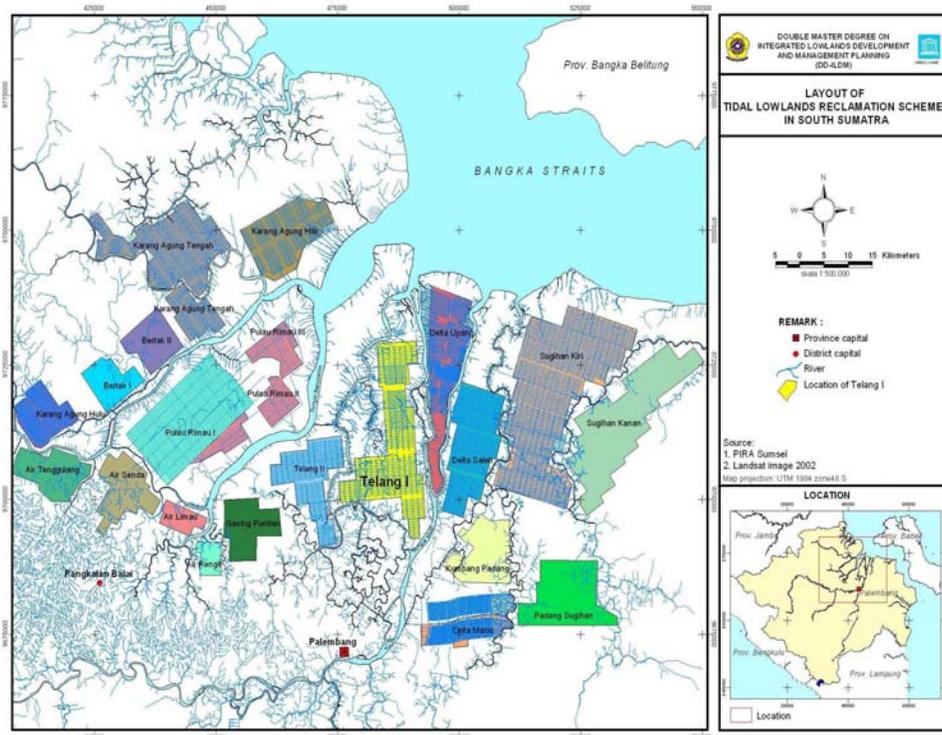


UNESCO-IHE INSTITUTE FOR WATER EDUCATION SRIWIJAYA UNIVERSITY



Water Management Service Fee for Optimal Operation and Maintenance of Canal Systems in Tidal Lowlands Case Study Telang I, South Sumatera

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Maintenance of Canal Systems in Tidal Lowlands
Case Study Telang I, South Sumatera**

Master of Science Thesis
by

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Summary

Competition between population growth and the more limited area for supporting the living conditions has become really obvious nowadays. Indonesia particularly, as an emerging country which has rapid growth of population is projected to have 270 million people in 2025. Loss of agricultural land due to urban and industrial expansion combined with degeneration of existing irrigation and drainage systems put the development of tidal lowlands as an important policy of the Indonesian Government to contribute to the required increase in food production. However, the success of reclaiming tidal lowland as an agricultural area depends on the water management system which is applied. To ensure a proper water management system, operation and maintenance (O&M) of the canal systems have important roles. Sufficient budget is a key issue in assuring proper O&M of the canal systems which will lead to sustainability.

Telang I in South Sumatra as one of the large reclaimed tidal lowlands sponsored by the government is carried out as the case study of this research. So far, farmers are not yet charged a water service fee, which means that all the cost of the irrigation and drainage systems is shouldered on the limited funding of the government. This research has tried to find out how and how much fee needs to be charged to the farmers based on the actual situation and conditions of Telang I, in order to participate in funding the O&M of canal systems for sustainability.

DUFLOW modelling simulation was carried out to recognize the drainage function and maintenance relationship of the canal system in the concerned scheme. It was simulated for different scenarios with the structures provided in the canal systems. Furthermore, the condition of the canal systems in relation with different levels of maintenance was also simulated for different scenarios. The results show that the more complete the structures, the more optimum the drainage function. The higher the level of maintenance, the better the drainage functions.

Required activities and budget of O&M of the canal systems has been analyzed and compared to the budget available from the government and capability of the farmers to contribute. The findings show that the budget available from the government is still not sufficient to cover the O&M cost of primary and secondary canals even for the lowest level of maintenance.

The results of DUFLOW modelling scenarios have been used together with the graph of *relationship between relative yield decrease and number of days of total submergence with clear water for rice*, as well as GIS maps to find out the yield reduction which can be expected in different scenarios. The findings of this analysis were compared with the O&M cost of the canal systems to attain the optimal maintenance scenario for a particular secondary blocks in the research area. It shows that the more complete the structures equipped to a canal system, the lower maintenance level is required to obtain the optimal condition.

Charging 5% water management service fee (WMSF) of the gross revenue from one planting season is sufficient to cover the optimal level of O&M of tertiary canals. Furthermore, if there is more than one planting season in one year, WMSF becomes more visible. As an option, farmers could also contribute labour. In addition, the findings in this study also show that the willingness to pay and to participate in canal systems' O&M of the farmers depends on the availability of water control structures, the condition of the canals, and also the activity of the Water Users Association (WUA). Hence for that reason, empowerment and strengthening of WUAs is vital. Also the government is needed to improve and upgrade the present canal systems to improve the water management and encourage the farmers' participation in terms of money and labour. Besides, the government would need to consider allocating more budget to cost of O&M of primary and secondary canals.