of the rainwater harvesting system installed has been dismantled to give way for renovation.

With such statistics of the level of installation in Malaysia, one may wonder why nobody cares to use this alternative and conventional water supply of rainwater. Is it because of the unfriendly design which had taken too much space in the backyard? Is it too expensive to begin with? Or is it due to the concern of mosquito breeding? Since it is not mandatory, we should at least give some form of acknowledgement to those who have installed it. Using the ratings system as in New South Wales, Australia can do this. Their local governments have introduced the Basic Sustainability Index or BASIX to rate environmentally sustainable buildings. This may also act as an added value to the property for being energy efficient. On the design issues, perhaps Malaysian architects and engineers should work together to come up with good design that can prevent mosquito breeding and more environmental and space-friendly.

RECENT DEVELOPMENT ON RAINWATER HARVESTING POLICY

After the creation of the Ministry of Natural Resources and Environment in 2004, the National Hydraulic Research Institute of Malaysia (NAHRIM) was established under the wing of the Ministry. It aims at conducting research in all aspects of water hydraulic and water environment, rainwater harvesting included. To date, NAHRIM had started three

[5] Guidelines for Installing a Rainwater Collection and Utilization System, p. 1

main pilot projects that involve a government building, a mosque and a residential house. It is also actively involved in designing and installing rainwater harvesting systems for several schools.

In August 2006, the Town of Country Planning and Development has formulated the National Urbanization Policy (NUP). The policy in particular stresses that cities need to improve water management efficiency which emphasize on the use of alternative sources and non-conventional of rainwater harvesting and water recycling[6]. Under the policy, the relevant agencies for implementation are the Ministry of Technology, Water & Communication (KTAK)[7], the Water Supply Department as well as both State and Local Authorities. To date the Ministry of Technology, Water & Communication has initiated a water saving campaign with the Federation of Malaysian Consumer Association (FOMCA) and makes rainwater harvesting an important component in the water saving efforts. In its long-term plan[8], the Ministry aims at installing rainwater harvesting systems in new government buildings and schools.

The most encouraging development for the success of rainwater harvesting in Malaysia came about after the announcement by the government to make it mandatory in March 27, 2006. Despite the fact that it will only apply to large buildings like factories, schools or bungalows, it is certainly a right step towards a more sustainable development in Malaysia. The government has finally come to realize that although initial steps were taken since 1999, not much progress has been made in conserving treated water. It is hoped that by making rainwater harvesting mandatory, Malaysia will have less water-related crises in the future.

RAINWATER HARVESTING UNDER MALAYSIAN LEGAL FRAMEWORK

In Malaysia, rainwater harvesting is still considered as a new phenomenon. As far as the Malaysian legal framework is concerned there is no single provision pertaining to rainwater harvesting being stated under local laws. This has been so albeit recent development in the local water resource management.

Under the constitutional arrangement, the Federal Constitution clearly indicates that water is a State matter, and this includes rivers, lakes, streams and water beneath the surface of land. This however is not exclusive as under the Federal List, the Federal Government has power over water-based projects in the State, hydropower generation, navigation within ports, marine fisheries and mining. Furthermore, drainage and irrigation has been stipulated under the Concurrent List, hence both Federal and State can

[6] National Urbanization Policy 18 Clause (vi)

[7] After the creation of the Ministry in 2004, the Federal Constitution has been amended in 2005 to transfer the authority over water supply from State List to the Concurrent List. By virtue of the amendment, the Federal Government can now legislate on matters of water supply.

[8] See Badriyah Abdul Malek, "Pelan Penjimatan Air Kebangsaan: Tanggungjawab Kerajaan" paper presented at the National Seminar on Water Saving Awareness in Malaysia, 22 Mac 2007, Berjaya Times Square Hotel, Kuala Lumpur.

legislate on them. The Parliament also has the power to enact any law under the State List to achieve uniformity, or to comply with international treaty, or at the request of the State. Nevertheless, all these shall not have effect unless the State Legislature approves it[9].

Fairly recently, in 2005, the Federal Constitution has been to transfer all matters related to water supply services from the State List to the Concurrent List. This will enable the Federal Government's involvement in the water services sector and to establish a regulated water services industry via the newly created Ministry of Energy, Water and Telecommunication. It is interesting to note that the Ministry has come up with two new water related laws, namely the Water Services Industry Act 2006 and the Water Services Commission Act 2006. Despite the fact that the Ministry is actively involved in the water saving programs, which encourages rainwater harvesting, there is no single provision on rainwater savings in the new Act. This is understandable since the aim of the Ministry is to regulate the water services industry that is carried out by profit making companies. However since it is the responsibility of the Ministry to ensure that the water service industry in Malaysia remains sustainable, perhaps it has to prepare some rules pertaining to rainwater harvesting.

Under this new arrangement, the State Government will still have jurisdiction over the management of water resources. Nevertheless, States Governments have certain limitation in the execution of their powers. Many local authorities faced with financial problem to fully implement their policies and sometimes lack of manpower, especially experts. As a result borrowing to the Federal Government becomes common and local authorities rely on experts at the federal level for advice, and sometimes to implement their policies. On the other hand, the Federal Government has been and is formulating and coordinating water resources policy that will be implemented by all states at the state level. This is sometimes made with little support from the State Government. For instance, when the Federal Government initiates the need to gazette certain catchments areas within certain States, the State Governments have shown some reluctance since their income from logging and industrial activities take place at those areas.[10]

Despite the development of local water resource management and the amendment to the Federal Constitution, no provision has been made to rainwater harvesting in the Malaysian legal framework. Regardless of the enactment of the two Acts in 2006, nothing is said on water saving. It is submitted that since the Ministry is serious on water saving, it was such a good occasion for the Ministry to include rainwater harvesting provisions in the Water Services Industry Act 2006, perhaps under water saving effort provision by the industry. Such a miss of opportunity is intolerable when Malaysia is very keen in improving its water services industry.

[9] Article 74, subject to Article 76 of the Federal Constitution

[10] Kheizrul Abdullah, 'Water for Sustainable Development Towards a Developed Nation by 2020', a paper presented at a National Conference on Water for Sustainable Development Towards a Developed Nation by 2020, Guoman Resort, Port Dickson (13-14 July 2006)

LEGISLATING RAINWATER HARVESTING IN MALAYSIA

It is explicable that legal instrument can be used to implement government policies. In other jurisdictions like India, legal instrument has been used to put rainwater harvesting into practice amongst its citizen. In this context, Chennai has succeeded when 98% of its citizens utilize rainwater as an alternative source to mains water supply[11]. The same scenario could be accomplished in Malaysia. In fact, from the recent announcement it is understandable that the government wants rainwater harvesting be implemented in Malaysia.

The law relating to rainwater harvesting in this country can be legislated either as a substantive legislation or, it can also be made as a subordinate legislation. Through a substantive legislation the government's objective could be achieved in a shorter period and in a comprehensive manner. Through the substantive law the practice of rainwater harvesting can be applied in all states. The constraint of such law however is the fact that it has to undergo a lengthy period of legislative process whereby the draft bill of rainwater harvesting needs to be debated and amended in several stages in both Houses of Parliament.

On the other hand, the subordinate legislation however does not require such process. It suffices through the approval of a respective minister or to some extent through local authorities to make such practice as law. All the subordinate legislation has to meet is that it be made through a thorough study whereby all related stakeholders are consulted before it is enacted. In other words, the subordinate legislation is made through a careful study prepared by the experts on the subject. In addition, subordinate legislation is more detailed if compared to substantive legislation as the subordinate legislation is normally designed for implementation purposes, rather as a general policy.

From the above, we are of the view that by-laws are the appropriate channel to enact rainwater harvesting as law. Apart from the earlier advantages, by-laws can be made according to the needs of certain localities. Hence, the authority can decide which area needs implementation, either based on the density of population, or restrict it to drought prone areas.

IMPLICATION OF COMPULSORY RAINWATER HARVESTING

It is acknowledged that voluntary rainwater harvesting would not lead to a significant progress to the number of installation. As mentioned earlier only few agencies have adopted the system. Hence the move by the government to make rainwater harvesting compulsory is a welcomed effort.

[11] S. Vishwanath, *Rainwater Harvesting in Urban Areas* in http://www.rainwaterclub.org/docs/R.W.H.industries.urban.pdf

However, to make rainwater harvesting compulsory would result in some implications on the social, economic and legal sectors. From a legal aspect, compulsory harvesting would involve amendment of certain laws since this attracts some planning, environmental and health issues. It goes without saying that the Uniform Building By-laws 1984 will be the most affected laws in this area. If the By-laws can be amended in 1993 to require all new building to provide access to enable disabled persons to get in and out within the building[12], surely it can accommodate a provision for the requirement for rainwater harvesting installation. It shall now prepare a new specification for new buildings that includes rainwater harvesting. For a start it should apply to the large buildings and it will be the responsibility of the Public Work Department to refuse applications that do not comply with the new requirement. Nevertheless, this could be easier said than done as the developers who will practically implement this new policy might have other concerns such as the cost and technical issues.

Besides this, there are other related agencies; hence regulations on the planning and water related issues. To begin with, the control of land development, which is closely related to water resource management for sustainable development, falls under the Town and Country Department. This requires the need to amend certain provisions of the Town and Country Planning Act of 1976. In addition, the task of enforcing water quality is shared between the Department of Environment and the Department of Local Government. In this regard, the Environmental Quality Act 1974 and the Local Government Act 1976 may require some review. Besides this, the Department of Local Government is also responsible for planning approval and urban drainage, hence some assessment need to be made on the Street, Drainage and Building Act 1974. All in all, by making rainwater harvesting compulsory, detailed examination is needed on the legal side with all these Acts to go through.

Another related concern will be the health issues. This will be divided into two, the water quality and contamination[13], as well as the mosquito breeding. As most pilot projects use rainwater for non-potable use like toilet flushing or gardening, water quality might not be an issue. However if we start to have rainwater for potable use, quality should not be compromised for the sake of saving[14]. On the other hand, the public as well as government agencies are concerned with the possibility of mosquito breeding in the gutter. To make rainwater harvesting work without this worry, architects and engineers should not only come out with an environmentally and space-friendly design, but also a design that allows inspection and detection of mosquitoes.

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[12] Section 34A Uniform Building (Amendment) By-Laws 1993

[13] A research conducted in Maldives shows that 40% of rainwater collected was contaminated with faecal. See Maldives Water and Sanitation Authority, 'Rainwater Harvesting and its Safety in Maldives', a paper presented at the 12th International Rainwater Catchments Systems Conference, New Delhi, India (November 2005)

[14] This is the same reason why rainwater harvesting is not popular United Kingdom. http://www.environment-agency.gov.uk/commondata/acrobat/rainharvest_june04_809069.pdf, April 13, 2006.

ECONOMIC IMPACTS

Rain water harvesting could play important roles in reducing water demands and averting water wastages.

Several R&D efforts of rain water utilization for domestic, office and mosque complex, industry and agriculture use have been conducted by NAHRIM in collaboration with other government agencies and universities. Among the R&D efforts included;

- Installation of two 2,500 liter capacity high density polyethylene (HDPE) tanks that were later replaced with a 3,300 liters brick storage tank design that incorporated aesthetic and utility aspects to trap rain water falling onto the 60m2 roof top area. The system was able to save on one thirth of the household water use of 40,650 liters.[15]. The rain water utilization system for a double storey terrace house located at Taman Melawati for non-potable household use and also reducing peak storm run off. The system was able to trap 61.4 to 65.5% of the rain water flow. The initial cost was RM2,700 for the two HDPE tank construction and RM4,300 for the rain water cum detention storage system (brick tank). The maintenance cost for both the HDPE and brick tank was RM53/year. Assuming that the systems could last for twenty years, the annual total cost of the earlier system is RM188/year and the latter was RM268/year. The HDPE tank is projected to collect 109m^3 of water resulting in a unit cost of RM1.72/m^3. While the brick tank could collect 102 m^3 of water incurring a unit cost of RM2.62/ m^3 .

- Installation of an underground 60 m^3 storage tank to collect rain water to be pumped to toilets and standpipes at a mosque in Ampang. The installed cost of the system was RM95,000 with a life expectancy of 25 years. With an annual cost of RM4,100 and an annual rainwater utilisation of 3,249 m^3/annum, the unit cost of water is RM1.26 $m^{3.16}$ In both of the above cases, the per unit costs are both still high. The Government may have to urgently provide subsidies to encourage the public to insall new rain water harvesters.

ECONOMIC INSTRUMENTS TO ENCOURAGE RAINWATER HARVESTING

Steps have to be taken in order to encourage the use and practice of rain water harvesting. By looking at what has been implemented by other countries, it is clear that without

[15] Ahmad Jamaluddin and Adhityan 2000

[16] Ahmad Jamaluddin and Jabir 2004

certain measures, this practice will not be accepted by members of the public. With this in mind, it is proposed that certain economic instruments should be introduced.

A review of the literature on economic instruments to encourage rainwater harvesting in the rest of the world can be classified into

1. provision of subsidies
2. tax and cost rebates
3. rebates
4. education and raising awareness
5. guidelines
6. restriction in usage of piped water

1) Provision of Subsidies

It has been discovered that the cost of installation, maintenance and usage of rain water harvesting is much higher than that of piped water. [17] Steps have to be taken by the government to provide subsidies to encourage the public to install rain water harvesting systems, as done in other countries like Japan, Germany and Australia.

In Japan, there is no national legislation governing the practice of rainwater harvesting, but local governments are very active in promoting rain water harvesting by way of subsidies. For example, In Yamata City of Kanagawa, the local authorities installed 19 rainwater tanks in all 19 municipal primary schools as a means of promoting environment education. The tanks were made from recycled 250 litres whiskey barrels. In the city of Kobe where a 150-200 liters rainwater tank costs between 30000-50000 yens, the government will subsidize up to 2/3 of the cost, as high as 30000 yens, as a step to encourage the installation of the system.

In Australia, Queensland's state government have set up a new program, the Home WaterWise Service, which is a subsidized service that sees licensed plumbers visiting homes to install a range of water efficient devices and providing advice on water saving strategies. Under this program, homeowners can receive, among others, a water audit on their home, replace their old showerheads for water- efficient ones, fix leaking taps and receive information and advice on how to make their home water efficient.[18]

2) Tax rebates

Another economic incentive that the government should consider introducing is tax rebates. This rebate can be offered to both homeowners or other members of public who choose to participate in rain water harvesting and also to manufacturers and suppliers of rain water harvesting systems or equipment.

[17] See Ahmad Jamalluddin Bin Shaaban & Adhityan Appan, "Utilising Rainwater For Non-Potable Domestic Uses And Reducing Peak Urban Runoff In Malaysia" page 7.
[18] http://www.lgis.com.au/waterwise April 16, 2007

This tax rebate for home owners has been implemented successfully in certain parts of India. For example, in the city of Indore, known as the commercial centre for the state of Madhya Pradesh, a rebate of 6 % on property tax has been offered by the Indore Municipal Corporation (IMC) as an incentive to encourage and motivate the public for implementing rainwater harvesting systems.[19] Similarly, this incentive of 6 % rebate in property tax in the year in which the construction of rain water harvesting facility has been completed to the building owner is also offered in Gwalior, another city in Madhya Pradesh.[20]

Since this rain water harvesting practice is fairly new in Malaysia, there are not many manufacturers or suppliers of the system available. To encourage their participation, it is recommended that a tax rebate is introduced for the various stakeholders such as manufacturers, suppliers, housing developers, contractors who are involved in rain water harvesting systems production and installation.

For instance, in Texas, USA, the State Government provides a Sales Tax Redemption for water efficiency equipment – including equipment for rain water harvesting. Rainwater harvesting materials are tax-free. Measures such as this will encourage the participation of the stakeholders.[21]

3) Rebates to property owners

Another measure that can be taken to attract interest and encourage the practice of rain water harvesting is by providing rebates for the purchase and installation of rain water harvesting equipment and installation.

This measure has been implemented successfully in countries like Australia. In Australia, each state government implements its own scheme to implement and encourage rainwater harvesting among homeowners. For example, in the State of Queensland, the scheme is known as Home WaterWise Rebate Scheme. As an incentive to entice homeowners to install rainwater tanks, most City Councils will offer various rebates for the purchase and installation of the tanks and other related items such as showerheads, toilets, etc.

For example, Brisbane City Council provides rebates for homeowners who purchase water tanks and fulfill other conditions that have been set by the Council. A residential rebate of $500 is provided for the purchase of a tank that is equal to or more than 3,000 liters while a $750 residential rebate is given for a tank that that is equal to or more than 5,000 liters. A $1,000 body corporate or community title scheme rebate is provided for the purchase of tanks equal to or more than 10,000 liters. A further $100 internal connection rebate is also available to purchasers who fulfill the eligibility criteria. In addition to the Council's rebate, the Queensland state government will pay up to an

[19] http://www.rainwaterharvesting.org/Urban/Practices-and-practitioners.htm, April 16, 2007
[20] http://www.unchs.org/downloads/docs/4179_35990_Policy%20Paper-2.pdf, April 16, 2007
[21] http://www.twdb.state.tx.us/iwt/rainwater/faq.html#08, April 16, 2007

additional $1000. However, both rebates must not be more than the cost of the tank and associated installation and plumbing cost.[22]

In the city of Toowoomba, a rebate of $500 is offered for any homeowner who purchases a rainwater tank. To be eligible for the rebate, the tanks must have a capacity of at least 5,000 liters, and be connected to at least one toilet cistern or alternatively, to the washing machine; and to a garden tap.[23]

In Pine Rivers Shire, the city council is implementing the Water Efficient Device Rebates to encourage homeowners to participate in rainwater harvesting as a step to reduce relying on piped water supply. Under this rebates scheme, a rebate up to $500 is given for pumps, plumbing materials and installation cost. The council is also waiving the inspection fee of $100. A rebate up to $100 is given for the replacement from a single flush toilet to a dual flush toilet suite, a maximum of 2 toilets only is eligible for rebates. Rebates are also offered for the purchase of other rainwater harvesting-friendly equipment such as washing machines, showerheads, pool covers and pool cover rollers.[24]

In Sydney, rebates up to $800 is given for the installation of rainwater tanks, eligibility and amount of the rebate is determined on the fulfillment of required conditions, size of the tank and whether the rainwater is connected to your toilet or washing machine. There are certain conditions to be fulfilled before qualifying for rebate.[25]

4) Education and Raising Awareness

Campaigns by various related Government Agencies and mass media to be conducted to promote benefit and importance of rain water harvesting and utilization. Steps should be taken to incorporate rain water harvesting into school education curriculum probably through Kemahiran Hidup (Living Skills) or Geography subjects. Currently, Education Ministry has introduced nature education in both primary and secondary schools. Now it should be taken to the next step where topics like water cycle, conservation of natural water sources like rivers and lakes, should be included in the curriculum.[26]

In Australia, certain state governments have introduced a rainwater tanks in school program whereby participating schools will be given a rebate up to $2,500 for the installation of a rainwater tank. Besides, awareness campaigns on importance of conserving water are also done in the participating schools. Tips and information on how to conserve and save water will be provided to help the school authorities.[27]

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[22] http://www.brisbane.qld.gov.au/BCC:BRISWATER::pc=PC_1460, April 16, 2007
[23] http://www.toowoombawater.com.au/rebates/rainwatertanks.html, March 1, 2007
[24] www.**pinerivers**.qld.gov.au/c/prsc?a=da&did=1212064&pid=1129696417&sid, March 1, 2007
[25] http://www.sydneywater.com.au/SavingWater/InYourGarden/RainwaterTanks/Rebates.cfm, April 16, 2007
[26] See Badriyah Abdul Malek, "Pelan Penjimatan Air Kebangsaan: Tanggungjawab Kerajaan" paper presented at the National Seminar on Water Saving Awareness in Malaysia, 22 Mac 2007, Berjaya Times Square Hotel, Kuala Lumpur.
[27] https://www.sydneywater.com.au/Publications/FactSheets/RainwaterTanksFAQs.pdf#Page=1 April 16, 2007

5) Guidelines

By providing standardized guidelines, the government or city council will make it easier for the consumers interested in installing rainwater harvesting systems. A guideline will ensure that proper and suitable rainwater harvesting systems are purchased, installed and maintained by the homeowner.

Each city council in the state of Queensland has its own Guidelines for Installation of Rainwater Tanks[28].

In UK, although rainwater harvesting is not mandatory and no legislation has been enacted to govern the practice due to the high cost and the health risks involved, homeowners are free to install the rainwater harvesting systems, but they still need to comply with the Water Supply (Water Fittings) Regulations 1999 (England & Wales) & By-Laws 2000 (Scotland). The nearest thing resembling guidelines available in the UK is the Harvesting Rainwater for Domestic Uses: An Information Guide 2003 which was prepared by the Environment Agency Planning Policy Guidance Note 25 (PPG25) which deals with issues pertaining to water resources, water quality and flood risk – to deal with these issues, the Environment Agency encourages the use of Sustainable Drainage Systems (SUDS), including the rain water harvesting[29].

Similarly, in Germany, rainwater harvesting has yet to be made mandatory and no specific legislation is available. However, there is the National Guidelines of DIN (Deutsches Institut fur Normung) prepared in 1989 named Rainwater Harvesting Systems Maintenance which specifies the general requirements for the appropriate system to be used for the storage and utilization of rainwater. Topics covered include the planning, installation, operation and maintenance of the Rainwater harvesting system[30].

6) Restrictions in usage of piped water

This is implemented in Australia, where the usage of town water (piped water) is limited to certain time and amount. This is done in several cities especially in areas which receive low annual rainfall or are drought-prone, such as Toowoomba, Queensland.[31]

[28] www.**homewaterwise**.com.au, March 1, 2007
[29] Harvesting Rainwater for Domestic Uses: An Information Guide (Environment Agency – July 2003); see also www.environment-agency.gov.uk/savewater
[30] www.nssn.org/search/DetailResults.aspx?docid=432952&selnode
[31] www.toowoomba.qld.gov.au/index.php?option=com_content&task=blogcategory&id=286&Itemid=315, March 1, 2007

OPINIONS AND COMMENTS BY WATER STAKEHOLDERS

Implementation of compulsory rainwater harvesting in Malaysia as announced by the Prime Minister invites opinion from various stakeholders. As a matter of fact, several hundreds household in Carey Island which has collected rainwater for more than 25 years would be the best group to comment on this. Their houses have been built with a gutter system that channels rainwater from the roof into large water tanks placed outside the houses. Water flows from the tanks from attached pipes just like treated pipe water. The houses are located in the oil palm estate belonging to Golden Hope Plantations Bhd that is occupied by estate workers and management staff on the estate.

Golden Hope senior manager Shamaruddin Abu Samah said that the rainwater collecting system was provided for all houses built by the company. The system has been instrumental in coping with non-essential uses and in cutting cost to treat its own supplies using water from the rivers since treated water was not available in many plantations in remote areas. He further explained the way the tanks function and its capacity. The tanks are of two storage capacities. The concrete storage tanks at the workers' 26 year old quarters can hold about 2,000 liters of rainwater while those at the newer management quarters occupied in 2006 can hold about 400 liters. At one stage, rainwater was the only source of water until treated water was piped into the houses in the 1990s. Even in the case of water cuts, the houses are never short of water as there is plenty of water in the tanks for normal household chores.[32]

With rising awareness of environmental issues, an increasing number of companies are requesting for energy efficient and environmentally friendly buildings. According to Ahmad Rozi of aQidea Architect, "Green architecture is the way of the future, it's the next step in architectural evolution. In designing buildings, architects should place emphasis on maximising the use of the natural resources in view of rising costs and greater awareness for conservation. A designer of a building should always strive to fit the design into the natural landscape instead of the other way round. Changing the natural landscape can come with a heavy price". ".[33]

Water and housing associations have lauded the proposal to create a rainwater harvesting system for building owners but voiced reservations over its effective implementation. [34]According to the President of Malaysian Water Association, Datuk Syed Muhammad Shahabudin, the implementation of rain water harvesting is a welcomed idea as it is very beneficial to the people as it provides another means of obtaining water naturally. However, he voiced his concerns over the proposed by-laws. As it will affect a lot of

[32] New Strait Times, 29 March 2007, Ganesh V. Shankar "Rainwater harvesting quite the norm in Carey Island". Page 9

[33] New Strait Times, 29 March 2007 "Green Architecture the New Buzzword in Building Concept." , Page 6

[34] The Star, Nation 30 March, 2007 "Aye' to rainwater plan: But many associations want proper system planning first" Page N35

consumers, in his opinion it is important to talk to the public first, through forums and dialogues, to get their opinion and views, and to make them aware of how it will affect them. It is also his view that the implementation of the rain water harvesting system must be done selectively, as not all buildings could be fitted with the system, as it required a considerable roof size and also room for the storage tank.

Before the implementation of the system, some issues must be sorted out before going ahead with the plan. This includes; rain water harvesting methods can be easily applied to new structure but what about the existing buildings, what about the cost of putting up the system, and what action to be taken against building owners who do not comply with this ruling. Kok Hee Poh, the Regional Programme Coordinator for Global Water Partnership South East Asia (GWP SEA) welcomed the proposal by the government, "It is indeed a decision in the right direction in view of the world water shortage".

Ng Seing Liong, the president of Real Estate and Housing Developers' Association Malaysia (REHDA) has this to say on the issue. "We support the Government's plan but we feel the implementation, using the introduction of by-laws, entailing the housing sector, might not be a good idea. "For such a system to work effectively, it requires periodic and proper maintenance. Malfunctioning pumps could create a health hazard by turning the place into a breeding ground for mosquitoes. Poor level of maintenance, which is common in Malaysia, could turn the plan into something detrimental to the public. (The) Government is urged to reconsider compulsory installation of the rainwater harvesting system and focus instead on creating awareness among the public on efficient water usage".

CONCLUSIONS AND RECOMMENDATIONS

From the information we have gathered, it can be seen that certain countries like India and Australia are using a more forceful method where the practice is not only supplementary but is mandatory on the people. By enacting legislations and providing detailed guidelines, their system is more authoritative and organized. This could be due to several reasons. India, being a drought-prone country with limited natural water resources, has no choice but to limit or reduce reliance on piped water and use rainwater harvesting instead. On the other hand, by making rain water harvesting mandatory, added with encouraging incentives and awareness campaign, Australia has succeeded in convincing her people to resort to rain water harvesting and implemented rain water harvesting on a large scale. India, as a nation with billions of people and limited economic resources, may not be capable of providing incentive or campaign as in Australia. It goes without saying that strict regulations back by fines for violation is the only way for successful execution of the policy in India.

With regard to Malaysia, it is recommended that a combination of the methods stated above should be implemented. From a legal perspective, introducing rainwater harvesting

under a by law would be more feasible method. Alternatively, the Uniform Building By-Laws could be amended to include a requirement for rainwater harvesting installation in buildings for the authority's approval. While Malaysia has, from time to time, experienced droughts or water shortage, things have yet to come to a critical stage where the people have no choice but to rely on rain water harvesting as a main water source. It is recommended that rain water harvesting is introduced, initially on a small scale, to assess public reaction. Since Malaysians are known to be slow in accepting changes, drastic measures could cause rain water harvesting to fail. Monetary or economic incentives like cash or tax rebates and subsidies in purchasing or installing rain water harvesting devices should be introduced to attract interest of members of the public. Furthermore, education and awareness campaigns should start from the early stages to instill a sense of awareness. This may be included in the water and energy conservation topics under the environment subject in the school curriculum. As a matter of fact, the younger generation is the generation of the future. Thus, they should be equipped with knowledge which is energy and water efficient, as well as environmentally sustainable.

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