Case Study: MAUNG MAI MARKET INNOVATIVE WASTEWATER MANAGEMENT

Country: Thailand  |  City: Chiang Mai  |  Key Sectors: Wastewater Management

Local Partner Organization

Chiang Mai Municipality

Geography and Population

Area 40.22 km²
Population 148,477 registered
The city is subdivided into four wards: Nakhon Ping, Srivijaya, Mengrai, Kawila

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Summary

As a tourist destination, Chiangmai province and city attract over 9.6 million visitors in 2016. With the ASEAN Economic Community (AEC) opening up since 2015 and the Chinese influx, the city will continue to grow. This growth brings strain and pollution to the water resources, and wastewater management has become a critical problem of many communities in Chiang Mai.

The city main wholesale market, Muang Mai market, is discharging waste water, organic, and solid waste into the drainage system and cause heavy blockage within the market’s drainage/sewage system. The contaminated water along with the rats and other disease carriers such as cockroaches and mosquitoes living inside the sewer cause serious hygiene concerns. Moreover, wastewater from Muang Mai market is being released into the nearest natural water way. Muang Mai Market has now become one of the main contributors to the contamination of Mae Kha canal which was once essential to the livelihood of Chiang Mai people.

In order to find an adequate solution for sustainable wastewater treatment for Muang Mai Market, the GIZ Nexus Project promotes a wastewater vacuum sewerage collection system, not requiring a slope, apt for flat terrain and a high water table. This is the most effective solution for managing wastewater in flat terrain, with little open space. The treated water can be used to flush the Mae Kha Canal and the moat of the old city, or at least can be used to dilute the polluted water in the canal and the city moat.
**Rationale**

The Mae Kha canal, one of the seven ‘auspicious constituents’ of Chiangmai city, obtains its water from sources to the north and west of the city, as well as canals within the city. Over the years it has become an open sewer flowing through the heart of the city. People (illegal settlers) live and work immediately along the Mae Kha and it was observed by the study team that the effluent is discharged directly into the canal from these residences and businesses. One of the main contributors to the contamination of Mae Kha Canal is the waste water released from Muang Mai market.

Starting operation over 40 years ago, Muang Mai Market is one of the 16 wet markets in Chiang Mai. It is the main wholesale market in Chiang Mai located a couple of blocks northeast of Chiang Mai's old city center (Koo Muang), adjacent to Chiang Mai Municipality office. As the city grows the demand for the products from Muang Mai market also grows. The market is open 24 hours with various vendors set up i.e. street vendors, stalls, shops, commercial buildings and selling from the back of the trucks.

Wastewater and solid waste from Muang Mai Market are generated from activities which include meat, poultry, seafood preparation, preparation of fruit and vegetable and stall cleaning, preparation and consumption of food, waste water from cleaning the market floors and market streets, as well as public restrooms.

The above mentioned waste water and organic solid waste are often discarded into the drainage system and cause heavy blockage within the market’s drainage/sewage system, which means that a rain shower can cause flooding in several areas of the markets. The contaminated water along with the rats and other disease carriers such as cockroaches and mosquitoes living inside the sewer, as well as the meat, seafood, and fish being exposed to flies and sometimes also soaked in formalin, cause serious hygiene concerns. Moreover, wastewater from Muang Mai market is being released into the nearest natural water way. The released waste water contaminates the natural water way and affects the communities and establishments downstream.

A holistic and innovative approach to solve the waste water management issue for Muang Mai market and surrounding area is required in order to improve the overall image of Chiang Mai and the well-being of its constituents which in turn could increase tourism and other economic and development gains of the city.

**Project Description**

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The waste water problem in Muang Mai market is a good opportunity to disseminate the Nexus approach in both the technical aspect (waste water to energy) as well as governance aspect (vertical and horizontal integration of several stakeholders). The provisional recommendation is that all stakeholders should be involved in order to solve the problem and that the solution is not only technical. It requires the governance related solution as well such as:

- Market Management System with clear organizational structure and sanction mechanisms
- There should be collaboration between the market place owners and the owners of the commercial buildings- structured/organized collaboration on basis of enforced rules & regulations
- Compliance with rules & regulations is required (rule of the law), i.e. regulatory measures/regulatory force for the benefit of all
Stakeholders / Target groups

The key stakeholders include:
- Muang Mai Market owners and vendors
- Chiang Mai Municipality
- Chiang Mai Provincial Office
- Wastewater Management Authority (WMA)
- Communities in the Maung Mai market and along the Mae Kha canal
- Inhabitants in Chiang Mai Municipality

Methodology

Focusing on the Muang Mai market current situation with regards to ownership structure, source of waste water, and existing waste water treatment systems, the project collected information via several studies and presented the findings and introduced innovative wastewater management to the key stakeholders.

The following activities were done for data collection, public participation, and capacity building:

- Field surveys of Muang Mai Market and surrounding area (2015)
- Muang Mai Market Stakeholder Consultation and Stakeholder Mapping (30 November 2015)
- Technical Training on Vacuum Sewer (2015)

Costs / Financing

Co-financing between private sector and municipality.

As most area of Muang Mai market is owned by private entities, if the waste water collection system is to be improved, large financing contribution will have to come from the market owners, commercial building owners, and stall venders.

If budget is available, the municipality can invest in municipality owned area such as installation of collection pipes in the market main road as well as decentralize waste water treatment plant at the Nakhon Ping District office.

Studies / Reports / Training

- Preliminary Study on Muang Mai Market: Overview of Waste Water Management problems and Preliminary Recommendations, December 2015
- Semi- and decentralized solutions for the treatment of domestic wastewater and wastewater of a marketplace in Chiang Mai (Thailand), Peter Meier, December 2016

Results (Impact)

- Mayor of Chiang Mai Municipality and other relevant decision makers have been made aware of the critical levels of water contamination of various streams in Chiang Mai, and that Muang Mai market is one of the main polluter of the Mae Kha canal.
- Stakeholders have been brought together. A clearer understanding about the market ownership structure also helps the Municipality to make future decisions. Consequently, the stakeholders are willing to work with the Municipality to alleviate the problems.
- A Study on innovative waste water management for Muang Mai market has been presented