



Series 1 of 2018

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Kinaiyahan

Watershed Issues in Brief Bantay Kinaiyahan is a regular publication of the Interfacing Development Interventions for Sustainability Inc. to provide the public with relevant and concise information on pressing watershed issues.



SAVING AND USING THE RAIN

Validation and Assessment of Rainwater Harvesting Ordinance of Davao City

Davao City, being the largest city in the Philippines in terms of land area, receives on average 2,628 mm of rain per year. Even during a typical dry season, the city receives a minimum of 2,000 mm of rainfall, ensuring the city of at least 100,000 liters of rain if only harvested by a typical 50 square meter roof catchment.

In 2016, however, Davao City's demand for all types of water use was reported at 108,358,841 cubic meters and is projected to reach 164,392,803 cubic meters by 2031, with an estimated 52% increase within the next 15 years. Currently, the city has 58 production wells with capacity of 112,993,904 cubic meters. Groundwater capacity of these water sources is no longer sufficient to supply the increasing water needs of the city for the next decade.

Over the years, the city has wasted millions of gallons of valuable free rainwater because of Dabawenyos' dependence to a more accessible high-quality potable water supply extracted from groundwaters of Talomo-Lipadas watershed even for non-potable uses. Ironically, the city also suffers from flooding in periods of intense rainfall due to overloaded drainage systems made worse by poor urban and waste management.

But as early as 2009, Davao City already passed an Ordinance for the Proper Harvesting, Storage and Utilization of Rainwater in Davao City (City Ordinance 0298-09) requiring establishments and buildings to install catchment facilities to harvest rainwater. The ordinance, authored by the late Councilor Leonardo Avila III, aimed for rainwater to be an alternative source of non-potable water supply as well as a flood mitigation strategy.

Given the recent water demand increase and supply shortage, there is a need to assess the implementation of the City's Ordinance, seen as a crucial component of the entire watershed management conservation effort of the City.

Assessment Results of Establishments in Davao City

Compliance: LOW

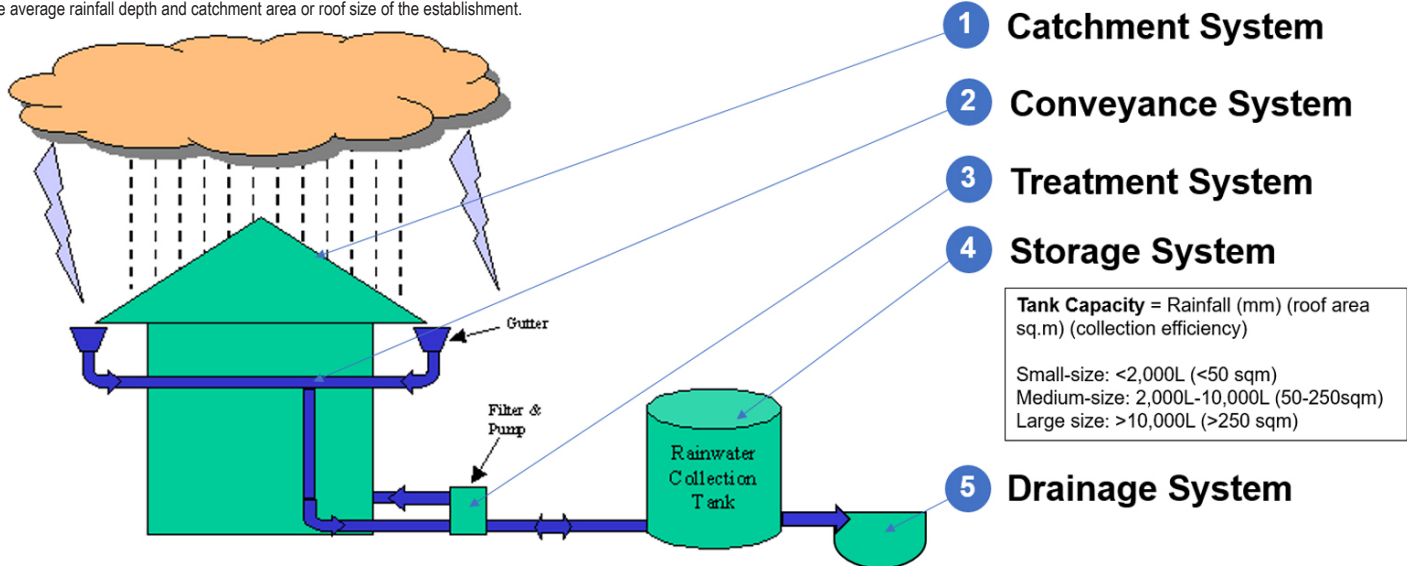
- Only 26% of the 100 establishments randomly selected from the Office of the City Building Official (2015-2017) inventory were found to have actual Rainwater Harvesting System (RWHS) installed, with management or owners themselves confirming that they did not have the facility. Only 22% of establishments have catchment facilities that were in good condition, meaning operating and functional. This echoes the same result from a similar survey conducted four years earlier where only 29% were found to be compliant.
- Ateneo de Davao University's City-wide Social Survey Series revealed an average of 32% personal compliance to the Ordinance, comparatively lower to 88.7% when asked if they had rainwater reservoirs.

Awareness: LOW

- Majority (67%) of the owners, managers and building personnel were unaware of the Ordinance when interviewed. But even a small percentage of those that were aware of the Ordinance did not translate into compliance as 11% of them were reported to have no RWHS.
- Ateneo de Davao University's City-wide Social Survey Series in 2015 also reported only 17% awareness on the Ordinance.



▼ The Implementing Rules and Regulation (IRR) requires that the Rainwater Harvesting System (RWHS) should have (5) five components, with appropriate storage tank sizes through calculating the average rainfall depth and catchment area or roof size of the establishment.



Quality: GOOD

- Most establishments with RWHS were found to had basic components, while a few others had advanced treatment methods.
- However, several establishments did not follow the appropriate formula of tank capacity, vis-a-vis rainfall depth and catchment surface as described in the IRR. Some establishments also did not have conveyances leading to the storages. Tanks were also often used for different purposes i.e stored water from Davao City Water District (DCWD) supply. An offer on tank rental for Occupancy Permit approval was documented.

Usage: HIGHLY USEFUL AND BENEFICIAL

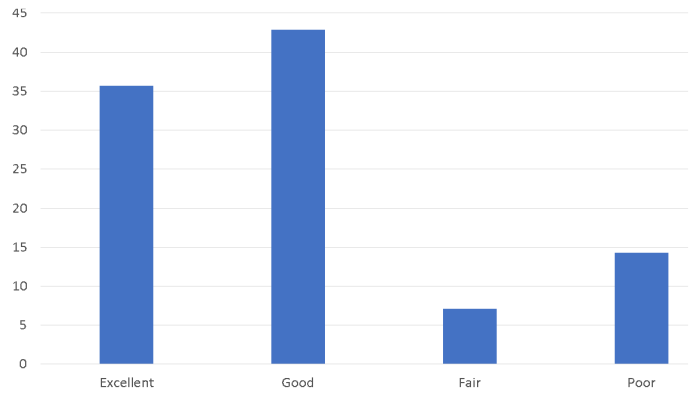
- Majority (93%) of the respondents use stored rainwater for general cleaning, gardening and landscaping. Many of them (70%) use the stored rainwater on a daily basis.
- A separate survey revealed contrasting results with only an average of 27%, citing that “there is no need” as the main reason for their non-usage of the facility.

Efficiency: GOOD

- Of those with existing RWHS, 43% of the respondents observed significant decrease in their water bill since their RWHS were installed. As many as 71% affirmed that there were no flooding incidents after the RWHS installation. However, all of them noted that they have not received any incentives or rebates from the LGU for their compliance but a small percentage (14%) experienced faster processing of their building and occupancy permits due to their completed RWHS facility.

Overall Assessment

Majority of the establishments with existing RWHS facilities were rated Excellent (35.4%) and Good (42.86%). This confirms the fact that these establishments adopted rainwater harvesting voluntarily and confidently showcased their RWHS facility. Those with fair and poor remarks (21%) were hesitant during inspection due to incomplete/non-functional RWHS facilities.



Rainwater Harvesting Systems (RWHS) of different establishments during the validation and assessment in 2018.

Best Practices in Rainwater Harvesting and Utilization



Davao Christian High School, V. Mapa Campus

Rated “Excellent” in the assessment, DCHS is harvesting rainwater stored in a cistern tank and in three (3) 20,000-liter tanks to be distributed on rooftop tanks used in toilet flushing. The school’s rainwater harvesting facility has an advanced sensor systems programmed for water conservation.



San Pablo Parish, Juna Subdivision

Also a 2018 Lunhaw Awardee and rated “Excellent” during the assessment, San Pablo Parish established its own RWHS as early as 2004. Their new building has four tanks used for watering the plants, general cleaning, and toilet flushing. The parish also donates water supply for neighboring communities and chapels under its jurisdiction.



Responses from Government Agencies

Davao City Office of the City Building Official (OCBO)

- Lack and inadequacy of inspectors assigned in validating and monitoring of RWHS facilities per establishment and household. They have only three (3) inspectors for each district.
- After inspection for Occupancy permit, inspectors could not anymore monitor how the management or owner uses the RWHS, some would use tanks for other purposes.
- Deficiency on updated and official inventory of establishments with RWHS, it was discussed that the office will be improving their database.
- Owners rely on their contractors as building permit applicants, when its turned over some would not sustain, because orientation of RWHS requirements are usually attended by contractors.
- There is an overall fee for building permits, no specific fee for RWHS. As for penalties, office have not collected yet since the implementation of the ordinance.

Davao City Watershed Management Council (WMC)

- Issued a resolution adopting the results of the Assessment on the Rainwater Harvesting Ordinance.
- Called on the Office of the City Building Official to attend the WMC meeting and report on updates/actions in response to the research recommendations.

◀ Presentation and discussion of assessment results with Engr. Cirinia Catubig, Officer-in-Charge of the Office of City Building Official (OCBO).



Recommendations

Research results showed that the Rainwater Harvesting Ordinance of Davao City has not been fully complied, implemented and monitored since it was passed in 2009 and its Implementing Rules and Regulations approved in 2014. Hence, there is an immediate need to intensify the implementation and monitoring of the public's adoption of the ordinance.

1. Clarify role delineation of local government agencies (Office of the City Building Official for permits, Watershed Management Council for monitoring).
2. Implement promised incentives and improve on tax rebates.
3. Fast track development of technical manual and make it publicly accessible.
4. Adopt and improve LGU's monitoring systems, inventory and databank management.
5. Investigate alleged anomalies and issues documented.
6. Intensify Communication Education and Public Awareness (CEPA) focusing not on mere compliance to the ordinance but on the long-term goal of water conservation and flood mitigation for the city.

Highlights from the RWHS Research Results Presentation

"The city is experiencing flooding, rise in the influx of migrants thus land conversions and commercial agriculture, demanding infrastructure preventing natural waterways. The results that only 26% are implementing is alarming low. In a population of 10,000, the figures are quite disappointing. Knowing that the population has increased in Davao City, figures are very minimal compared to the number of households. Hopefully, research recommendations will be addressed by government offices."- Engr. Tender Ferolin, Ecoteneo/AddDU and RWHS Practitioner

"Our program started way back in 2004 by Bishop Tonel. We were thinking of how we will save money. Instead of spending for water bills, maybe we can convert it to other programs. So when we created new buildings, we included water harvesting system without any idea of this ordinance with incentives. Hopefully this initiative will go down to the communities. Davao City has 1.6M population. If every household has a drum that can contain 200L, multiply it to just 400 households, then 8000 liters of water can be saved. We need a push from below, a multi-sectoral effort."- Mr. Rhoderick Hernandez, Parish Social Action Ministry, San Pablo Parish/2018 Lunhaw Awardee for Water Conservation

"There has been a lot of infrastructure development in the city, particularly putting of condominiums. The RWHS will address water shortage especially in residential areas, where there water availability is a challenge. As far as the EMB is concerned, the implementation of the RWHS is now part of the environmental impact assessment (EIA) process. It is included as requirement in the approval or issuance of Environmental Compliance Certificate (ECC) for condos, subdivisions, and other establishments."- Ms. Sheena Mari Campos, Senior Environmental Management Specialist, DENR-EMB Region XI

"We assure you that all applicants of building permits have been required to have the RWHS. But during the occupancy permit has been released, after the inspection we can no longer assure the status of the rainwater harvesting systems. With this study of IDIS, this can really help us in monitoring. In our department, we have already created a group to monitor the implementation of the rainwater harvesting facilities after the issuance of the occupancy permit." – Engr. Leonard Palban, Acting Head, Inspection & Enforcement, OCBO-Davao City



▲ IDIS and Ateneo de Davao University's studies on Davao City's Rainwater Collection Ordinance held a public presentation and forum with Government Agencies and stakeholders last October 2018.



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Credits

- [1] Ibañez, J., Villanueva, A., et al. (2013) Resource and Socio-economic Assessment of Talomo-Lipadas and Panigan-Tamugan Watersheds
- [2] Davao City Water District (2016)
- [3] Interface Development Interventions, Inc., 2014
- [4] City-wide social survey series covering 2015-2018, Ateneo de Davao University City-wide social survey 2015-2018
- [5] Sunstar Davao Harvesting Rain Article by John F. Lumawag, 2018
- [6] City Information Office (CIO), Byaheng Du30 episode on Rainwater Catchment in Davao City, 2018

Funding Support from:

