



Planning and Implementation of the Dyke Systems in the Mekong Delta, Vietnam

PhD Thesis by Huu Pham Cong¹ (2011)

Executive Summary

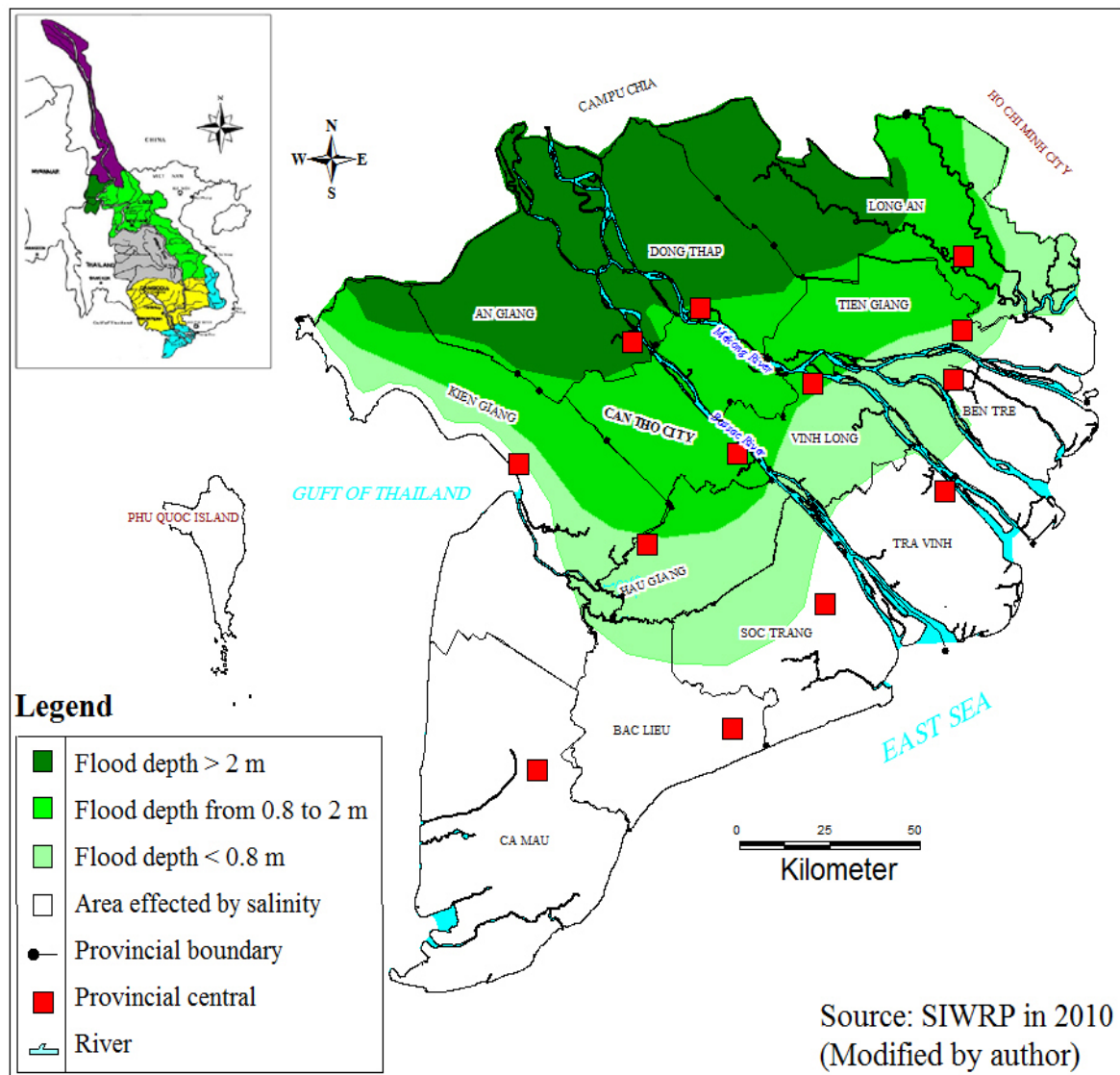
The Vietnamese Mekong Delta (MD) is the most vulnerable flooding region compared to other regions in Vietnam and in the Mekong River system (MR). Its very nature is the lowest part of the Mekong River. During the last decades, the Mekong Delta people have coped with and adapted to a number of “natural disasters” and “human disasters”. In fact, a number of people lost their assets and a few even died because of floods. According to a flood disaster summary, published by the Central Committee for Flood and Storm Control (CCFSC) for the period 1991 to 2005, 2032 people were killed by floods; more than 3.6 million buildings were flooded and collapsed and more than 1.1 million ha of paddy fields inundated. A remarkable number of fishponds, fish hatcheries and roads were also damaged by floods. The total estimated damage was approximately VND 12 billion. In view of these alarming figures, it is justified to call the Mekong River floods both a curse and a blessing for the region. Floods are especially disastrous to those who have not been able to adapt to their negative impacts, and especially for the poor who suffer most from the negative impacts of uncontrolled and so far incontrollable extreme floods. Therefore, the report on the development of the Millennium Development Goals (MDG) in 2010 strongly impressed that natural disaster reduction is one of the important goals to alleviate poverty because natural disasters increasingly have caused death, disability and economic loss as well as ecosystem degradation globally and especially in

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poor countries. In addition, effective flood control and vulnerability reduction need to be prioritized in the flooding context of the Mekong Delta. In pursuit of the Millennium Development Goals (MDGs) and in order to ensure agricultural livelihood and infrastructure in the flooding context of the Mekong Delta, the Vietnamese government responded to flood catastrophes by issuing Decision 99TTg on February 09th, 1996 regarding long-term orientation in a 5-year plan from 1996 to 2000. The aim of this decree was to develop irrigation and infrastructure, transportation and construction in rural areas and to respond to the flood risks in the Mekong Delta. In order to implement this decision, the Ministry of Agriculture and Rural Development (MARD) was assigned to set up and implement a program called Mekong Delta general flood control planning. In this plan, the dyke system was identified as an optimal flood control measure for the whole Mekong Delta including safety and benefits for agricultural production and for the life of people in the floodplains. As a result, dyke systems were constructed in all flood-

prone areas of the MD, especially for the upper part of the delta provinces such as An Giang, Dong Thap and Long An were included as much as the lower ones like of Kien Giang, Soc Trang, Hau Giang Tien Giang, Vinh Long provinces and Can Tho city.

Map 1: Flood-prone areas and brackish areas in the Mekong Delta



The construction of a dyke system to control floods is a vital and strategic solution to mitigate disastrous consequences for life and agricultural production in the flood-prone area of the Mekong Delta. It is also one of the main political purposes of planners and of the Vietnamese government. The Vietnamese government decided that the dyke system is

a relevant flood control measure to control floods and ensure sustainable agriculture development and human safety in the Mekong Delta based on a politically top-down approach. In fact, planning and its implementation has been predominantly a top-down approach by central governmental agencies without specific knowledge of regional and local conditions creating new challenges beyond the dyke system for inhabitants and local organizations in the MD.

Therefore, the purpose of the here presented study was to understand and discuss the problems on planning and implementation of the dyke system in the Mekong Delta. A strong focus of the research was to investigate the reactions of the farmers and affected farming communities in order to include their specific experience and visions of the social and economic context of the Mekong Delta floods. The sub-objectives of the study were:

- (i) to understand the interaction, relationship and the existing problems in the decision-making process of dyke system planning by governmental organizations;
- (ii) to analyze critically the impacts, barriers and constraints of the implementation process in the protected flooding areas at district level; and
- (iii) to understand and analyze farmer communities' adaptation to the dyke system from social perceptions and reflections of farmer communities and grass-root organizations at commune levels.

In order to elucidate the relevance and consequences of this decision for the affected local communities as expected beneficiaries of this decision, the research critically looked at the underlying hypothesis that the governmental approach is in principle a correct and wise decision. The government sees the dyke system as a relevant flood control measure for the floodplains of the Mekong Delta. This assumption, however, and its perception and consequences are – from a bottom-up perspective – partly adverse to the necessities and practical experiences of the local population. Therefore, as the research findings show, farmer communities and local organizations rejected this dyke system in their

practical flooding situation. Other results provide evidence on how far the dyke system helped to reduce the flood risks for the agricultural livelihoods of inhabitants within the dyke system. These results also allow to reflect on the question whether the here discussed dyke system has been a ‘correct’ or rather ‘incorrect’ decision taken by the government and how far the system also contributes to achieve at least part of the MDGs. In this regard, the experiences and knowledge systems of the local communities as well as local organizations concerning (potential) improvements of the dyke system will be illustrated.

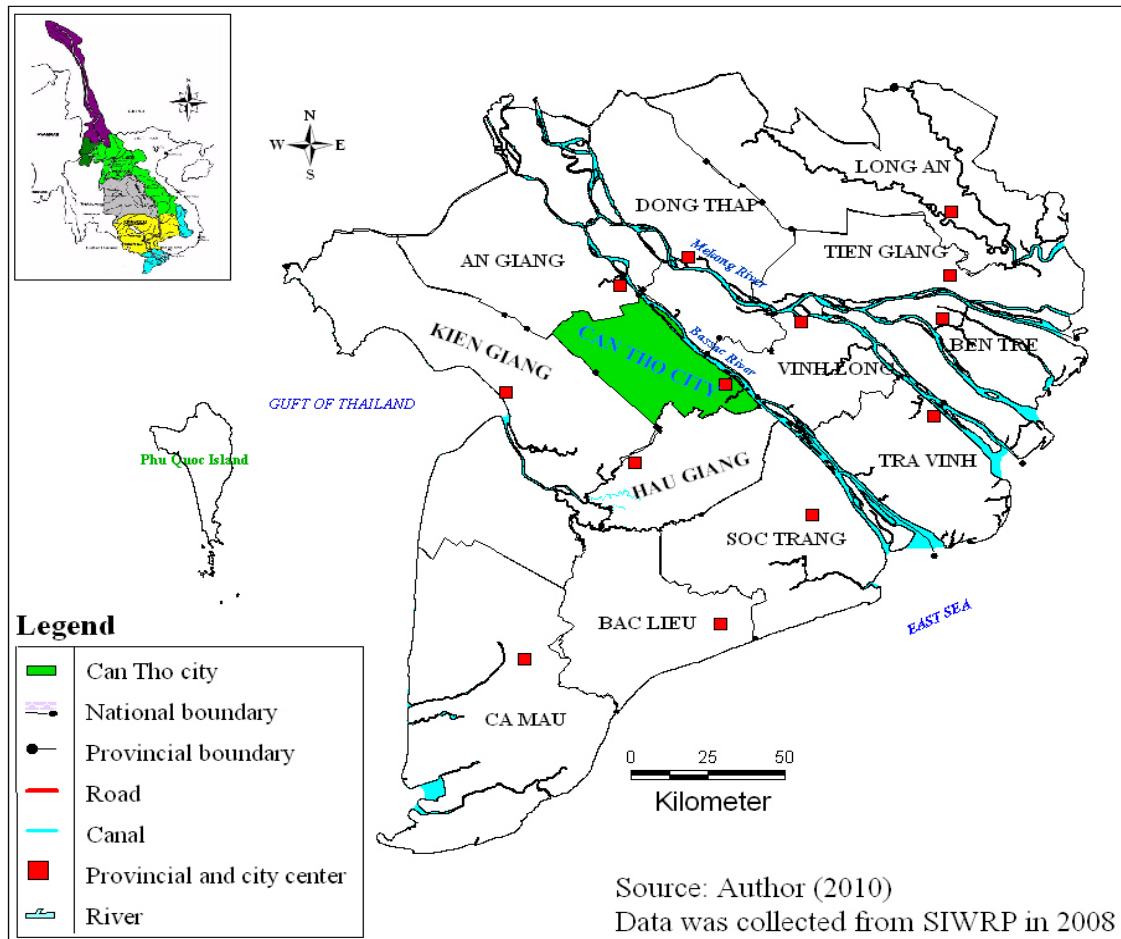
The study applied concepts of Integrated Flood Management (IMF) and planning to explain how floods are controlled and managed to reduce their damages and risks in the vulnerable flooding contexts of the Mekong Delta. The concepts represent different approaches to tackle flood control measures and they include the notion that flood control and flood management should include aspects of ecology, society and environment. Some concepts focus on a framework that describes and explains the interventional activities of governmental organizations and interactions between government and local people in flood control, flood risk and damage mitigation in the Mekong Delta.

The Mekong Delta can be divided into three flooding areas based on the different flooding levels between the floodplains (Map 1):

- (i) deep flooded areas with flood depth deeper than 2 meters and located at An Giang, Dong Thap and Long An provinces;
- (ii) average flooded areas with flood depth from 0.8 to 2 m including Can Tho city and two provinces Vinh Long and Tien Giang; and

(iii) the rest of flooded areas i.e. the shallow flooded areas consisting of Hau Giang, Soc Trang, Tra Vinh and parts of Bac Lieu and Ben Tre provinces.

Map 2: The location of research site in the Mekong Delta



Can Tho city was chosen (Map 2) as a representative case study area for average flooded floodplains of the Mekong Delta. Can Tho city is located in the center of the Mekong Delta. It belongs to the section with an average flooding level. Besides, Can Tho city is considered to be an important location because the estuary system of the Mekong Delta is convenient to control flood flows from An Giang province in the North and allocate floodwater distribution within Can Tho city and the lower flooding areas. Especially, the canal and river systems are advantageous to control the flooding level and flood flows from the upstream areas and their run-off to the West and the East Sea. Additionally, the

dyke system has been constructed to control the flooding level for the whole of Can Tho city and for the lower flooding areas such as Kien Giang, Hau Giang, Soc Trang, Tra Vinh provinces. It is for these reasons that Can Tho city is considered representative for large parts of the Mekong Delta and its problems. Moreover, the impacts of the dyke system have threatened the sustainable development of the protected floodplains and have caused conflicts between local people and planners and this, again, reflects the overall situation of the Mekong Delta. The planning design and the impacts of the dyke system in Can Tho city are therefore suited to draw lessons in view of future dyke projects to be implemented in the coming years.

In order to obtain these objectives, a participatory integrated research approach was chosen. Hereby, existing problems in the planning and implementation of the dyke system were assessed from a bottom-up perspective. The research methodology combines qualitative and quantitative methods. These methods were alternatively employed during the process of data and information collection in the fieldwork. The qualitative methods are defined as a review of literature, personal interviews and participatory group discussions to collect the information from governmental organizations, local farmers and communities and others engaged in the process of flood control and flood management measures in the Mekong Delta and Can Tho city. The quantitative method employed was a household survey. It is self-understood that the information and data collected from qualitative as well as quantitative research methods were crosschecked in order to ensure the viability of the data. Data collection was conducted between April 2008 and April 2009 in rural research areas and governmental organizations in Can Tho city. Technical and engineering aspects of the Mekong Delta dyke system were not part of the study.

Following the findings, the dyke system has brought specific benefits to the protected floodplains in terms of increased security for its people and rural infrastructure. Negative impacts, however, have been a severe increase of natural resources degradation, erosion and water pollution since the year 2000. Previous studies show that the dyke system is one of the main causes leading to erosion, plant diseases, soil fertility decline and natural degradation in the protected flooding areas of the Mekong Delta. Other negative impacts are changes in flow velocity and annual flooding levels with negative effects in both

protected and non-protected flooding areas. Especially the high dyke system obstructs the fine-sediment flow into agricultural lands. In the long run, the flooding conditions may even worsen and estuarine siltation resulting from the construction of dams may also be negatively affected. Already now ecosystems in the floodplains have been degraded due to human intervention measures with degradation of natural fish resources biodiversity and loss of soil fertility. Besides, the new dyke system has increased risks from storm surges and catastrophes as a result of breaks and leakages of the dykes. Altogether, one may very well argue that the undoubtedly positive effects of dyke construction measures in the Mekong Delta are counterbalanced by a wide range of potential and real negative impacts on people and land, of which the decrease of natural fertilization of the fields by controlled river floods are one of the major constraints.

The dyke system has created unforeseeable diverse impacts on life, agricultural livelihood activities of people and ecosystems in the whole Mekong Delta. It is not surprising that the impacts of the dyke system have caused conflicts among provinces and between local people and planners in the overall context of flood control and its management. The negative impacts of the dyke system were mainly addressed from technological studies and partly solved by technical interferences. Social aspects, however, have been widely ignored in the existing scientific literature on the Mekong Delta development. This is the more surprising since local organizations, grass-root institutions, farmer communities and individual farmers possess a wealth of knowledge of how to tackle the ecological impacts of the dyke system.

The Vietnamese government first identified the practical needs of local people in the floodplains of Can Tho city. The governmental decision to construct the dyke system is a correct one in order to guarantee safety for agricultural livelihoods of the flood-affected communities in the floodplains. However, there were and are problems in the process of dyke system planning and its implementation. This has caused conflicts between local people and central dyke planners. One may call it with good reason a lack of democracy in the dyke system planning and implementation process. On the other hand: one lesson to be learned is that, because of the overall positive effects of the dyke construction, an opening of discussion and the inclusion of the bottom-up groups would cause additional

positive results and diminish conflicts between the central dyke planners and local people. Thus, democracy is a necessary precondition in future planning practices in order to ensure benefits for both sides that is for governmental organizations and local people.

Grassroots democratization and participation had, to a certain degree, been included in the process of dyke system planning and implementation. In future, inhabitants and local organizations should be much more involved in decision-making processes. Governmental planning has to observe the participatory rights of the flood-affected communities. Local people, villagers and local organizations have the right and also the knowledge to discuss and to take part in the decision-making processes concerning their own interests, responsibilities and benefits in the given floodplains. Thus, the collaboration between the central organizations and local people must become a significant factor to reduce conflicts between central and local levels. This means that, in concrete terms, the dyke system planning needs to be based on a broad participatory foundation in order to increase the transparency of goals, planning contents, budget and expected results and outcomes of government and planning organizations. The implementation guidelines must be disseminated to each level from central to local communities. Besides, additional experiences by local people regarding the dyke planning must be considered and incorporated adequately in order to achieve wide consensus and basic agreement in the dyke system planning and implementation processes. With other words: the role and responsibility of local people should be included in governmental policies in order to reduce conflicts between governmental organizations and local people. The contributions of locals should be perceived by government organizations not as criticism, but as opportunities to control and to improve weaknesses in the process of policy implementation. Furthermore, they could and should serve as a means to control power abuse and corruption in the governmental organizations at each level. Democratization should be considered and applied widely in all governmental activities to ensure equal participation rights, interests and benefits from central to local levels. The inclusion of local expertise is not only a relevant and practical demand, but it can also contribute to control.

With regard to the ecological aspects of hydraulic engineering in the MD, we have to recall that the construction of the dykes has also to be seen as a contribution to the MDG by the Vietnamese government. While economically parts of these goals have been achieved, socially and ecologically new problems have been created and need to be improved. The dyke system planning was primarily focused on hydraulic technology aspects to control floods and reduce risks for the local people in the floodplains. The technological details of the dyke system were based on the professional knowledge and experiences of hydraulic engineers who were successful in the pursuit of their specific tasks. But were they also successful in ecological terms? Our research in Can Tho city, in Thanh Thang and Thanh Phu communes has shown that the new dykes have caused a number of new problems which need to be addressed. Besides increasing problems of erosion, which can potentially be solved by additional engineering interferences, there are other setbacks. They include a dramatic increase of land and water pollution as a result of the use of agrochemicals of all kinds. But they also refer to the decrease of natural fish resources and so on. A lesson to be learned from these negative side effects is the necessity of closer cooperation not only between different experts in land and water management. Apart from hydraulic engineers, especially ecologists, biologists, plant and soil scientists as well as agricultural experts with different backgrounds have to cooperate to tackle these newly developing problems. A solution would be to establish an agricultural extension service which consists of both professional experts and local farmers with the purpose to solve problems jointly and to give advice to the local farming communities in order to reconcile economic and ecological aims and goals of the dyke systems and their effects.

A final aspect of our conclusions and suggestions for future improvements of livelihood and well-being of the local households refers to the social impacts of the dyke systems in Can Tho city and the Mekong Delta. Our interviews and investigations in the two case study communes have revealed two aspects which future planning as well as future research should take up for further consideration. One aspect is the widening gap between the better-off farmers and the poor members of the communes with little land of their own and little access to other resources. The latter group actually is severely affected in a negative sense, because their access to improved farming techniques, new rice varieties

or agrochemicals is very limited or impossible; besides, this group has been deprived of its traditional casual emoluments, i.e. the catch of natural fish during flooding seasons. It is a political decision that the government has to take: Is the widening gap between “rich” and “poor” an option under the given political circumstances? And: Is the development of a rural “underclass” without access to basic services and natural resources a desirable development or not? If not, then the responsible political organizations have to take care of these inappropriate side effects of the dyke system policy.

The other and second aspect concerns the envisaged changes of land use until the year 2020. The very fact that large amounts of agricultural land will be transferred to urban and industrial uses will be connected with the creation of new employment opportunities. A considerate social policy by the central government and by the regional administrations must use these scenarios for the creation of new jobs, which should be available also and especially for the underprivileged inhabitants of the rural communes. The construction of rural infrastructure – roads and highways, bridges, residential and industrial premises etc. – offers a wide variety of possibilities to include the rural poor into the benefits of the future socio-economic development of the Mekong Delta and its people.

Our research has shown that the Mekong Delta and its people are undergoing deep changes. In short, one could say that Can Tho city has been transformed from a rural society living with the natural regulations of floods into a society of human-controlled regulations of the Mekong River in the long term. And these developments and trends will continue. Until 2020 the area of agricultural land will be diminished in favor of industries and urban residential areas. Therefore, the new challenges and risks that have appeared as a result of human interventions into the natural regimes and cycles of the Mekong River and the Mekong Delta, are threatening the sustainable development and life of natural ecosystems and human habitats. The dyke system has solved the practical problems of farmers by controlling the floods and thus has obtained short-term benefits. However, its negative impacts are a threat for sustainable development in the long term, especially whenever floods will rise and inundate all dykes. Therefore, a close observation of the dyke systems in the Mekong Delta will be an indispensable task also

for the future. And additional research on questions of how to improve the effects of the dykes for nature and society will remain an equally indispensable challenge.