

People Make Technologies

Sustainable Sanitation

GTZ works with local government units and communities in determining appropriate technology options to improve sanitation.



A social preparation activity on the constructed wetland system with residents of the barangay Villareal relocation site in Bayawan City, Negros Oriental.



Josefina Tumong (left) and Virgilio Tumong (right) are among the first users of the cost-shared Urine Diversion Dehydration (UDD) toilet facility.

The experience of Bayawan City, Negros Oriental shows that social preparation is just as important as choosing the right technology for the community. Strong leadership, political will, and active involvement of people in the decision-making process are also key factors.

Constructed Wetlands

The construction of a new coastal road along *Barangays* (villages) Boyco, Tinago, Suba and Villareal in Bayawan City, Negros Oriental prompted the need to relocate around 700 fisher families residing in the areas. The difficult task of strategically relocating the fisher families such that they need not be cut-off from their main source of livelihood fell in the hands of City Mayor German P. Saraña, Jr. and his team of planners and engineers.

Despite limited resources, the city administration managed to secure a small coastal land (around 7.4 hectares), near the fisher families' original residence. However, proper wastewater management soon became a concern for such a densely populated location with high ground water level. Mayor Saraña, a staunch advocate of environment protection and conservation, recognized the need to identify technology options for wastewater discharge other than the conventional septic tank.

In 2005, upon the city mayor's request and invitation, the German Agency for Technical Cooperation (GTZ), along with some experts, visited the resettlement and recommended the use of "constructed wetland" for wastewater management.

Constructed wetlands are man-made, engineered systems that remove organic pollutants and nutrients from wastewater through filtering by soil and plants with the help of microorganisms. The cleaned wastewater can be re-used, e.g. for irrigation or toilet flushing, thus reducing the demand for fresh water and therefore the exploitation of the water resources.

The Bayawan City Government and the GTZ Water and Sanitation Program forged a Memorandum of Agreement (MOA) that paved the way, in 2006, for the construction of the wetland treatment system in *Barangay Villareal*, the first of its kind in the Philippines. The city administration financed the construction through an estimated loan of



PhP10 million, which is higher than the average cost for such a facility due to the topographic conditions.

The GTZ supported the city's project through technical assistance with focus on capacity development and sustainable development. Specifically, GTZ experts worked with the city government's team of engineers in the design and construction monitoring of the system. With the knowledge gained from GTZ experts, the city engineers were able to make significant design innovations to increase energy efficiency and hence reduce system maintenance cost.

GTZ also initiated the integration of social preparation and community participation strategies all throughout the wetland system installation process to ensure that residents are well-informed and are able to participate in the decision-making process concerning, but not limited to wastewater management. Through regular meetings and interactions with the city engineers and GTZ experts, the residents were able to voice-out their concerns and complaints about the wetland system. (For example, by keeping the communication lines open, the city engineers and residents were able to agree on the most appropriate time to release wastewater to the reedbeds to minimize resident's exposure to the wastewater odor).

The city government is looking at training the residents themselves in the proper maintenance of the wetland system. The city also plans to construct two more systems for the public market and the new bus terminal.

Urine Diversion Dehydration (UDD) Toilet

With the positive results of the constructed wetland technology, Mayor Saraña sought GTZ's assistance once more to determine the appropriate technology for remotely located households with scarce water resources.

The city government and GTZ, through another MOA, agreed to implement the installation of Urine Diversion Dehydration (UDD) toilets. UDD toilets collect faeces and urine separately and store the same in separate chambers for a prolonged period of time to ensure pathogen die-off. The resulting material can be used as fertilizer and soil conditioner. The average cost of one (1) UDD toilet is PhP 15,000, which covers materials and labor.

An important step in introducing UDD toilets is social preparation of all stakeholders to ensure that the users of UDD toilets, and of the treated excreta, fully appreciate the concept and thus sustain the use of the technique.

Hence, upon the recommendation of GTZ, Mayor Saraña allotted PhP 500,000 for the project, of which 35 percent was used for the conduct of social preparation activities such as field visits, stakeholder workshops, household interviews, and monitoring visits, among others. Capacity development for community organizers was also necessary to strengthen the support system for UDD toilet users.

The project also used the "cost-shared" approach instead of the "dole-out" approach to espouse greater ownership of the facility among the users. UDD toilet recipients took part, as well as paid for certain material costs for the construction of the facility, particularly the walls and roof. Having invested their own resources, the UDD toilet owners were more motivated to care for the said facilities.

As of October 2007, there are now 24 UDD toilets installed in selected barangays of Bayawan and five (5) UDD toilets installed in Barangay Agriculture Development Centers (BADC) as a means to showcase the technology to potential users.

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