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**Sustainable Management of “Aqua” for Resilient  
21st Century (SMART) Communities**

**GRANTEE:** De La Salle University (DLSU)

**PRINCIPAL INVESTIGATOR:** Dr. Aileen Orbecido

**COLLABORATING PARTNERS:** Polytechnic University of the Philippines–Mulanay  
Quezon Campus (PUP-MQ)

**GRANT PERIOD:** February 1, 2017 to January 31, 2018

**CONTRACT AMOUNT:** Php 3,760,000 (approximately USD80,000)

**Improving water supply**

Water is a basic necessity of life, and having access to it is recognized as a fundamental human right. With rapid urbanization and growing populations, cities and towns of the 21st century face water management challenges more complex than ever before, as climate change threatens to cause disruptive changes to the hydrological cycle. In response to water shortages, polluted waterways, and climate change, water sectors are questioning traditional water management approaches that look at the design, operation, and management of supply and sanitation in isolation.



*Dr. Renan Tanhueco presents the concept of sustainable flood and drainage management that can be useful to local setting to the local community of Mulanay, Quezon*

These issues are particularly relevant to countries with emerging economies like the Philippines, as water is not only an environmental resource but also an economic commodity for progress and development. Water scarcity and water pollution create imminent crises in the country, not only in major cities but also in rural areas over the coming decade. According to the World Bank, there are still approximately 7.5 million Filipinos without access to improved water supply and 24 million without access to improved sanitation.

The rural communities are the main sector where improved access to these two basic needs remains the lowest. Moreover, toilets of households in rural communities are typically connected to septic tanks from which effluent is likely to be discharged without proper treatment. This may result in increased incidence of waterborne diseases. Thus, it is imperative to assess whether existing systems for water management in the Philippines are ecologically and financially sustainable, and resilient to extreme events associated with climate change.

The project aims to design and deploy integrated water management systems that consist of a rainwater harvesting system coupled with an off-the-grid water purification system and waterless eco-toilet. The main objective is to improve the water management and sanitation in rural communities with the use of indigenous materials and locally developed technologies.

### Potential application and benefits



*Ocular inspection at potential demonstration site in Mulanay, Quezon*

Mulanay, Quezon, would be the pilot municipality to test the proposed integrated systems, since the local government unit of Mulanay has been a long-time partner of DLSU in many of its “green-initiative” projects. It has also been reported that more than 80% of the households in many of Mulanay’s rural areas, including coastal barangays, still do not have access to clean and potable water. The local state college in the area, PUP-MQ, will also be a collaborator on capacity building. PUP-MQ will assist in the installation, monitoring, and maintenance of the facility in the chosen site. In addition, social acceptability will be a major factor for sustainability.

Several focus group discussions and workshops will be conducted to increase awareness and engage the local government, pilot community, and stakeholders in each phase of the project. The implication of this research project would even extend to public policy making in promoting off-the-grid or decentralized integrated water management systems as a low-impact development in the Philippines.