

# COMMUNITY RAINWATER-HARVESTING (RWH FOR ENHANCING FLOOD AND DROUGHT RESILIENCE

## REPORT FOR 2015

### 1. Aim

The project aims at exploring ways to reduce flood, drought and other climate risks in a community in Kampung Kuala Sungai Baru, a village in Puchong, Selangor, and also increasing their resilience towards those hazards.

### 2. Background

As mentioned in the earlier reports, the selection of the community was based on information and feedbacks from some Selangor's local authorities and State Department of Irrigation and Drainage. Kampung Kuala Sungai Baru is one of the communities in Selangor affected by both floods and water-rationing.

The premise selected for the rainwater harvesting (RWH) installation is Maahad Tahfiz al Muqri (MTM), a small rural and private or *madrasah*, located in Kg Kuala Sg Baru, Puchong, Selangor, Malaysia, about 20 km away from Kuala Lumpur. *Tahfiz* is a school where, apart from learning Islamic teachings, the students learn to memorize the Quran.

The ages of students range from about 8 to 21 years old. The number of the students in the school varies from time to time due to the nature of the school system. Students may register or leave almost at anytime of the the year since they pay monthly fees. Thus, the number of students may vary from month to month. For the purpose of this report, an estimated number of students of about 70 will be used. The number of teachers and staff also may vary but a safe figure would be about 6.

### 3. Sub-outputs / deliverables

Four sub-outputs or deliverables were expected during this phase:

#### 3.1 Awareness/ dialogue with local community

Dialogues and informal discussions were held between MyWP and the nearby villagers and also with the school management. Even though the villagers find it beneficial to install the system, they are, in general, see it as quite costly. Although the return may be good in the long run, the capital investment is a challenge.

The discussions with the locals prove to be quite challenging due to the instability of the local administrative structure i.e. Jawatankuasa Kemajuan dan Kesematan Kampung (JKKK) or the Village Development and Safety Committee. This is in turn the result of the political shift at the state level. This had been made more challenging due to the sudden demise of our very friendly and helpful liason villager, En. Zainal, in September, 2015.

The cheap cost of water is also not very motivating towards such practice. However, water rationing effects in the future is something that they know they can reduce, if not avoid, using the system. Cheaper methods of RWH need to be look at e.g. installing a community RWH facility where every family will invest a small amount of money into it. This is one of the possibilities still in discussion among the villagers whose premises may be the surau (small mosque), the community hall or even the compounds of individual houses.

### 3.2 Awareness session with primary school

A request was made to hold an awareness session with the local primary schools, Sekolah Alam Megah 1 and Sekolah Alam Megah 2. The schools' management seemed to be interested in the program and would like to see their involvement in the adoption of the technology which could also help them reduce their expenditure thus conduct more activities.

However, due to some logistics issues and slot availability, the sessions are postponed. The tentative dates have not been confirmed but scheduled sometime in May or June 2016.

### 3.3 Awareness sessions with secondary school (MTM)

As a follow-up of the introductory talk for the MTM students and teachers, a few formal and informal briefings on smart water use were held for the students. They were also explained about the system during the installation so that they have a better picture of not only how the system works but also how it saves water and help to reduce flood in the area.

(The school is on a slightly higher ground level so doesn't face any serious flooding problems although the surroundings area does.)

Various educational materials on water management at the individual levels were distributed among the students and teachers. They are brochures and posters. Due to lack of facilities, the videos can only be watched during one of the talks. More videos are planned to be shown in the near future.

### 3.4 Installation of RWH system at the secondary school (MTM)

Initially planned for 2014, the installation of the RWH system faced few delays due to unexpected renovation and upgrading works at the school which took many months to complete. They involved mainly the toilets, the piping system, and wiring which were physically poor, unhygienic, and unsafe due to lack of maintenance. The issue was made worse by the apparently intentional delays made by the contractor hired by school whom reportedly had received full payment before his job was completed.

However, the RWH contractor found it practical to install a gutter first while waiting for the water pump the renovation works was still in progress. In February 2015, a gutter was installed at one on the buildings near the toilet.

Due to lack of available safe space, an existing tank on the floor in the washroom was reconstructed and enlarged to accommodate the rainwater collected. The water was used directly by the students for secondary purposes.

A water pump was installed by April 22, 2015 to transfer the water to three units of flush latrines whose water was previously supplied by the main water supply. The teachers and students were briefed on the apparatus and basic procedures regarding its operations and maintenance. Any major problems due to the system will be solved by the contractor.

The system was designed in such a way that when the harvested rainwater runs out, water from the main water supply will automatically flow into the tank to ensure continuous water supply to the community. The system may require slightly more modification or adjustment to improve water use efficiency.

During its operation, the water pump faced two technical problems: one in July and the other in October. At the time of the report, the water pump is still being repaired and is expected to run again by mid-November, failing which it will be replaced by a new unit.

The teachers and students were briefed by the project manager and contractor on the system and the relevant health and safety issues. The main message was that every individual needs to use water efficiently and wisely even if the water supply is “free” harvested rainwater. They were also strongly reminded of the benefits of the practice and also the previous water rationing events which have caused them severe life difficulties.

Discussion groups were also conducted to, among others, allow the children to figure out ways on how to use water more efficiently. The students were also given educational materials about individual roles in water management and catchment management.

Some even discussed about the possibility of growing vegetables using the rainwater to not only be consumed by the school community but also selling them to the rural community. The contractor, who is also an avid vegetable grower also promises to assist in related technical matters, if required.

Apart from flushing the toilets, the harvested rainwater is also used for other secondary purposes mainly cleaning up the washrooms, the school compound, and the floors especially the dormitories, and cleaning the students’ feet after evening sporting activities. There have been remote cases of students stubbornly using it for bathing (since the tank is built so conveniently on the floor) but so far, no health cases have been reported. Every once in a while the students are reminded to only use the water for other than drinking and bathing purposes.

In general, the figure for water saving is based upon the water bills received by the school. Before the installation of the system, the monthly water bill was recorded at about RM2,500. Since the installation of the system, the water bill has slightly gone down varying between about 15% to 25%, a saving of at least about RM300/month, which is quite significant for the small school. Some of the highest saving were recorded during the long school holidays in March, May, and September.

Based on discussion with both the teachers and students, it is expected that further significant savings can be made once the students (and the maintenance workers) are used with the habit of not using tap water for secondary purposes. The school teachers believe that although time will be required to achieve this, it won't take long since the students are still young and easy to capture good habits.



Students reading educational materials on IWRM distributed to their school



Students reading educational materials on IWRM distributed to their school



For the first time, the school is getting free educational materials on IWRM



Some community members attending a dialogue session on RWH in their community



The gutter installed at a building near the washroom



Taking measurements of the existing floor tank which will be modified to serve as a rainwater collecting tank



The contractor talking to one of the students on the use of the tank



One of the latrines before it benefitted the rainwater harvested water