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Strategic Group Formation in the Mekong Delta -

The Development of a Modern Hydraulic Society

Hans-Dieter Evers and Simon Benedikter

Abstract

The lower Mekong Delta, one of the largest river deltas in Asia, is a landscape shaped by the waters of the Mekong River that flows, as last part of its long way from the Tibetan Plateau to the South Chinese Sea, through a dense river and canal network in the Southwest of Vietnam. People in this area are, traditionally, exposed to a water-shaped environment and have lived for generations in adaptation to their natural surrounding without much human interference into the complex natural hydraulic system of the delta. However, this has changed dramatically during recent decades when hydraulic management started to become a key issue for the development of the lower Mekong Delta constantly, in particular with respect to the agricultural sector, which is the backbone of the delta's economy.

After the Second Indochinese War ended in 1975 the delta started to shift from human adaption to human control, transforming itself into what Wittfogel has described as a hydraulic society. This was mainly due to the new socialist government's policy of rapid agricultural extension and growing endeavours in hydraulic management for fostering irrigated rice production. By now, in many places of the delta hydraulic works such as additional canals, dykes and sluices have been set up, constructed for regulating water flows. Technical innovations in hydraulic management and agricultural production have not only had significant impact on the delta's environment and ecology, but also have triggered social transformation, in particular the appearance of new social groups struggling for access to resources and power.

This paper intends to analyzes recent trends of social development and water management in the Mekong Delta from a scientific approach that is based on two social theories, firstly "strategic group analysis", and secondly selected core aspects of Wittfogel's social theory of "hydraulic society". By presenting recently collected data, it is illustrated how the Mekong Delta has been transformed into a modern hydraulic society, in which certain strategic groups emerged as a consequence of growing activities in hydraulic management and agricultural-based economic growth. More specifically, the paper aims to give an overview of strategic group development in the delta by putting a strong focus on the process of forming a state bureaucracy of hydraulic management and the appearance of hydraulic construction companies as its clients. The paper shows how the strategic alliance between both groups has increased the chances for mutually appropriating government funds spent on hydraulic works and how this has caused ecologically and socially far-reaching impacts for the Mekong Delta.

Key words:

Vietnam, Mekong Delta, strategic groups, hydraulic society, social transformation and power, water management, hydraulic bureaucracy

1. Introduction

During recent years the lower Mekong Delta has undergone an extraordinary development, which turned Vietnam into one of the leading Asian rice exporters and ensured food security for the Vietnamese nation. Nowadays, the Mekong Delta has been transformed into one of the most productive areas worldwide in agriculture and aquaculture. However, with some exceptions like Brocheux (1995), LeMeur (2005), Biggs (2004) or Miller (2006), most of the research done on the delta has centred on technical and natural science aspects. By addressing the Mekong Delta's rapid development from a social science perspective, we assume that technological progress in hydraulic management and agriculture as well as rapid economic growth of the agricultural sector throughout the previous three decades may have profoundly changed the social structures of the delta's society, especially in respect to economically and socially dominating groups and power structures. Following up on Le Meur's study on politics of land and water in the delta (2005), this paper[1] will examine social transition by focusing on strategic group formation during the last 30 years. Thereby we hope to through new lights on the delta's social transformation by drawing attention to the social consequences of technological progress and economic development with regard to the distribution of resources and power.

Figure 1 Mekong Delta

[1] We gratefully acknowledge useful comments on this paper by Solvay Gerke, Gabi Waibel, Saravanan S.V.

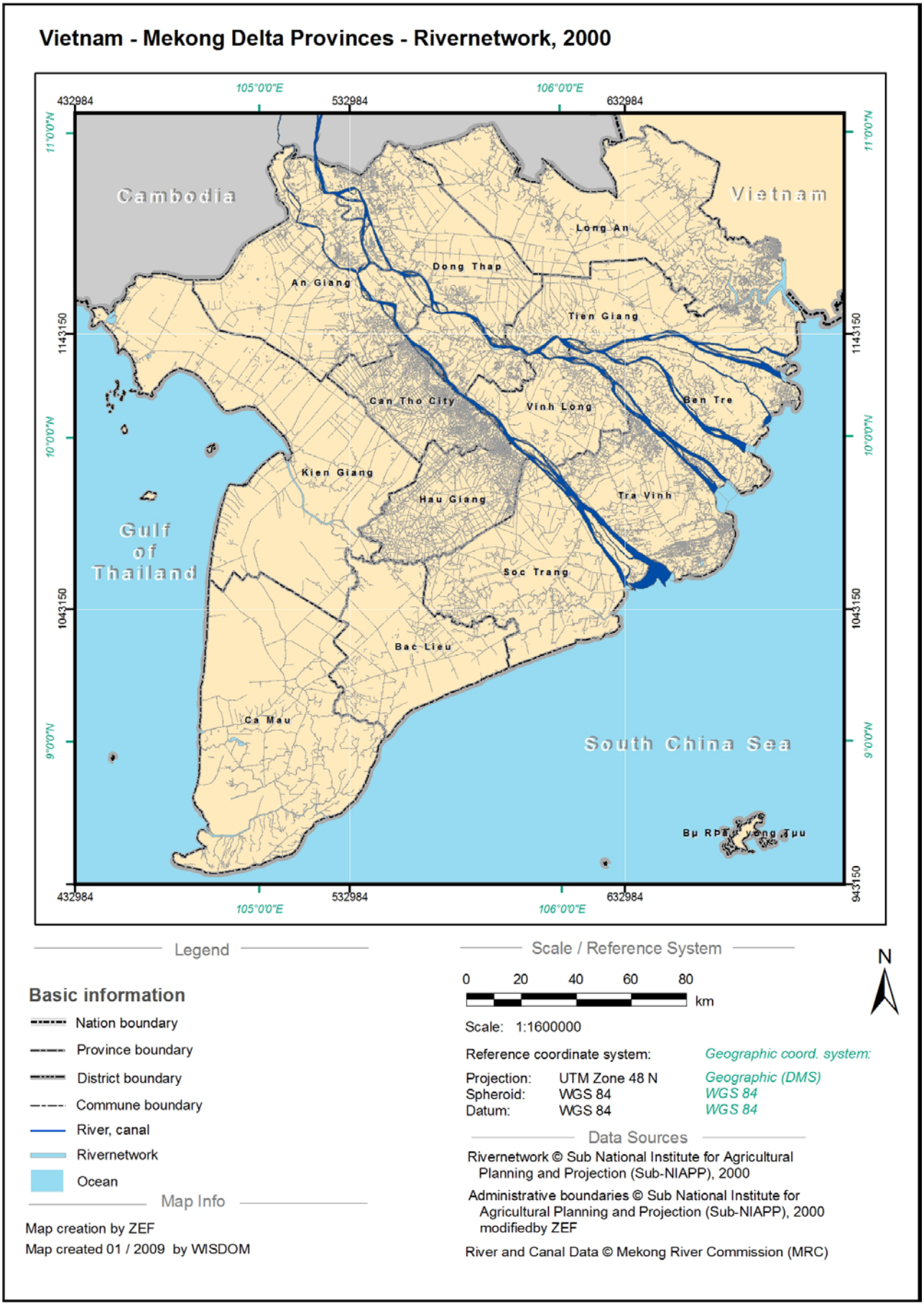
In the following we shall point out how technological innovation in hydraulic management combined with new agricultural production patterns has contributed significantly to the formation of new social groups. Their emergence is due to new resources that have become available in different stages of the delta's latest history. We consider these newly emerging groups as strategic in terms of their common interest and collective action.

For an explanation of these social processes we shall refer to two sets of social theory, characterized by their central concepts of strategic group formation (Evers 1975, Evers and Schiel 1988) and hydraulic society (Wittfogel 1957). As the Mekong Delta is to a large extend shaped by its' rivers, canals and dykes, there is a necessity to control water and manage it as a basic means of production for economic development. In this sense, we assume that natural conditions have driven the formation of specific forms of water-based strategic groups, especially after the reunification of Vietnam when a new government was set up in the South

The paper as a whole is divided into two sections. Firstly, we will give a brief overview of the concepts and theories that provide the theoretical groundwork of this study. Secondly, in an analytical part we shall use survey data derived from interviews with local authorities, private persons and local experts in the delta, mainly in Can Tho. Furthermore, this is supplemented by quantitative data obtained from the Vietnam General Statistic Office and its' various sub departments located in the delta, as well as local state agencies and mass organizations.

Through an analysis of both survey and secondary data it will be demonstrated how the Mekong Delta has turned into a human-regulated environment or as we would like to call it, a "modern hydraulic society". This process has been driven by strong human interference into nature, based on the construction of hydraulic works for flood prevention, salinity intrusion controlling and irrigation purposes. Furthermore, we want to show how these processes were driven by the emergence of strategic groups, of which, beside various water related businesses, the state bureaucracy of hydraulic management appears to be the most crucial one in terms of power, the number of its members and its' control over resources.

Figure 2 Hydraulic Landscape: River networks of the Mekong Delta



2. Strategic Group Theory and Analysis

2.1. Defining strategic groups.

Strategic groups are neither elites nor social classes. They cut across hierarchies, its members do not carry cards or identification tags, and they may follow different lifestyles and follow different beliefs. They are, however, united by one common goal: to secure present and future chances to gain access to resources; to share chances of appropriation of resources and their distribution. They are not necessarily members of a network nor members of an organisation, though this is not excluded either. A strategic group is, in sociological terms, a quasi-group. As all quasi-groups it may eventually assume group or network characteristics and move towards becoming a "Stand" (estate) in the sense of Max Weber or becoming a social class in Marxian terms, though we admit on theoretical grounds that it rarely happens. As resources are, by definition, scarce different strategic groups compete for access to these resources. The deregulation of the Vietnamese economy after Doi Moi provided such a chance to appropriate newly available resources. If new resources are created by the action of a strategic group, others nevertheless attempt to get a (perhaps undeserved) share, calculating costs and gains in terms of a cost-benefit analysis[2]. In the case to be discussed below, water appears to be the strategic resource. The management and control of the flow of water, its use for irrigation, aquaculture, river transport or industrial water supply provide a bundle of resources to strive for.

In this sense competition and strife for resources resembles a market model, where the actors are not individuals but social groups and where the overarching strategy is not necessarily immediate profit but institutional change. Strategic action aims at creating social, political and economic structures and institutions that enhance the chances to appropriate resources.

What keeps a strategic group together? Nothing but nodding ones head to a certain line of proposals, strategies, actions may be required to support the strategies or collective action of a strategic group, though support may also take the form of joining collective action, transfer of funds or granting or accepting privileges. Strategic groups are volatile, but may nevertheless be powerful and long lasting. Strategic groups typically transcend social boundaries and encompass leaders and followers. They may cross class boundaries and its members may belong to different social strata. Common values, ideologies and common interests are powerful binding forces and help to develop real groups out of quasi-groups, as are kinship networks or old school ties.

Typical strategic groups may be
Government/bureaucracy: government employees
Military: members of the armed forces, their families and their suppliers of goods and services
Professionals: doctors, nurses, members of the pharmaceutical industry
Intellectuals: teachers, lecturers, preachers, students, university administrators, poets, artists and journalists
Land Owners: large farmers, owners of estates, land speculators, landed gentry
Big business: business men, managers, employees of corporations, workers in big industry.

Strategic groups support long-term strategies to secure the appropriation of resources by shaping or structuring institutions. It may be irrelevant who takes action to secure resources or shape the institutions to secure access to resources, as long as the strategic group as a collective supports the action by selective actors who may be described as interest groups or elites. Nevertheless collective action is the hallmark of strategic groups. There are quite different social figurations emerging from this collective action. Quite often new organisations, perhaps in the form of statutory boards or state companies may be formed, as in the case of water management organisations or hydraulic construction companies in the Mekong Delta to be discussed below.

Strategic groups tend to emerge whenever new resources become available for appropriation or distribution. This was particularly the case during the industrial revolution, in the period of

[2] This section draws on Evers and Gerke 2009, where strategic group theory is explained in greater detail.

decolonization or, more recently, in the course of globalisation. The chances of surplus-extraction and appropriation are partly determined by the world economic system and its local articulation, but also by the political system of the state. Not only economic laws and stringencies but also power, possibly coercion, helped to determine the chances to increase the strategic groups' share of the GNP. Consequently, there is an interest on part of each strategic group to create a political and economic system that provides optimal chances for appropriation of surplus (Evers 1997).

In this connection the sequential pattern of strategic group formation becomes important. Whatever group emerges first, tries to establish a "superstructure" (political and economic system) that is most suited to its interest. With the emergence of a new economic or political system, whichever group emerges first to become large or powerful, has the greatest chance to structure the political system, to establish patterns of legitimacy, of political style, in short, to actively promote a specific framework suited to its interests. Any succeeding group has to contend with the already established framework.

Here we have to point to a basic contradiction. "Political stability" through an alliance between strategic groups might produce favourable conditions for economic growth but also increased chances of enrichment and exploitation, which in turn may provoke reactions, movements, uprisings and possibly revolution. The peasant movement in the Mekong Delta in the 1930ies are as relevant as the NLF[3] uprising before the American war in this respect. Controlling these movements from below and checking the growth of counter strategic groups thus becomes a major aspect of the political system. Ironically organizations originally intended to foster the interests of the immediate producers like farmers groups or trade unions may be turned into instruments of control and into structures of appropriation, a possibility we have to concider in our study of the modern hydraulic society of the Mekong Delta.

2.2. Strategic Group Formation in Modern Hydraulic Societies

In 1957 Karl Augustin Wittfogel published his work on “Oriental Despotism”, in which he assumes that in many places of the world a specific form of social order appeared since prehistoric times due to the necessity of large-scale water management. The need to regulate water for irrigation and to cope with floods as disastrous natural events through hydraulic works such as canals, embankments and sluices created forms of social orders that are typically characterised by strong organizational structures of rule or government. Wittfogel grants such civilisations great ability in organizing, coordinating and managing with special focus on water regulation for agricultural production. He therefore considers them as hydraulic or agrobureaucratic societies. This indicates the existent of a strong state bureaucracy commanding huge armies of corveé labour that were required to build heavy hydraulic works for water management purposes:

> “All team work requires team leaders; and the work of large integrated teams requires on-the-spot leaders and disciplinarians as well as organizers and planners. The great enterprises of hydraulic agriculture involve both types of direction. The foreman usually performs no menial work at all; and except for a few engineering specialists the sergeants and officers of labour force are essentially organizers. [...].Under hydraulic conditions of agriculture, certain large operations of construction and management must be organized. Other organizational activities are not imperative, but they are made possible by a political economy which compels the government to maintain centers of direction and coordination in all major regions of production. Being able to establish its authority not only over a limited “royal domain” and a number or royal towns – as does the typical feudal state – the hydraulic regime places its administrators and officers in all major settlements, which virtually everywhere assume the character of government-controlled administrative and garrison towns” (Wittfogel 1957: 26, 55).

Even political power of the ruling elite was very much linked to the ruler’s and his bureaucracy’s ability of controlling water, which were both a blessing and a curse. In imperial China, where large scale irrigation schemes for rice cultivation were highly developed in early times, much of the king’s ruling

[3] National Liberation Front of South Vietnam (Mặt trận Dân tộc Giải phóng miền Nam Việt Nam)

power was legitimized by his success in regulating the big streams of the country, as it is written in the mystic legend about China's first ancestral ruler:

> "In China the legendary trail blazer of governmental water control, the Great Yü, is said to have risen from the rank of a supreme hydraulic functionary to that of king, becoming, according to protohistorical records, the founder of the first hereditary dynasty, Hsia" (Wittfogel 1957: 27).

In brief, following Wittfogel's terminology of hydraulic society, it can be assumed that in water-based societies and economies the necessity to regulate water through hydraulic management has created strong hydraulic state bureaucracies, which hold considerable power to rule over how to utilize central means of production, namely water and land for agriculture. Since they are the great planners, builders and maintainers of the economical infrastructure in form of hydraulic works, hydraulic bureaucracies play a powerful role in economies and societies that are predominantly based on intensive water resources management as precondition of development.

Hydraulic works in hydraulic societies:

- Productive installations: canals, aqueducts, reservoirs, sluices, and dykes for the purpose of irrigation
- Protective installations: drainage canals and dykes for flood control
- Aqueducts providing drinking water
- Navigation canals

Source: Wittfogel 1957: 42

Wittfogel's final conclusion that hydraulic societies consist of static and unchangeable social and political orders ruled by despotic regimes was harshly criticized by many scholars (e.g. Eisenstadt 1958, Eberhard 1958), though his intention to unmask the Soviet Union as a despotic state was much appreciated by right-wing politicians under the world-political circumstances of the Cold War. Nonetheless the concept "hydraulic society" has been used to describe various societies, from Sri Lanka (Leach 1959) and Thailand (Wijeyewardene1973) to California (Worster 1982).

Eisenstadt's comprehensive review may be quoted here as a relevant sociological point of view (Eisenstadt 1958). He finds it doubtful "whether a general uniform type of either 'hydraulic' or 'Oriental despotic' societies can be found, and whether the two -hydraulic and Oriental despotic-are necessarily so closely connected" (Eisenstadt 1958:440). Furthermore he doubts if the political process in these societies has been adequately analysed, "especially with the extent of the influence of various social groups on the political structure and government activities in these societies, and with the impact of social changes on this political structure" (Eisenstadt 1958:440). We could not agree more with this criticism and have therefore endeavoured to combine Wittfogels analysis of hydraulic societies with strategic group theory, thus taking care of Eisenstadt's above mentioned criticism.

Though we are not entirely in line with the far-reaching social and political implications Wittfogel draws in "Oriental Despotism", namely that hydraulic societies necessarily are subject to eternal despotic rule of centrally organized state bureaucracies over a static society, it remains relevant to keep in mind that state bureaucracies might play an important role as a leading strategic group in water-based landscapes like the one we encounter it in Vietnam's Mekong Delta. Pushing this idea forward, we should like to change direction towards a more divers approach on hydraulic societies. We do not deny strong hydraulic bureaucracies as a significant feature of such social and political order, but allow other actors to have a stake as well.

> "The functions of the bureaucracy are not only to administer hydraulic works and to mobilize resources for the ruler and for themselves. Even in order to be able to do this, the

> bureaucracy has to perform various functions for the different groups in the society, and to mediate to some extent between such various groups. And in such mediation it must sometimes uphold the interests of these groups against the wishes and interests of the rulers, or to find some modus Vivendi between the two, even if the modus Vivendi is greatly biased in favour of the rulers" (Eisenstadt 1958:445-6).

In the context of strategic group theory, we assume that the arena for power and resource acquisition in hydraulic societies is indeed divers and complex, which implicates that apart from the hydraulic bureaucracy there are, as already indicated by Eisenstadt, additional social groups such as private business, for instance hydraulic construction companies or consulting business for water resources management, or simply users of water and hydraulic works such as rice farmers, fish farmers and waterway transportation companies. Indeed, in water management

> "there is growing recognition that multiple actors are interacting with diverse rules across complex decision-making arenas that are beyond individual coordinating bodies" (Saravanan 2008).

We possibly might also identify counter-strategic groups that attempt to oppose powerful groups shaping the political and economical framework of society. Such a scenario comes close to what was defined as strategic group formation. We thus might identify certain water related businesses, hydraulic bureaucracies or even certain professions like hydraulic engineers as strategic groups interacting or competing with each other in an arena centred on water as a resource.

3. The Mekong Delta in Vietnam – Social Transformation and Strategic Group Formation in a Water-based Environment

3.1. Vietnam – A Hydraulic Society?

Beside the threat of being dominated by a superior power in the North, expansions towards South after regaining freedom from China during the 10th century AD and strong village communities, struggle against nature always was as a significant continuum at any time in Vietnamese history. Water, which is abundant in a country shaped by big rivers and deltas, provides favourable conditions for agriculture on the one hand, but is a dangerous threat on the other hand. Disastrous storms and floods cause enormous damages and have brought suffering to the Vietnamese people every year for generations. Therefore, regulating waters was and still is an important issue in Vietnamese society.

According to the latest ADB Water Sector Review Report on Vietnam, published in 2008, 80 percent of the country's total estimated water use is utilized by the irrigation sector (66,000 million m^3 per year), of which the Red River Delta and the Mekong Delta account for almost 70 percent. In 2007 the total area under irrigated agriculture was 8.34 million hectare out of a cultivated area of 9.7 million.

Water and flood management for irrigation already played a crucial role when the Vietnamese civilization was born in the Red River Delta several centuries B.C.. In the early days of Vietnamese history, first centrally ruled kingdoms emerged on the basis of irrigated wet paddy production, which required large-scale hydraulic works such as dykes and canals to control natural hazards caused by the unpredictable waters of the Red River:

> "Early in Vietnamese history, possibly before the Christian era, the Vietnamese developed an elaborated system of dikes and canals and the rudiments of governmental authority to control and channel the supplies of water" (Sardesai 1998: 12).

The importance of hydraulic management and water control in Vietnamese society is also reflected in its language. "Quản lý tài nguyên nước" is basically the correct translation for water resources management into Vietnamese. However, in many Vietnamese reports dealing with water management issues commonly the term " quản lý thủy lợi" appears , even though "thủy lợi", which is Sino-Vietnamese,

means water for irrigation, but not water in general. So, traditionally, water management and irrigation management are closely linked in the perception of the Vietnamese people.

As stated before, Wittfogel argues that the rise of early civilizations in Asia, like imperial China or the Khmer Kingdom, was only possible due to the creation of a strong and centrally ruled state whose power and legitimation was based on the state bureaucracy's ability to manage high quantities of water used for irrigation as the basis of agricultural production and public welfare.

To sum up, in Vietnam the necessity of building hydraulic works for regulating water for irrigation is as old as the Vietnamese civilisation itself. Being under Chinese occupation for more than thousand years, the old Vietnamese kingdoms were very much influenced by the Chinese concept of administration and rule, and its skilful tradition in hydraulic management. To use Wittfogel's terminology of hydraulic society in the context of Vietnam therewith is justified, however, with some reservations remaining[4]. By combining selected aspects of Wittfogel's theory on hydraulic societies with strategic group theory we intend to proof Wolfram Eberhard wrong, who doubted that Wittfogel's theory "will be used as a tool in sociological analysis" (Eberhard 1958:448).

3.2. From Adaptation to Control – The Birth of a Modern Hydraulic Society in the Mekong Delta

Using Wittfogel's terminology and argument, though not necessarily following his conclusions, we will now attempt to illustrate how the lower Mekong Delta was transformed from a society adapted to its natural environment into a modern hydraulic society, in which hydraulic management plays a predominate role for economic development. Furthermore, it is argued that this process was the result of technological progress in hydraulic management accompanied by innovations in agricultural production patterns.

With more than 70 percent of the country's population living in rural areas, irrigated agriculture and aquaculture is still the backbone of Vietnam's economy. Among all regions of the country, the lower Mekong Delta, located in the Southwest of Vietnam, is the most productive agricultural zone. In only 250 years of colonization through Vietnamese settlers the Mekong Delta was transformed from a relatively wild and unspoiled landscape into what today is widely known as "Vietnam's rice bowl".[5] Nowadays, more than 75 percent of the entire delta is under agricultural use, mainly irrigated rice and rapidly expanding aquacultures.

However, while the Red River Delta traditionally is a "water" landscape that is very much shaped by human action, in the Mekong Delta extensive hydraulic management for agricultural production reached a peak only after the end of the Second Indochinese War in 1975. Before that, people were more or less adapted to the natural environment they found in the delta, growing floating and rain-fed rice as well as engaging in fishing (Nguyen Van Sanh et al. 1998).

For the inhabitants of the Cuu Long Delta, as the Vietnamese call the lower Mekong Delta, water is the basis of living, serving agricultural production, aquaculture, transportation and daily domestic use, including drinking water in many cases. When the first pioneer Vietnamese settlers reached the Delta as final destination of what in Vietnamese is called "Nam Tiến" (March to the South) by mid of the 18th century, they found themselves in an almost wild landscape of rivers, ecologically shaped by the waters of the Mekong, monsoon climate and the tide of the South Chinese Sea. In those days, when a never ending flow of Vietnamese and Chinese settlers entered the region and colonized the delta along its

[4] Although the Vietnamese state often is described as a centrally managed state with hierarchically static structures, there are clear features indicating that the central state is weak with respect to enforcement of power at the local level. Therefore, the struggle between the central state and the local state (provinces) is a continuum to be met throughout the entire Vietnamese history, also reflected by its strong and autonomous village society. In former times Vietnam's administrative system was derived from the one in China, which is characterized by a well organized administration and a hierarchically structured bureaucracy (Koh 2001, Großheim 2004, Marr 2004)

[5] Though there were several ancient kingdoms like Funan or Chenla (indinized civilizations) present in the delta, the delta as a whole was widely untapped wild nature, when Vietnamese and Chinese pioneers arrived.

rivers and newly dug canals, the delta turned into a so-called Water-River-Civilisation (Văn Minh Sông Nước). The new settlers and their civilization adapted to the natural conditions they were exposed to (Brocheux 1995).

It was not until the French colonial rule was established over Cochinchina (southern Vietnam) in 1885 that water management and human interference into the natural environment started to play a certain role in the development of the delta region. According to Brocheux, in this chapter of the delta's history, additionally dredged canals served mainly transportation purposes and military considerations, but did not focus on drainage, irrigation or flood control (Brocheux 1995). This is contradicted by Biggs who points out that French hydraulic management of the Delta started from 1866 (Biggs 2004:66). Water pumps and dykes were used already shortly after 1900 (157), when "scientific agriculture" was practiced (Biggs 2004:126) and extensive dredging campaigns were carried out in the 1920ies (Biggs 2004:117). There were, however, setbacks and the French colonial administration never managed to gain full hydraulic control of the Mekong Delta.

Later on, during the Cold War, US American experts initiated first programs centred on water regulation to address the problem of seasonally occurring floods in upstream areas and salt water intrusion in the coastal areas of the delta that were seen as obstacles for agricultural development and enforcement of the green revolution in the South of Vietnam. More precisely, the objective of this policy was to build up structures that allow water flow control into and out of the entire delta to enable double and triple-cropping. However, apart from some small-scale hydraulic work projects, the realisation of these plans turned out to be difficult because of the ongoing military conflict and overwhelming communist presence in the delta (Käkönen 2008).

After the war ended and North and South reunited, the process of bringing the natural environment of the delta under human control became more dynamic. Dredging new canals all over the delta in the first years after the war made it possible to shift from traditional rice grains (floating and rain-fed rice) to high-yield varieties which only grow under intensive irrigation. Later on in the 1990s, under a production oriented water policy of the government, dykes were constructed and hydraulic works were growing in size. Double and triple-rice cropping based on irrigation schemes started to spread all over the delta (Miller 2006). Today, typical hydraulic management devices such as pumps, flood gates and dikes can be found in most parts of the delta (Le Meur 2005). This clearly attests the shift from adaption to more control and the transformation of the Mekong Delta from a "water landscape" into a modern "hydraulic landscape", i.e. a "hydraulic society" in which hydraulic management plays a crucial role in many aspects of daily life and the economy as a whole. Vietnam's renovation policy (Đổi mới) after 1986 to a large extend explains the ongoing social transformation process in the Mekong Delta.

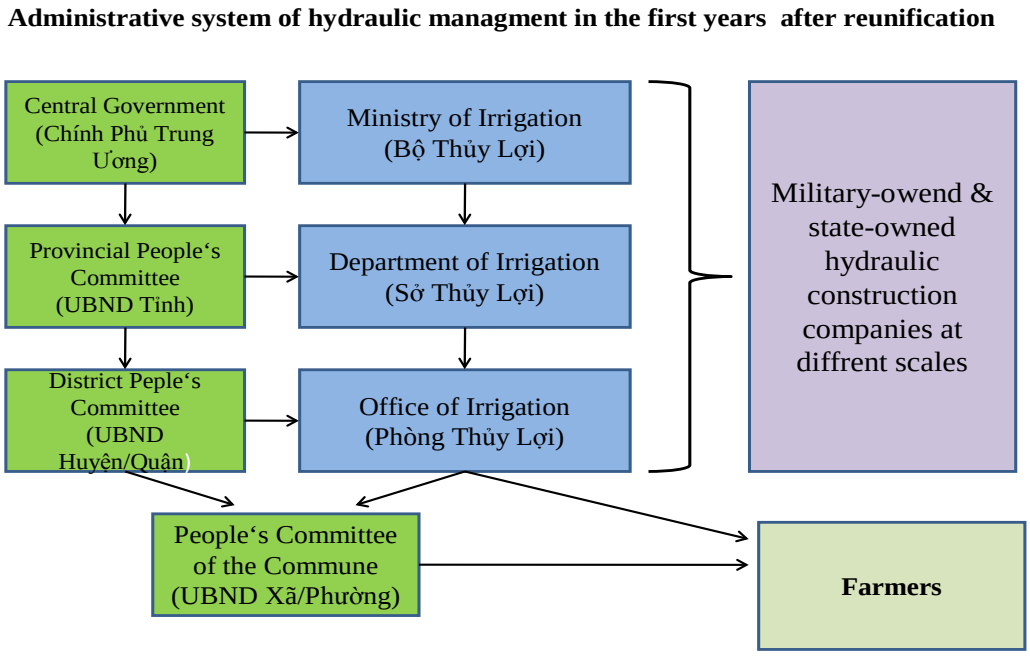
To summarize, in only 30 years, the entire Cuu Long Delta, as the Vietnamese call it, was transformed into a human-regulated environment and has thus become the country's centre for agricultural production. More precisely, this means that technological progress in hydraulic management and flood control laid the groundwork for agricultural development and economic growth in the delta. While in the 1980s rice production could not ensure food security for the entire nation, by the mid 1990ies Vietnam had developed into one of the world's largest rice exporters (Käkönen 2008). Today 51 percent of Vietnam's entire rice production, and even more impressively, 70 percent of Vietnam's total rice exports, are grown in the southern delta. Apart from mono-cultural rice, aquaculture plays an increasingly important role with a share of 48 percent of all aquatic products produced in Vietnam today.

3.3. Strategic Group Formation in a Hydraulic Society – The Formation of a Bureaucratic Polity of Hydraulic Management and its Clients

While in the previous section it was demonstrated how technological progress in hydraulic management turned the Mekong Delta into a modern hydraulic society, this section now explores the precise processes of social transformation that came along with the creation of this human-regulated environment. Here, we will point out that due to the transformation of the Mekong Delta into Vietnam's new agrarian frontier, several new powerful groups emerged on the basis of water management during the last 30 years.

When North and South were reunited by the victorious communist party through proclaiming the Socialist Republic of Vietnam in 1976, administrative structures in the South were completely adjusted to the one of the centrally managed socialist state in the North. With respect to water management, new state agencies responsible for hydraulic and irrigation management were established at all administrative levels[6] in the southern part of Vietnam under subordination of the Ministry of Irrigation in Hanoi (see Figure 3).

Figure 3 Administrative system of hydraulic and irrigation management in the Mekong Delta after reunification and before liberalization.



Source: own drawing.

Under this condition a new bureaucratic polity of hydraulic management began to emerge in the Mekong Delta due to thousands of newly created civil service positions that had to be filled within a short time. In the early days of socialist restructuring in the South, social mobility was relatively high at the lower administrative level of irrigation management, in particular for those who had obtained some knowledge on hydraulic management and fought on the right side during the war. However, high-ranking positions in the newly established bureaucratic apparatus of water management were confined to a circle of cadres from the North, who almost all graduated from the University of Water Resources Management in Hanoi[7] and were then sent to the South to work in either central-state institutions or institutions of the provincial governments, while others made careers in large-scale state-owned construction companies building hydro-dams or irrigation works. Thus, no matter whether looking into the top management of either central state institutions of hydraulic management or large-scale hydraulic construction companies today, the presence of people from the northern part of Vietnam in high-ranking position prevails.[8]

[6] Since 1976 the administrative system of Vietnam officially consists of four levels: central government, provinces, districts and communes (Vietnamese Constitution of 1992, article 118).

[7] Trường Đại Học Thủy Lợi Hà Nội: For long, this was the only university that provided higher education in water resources management in Vietnam. In 1997, a branch of this university was opened in Ho Chi Minh City.

[8] Interview with a former student of the Water Resources University in Hanoi whose father was a lecture and professor for more than 30 years there. Interviews conducted with managers of large-scale hydraulic construction companies in Can Tho City.

In Can Tho City, where we carried out Participatory Rapid Appraisal workshops with cadres form the irrigation station and agricultural office of three districts in October 2008[9], we learnt that the first years after the war financial resources for investing in new hydraulic works were rather scarce. Therefore additional canals in this period were normally dug by hands, more precisely, farmers provided labour for public infrastructure development. It was only after 1985 that public expenditures for the construction of new hydraulic works began to increase significantly. As a consequence the sector's development became more dynamic as hydraulic construction as well as related activities were on the rise.

Since private business were after communist victory almost totally abolished in the South , state-owned construction enterprises filled the gap and became the clients of the freshly established hydraulic bureaucracy. In Can Tho City, there were state-owned hydraulic construction enterprises[10] located at the provincial level under the Ministry of Irrigation as well as in each district under the Department of Irrigation, which possessed all machines and technical equipment necessary to build large irrigation works on behalf of the state. Government funds destined for new hydraulic works were therefore transferred from the Department of Irrigation to district state-owned enterprises for project implementation. In case of large-scale hydraulic works with high investment, the Ministry of Irrigation itself took over management and supervision of construction works through a special investment and hydraulic construction management board that was set up right after reunification, representing the central government's interests in local hydraulic management affairs.[11]

During the 1990s the transformation of the Mekong Delta into an agricultural production hub was achieved by building new hydraulic works for controlling water flows. Whereas before, the focus was exclusively on canals, during the 1990s dykes and gates began additionally to play an increasingly important role towards a successful completion of the green revolution in the delta, namely to entirely replace traditional farming systems through double and triple rice cropping patterns that require irrigation. Since the number of hydraulic works had grown considerably in provinces like Can Tho, a provincial state-owned irrigation management and exploitation company was established under the People's Committee to ensure the maintenance of hydraulic works.[12] Once this autonomous company was established, it was exclusively responsible to manage and to ensure maintenance of all hydraulic works that were under the provincial administration.[13]

The preservation of irrigation works caused new additional costs for the provincial government. The state addressed this problem by collecting an irrigation fee to be paid by all those farmers who enjoyed benefits out of hydraulic works for double and triple rice cropping. Revenues generated by the irrigation fee were used to run the newly established irrigation management and exploitation company and were reinvested in the maintenance of hydraulic works. [14]

In an attempt to reduce the number of state agencies, including ministries, the Ministry of Irrigation was merged with the Ministry of Agriculture and Rural Development (MARD). Thus the complete administrative structure of irrigation management was integrated into MARD and from then on has been existing under the umbrella of MARD (see figure 4). Although the state bureaucracy of hydraulic management was merged with MARD, its power continued to grow with the gradual enlargement of hydraulic systems consisting of canals, gates and dykes and their regulation in the delta.

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[9] PRA workshops were carried out in three of the eight districts of Can Tho City (Vĩnh Thạnh, Cờ Đỏ, Phong Điền) in order to capture the historical development process of hydraulic management and its institutional development after the war in Can Tho City.

[10] Xí nghiệp xây dựng thủy lợi /xí nghiệp quản lý thủy nông

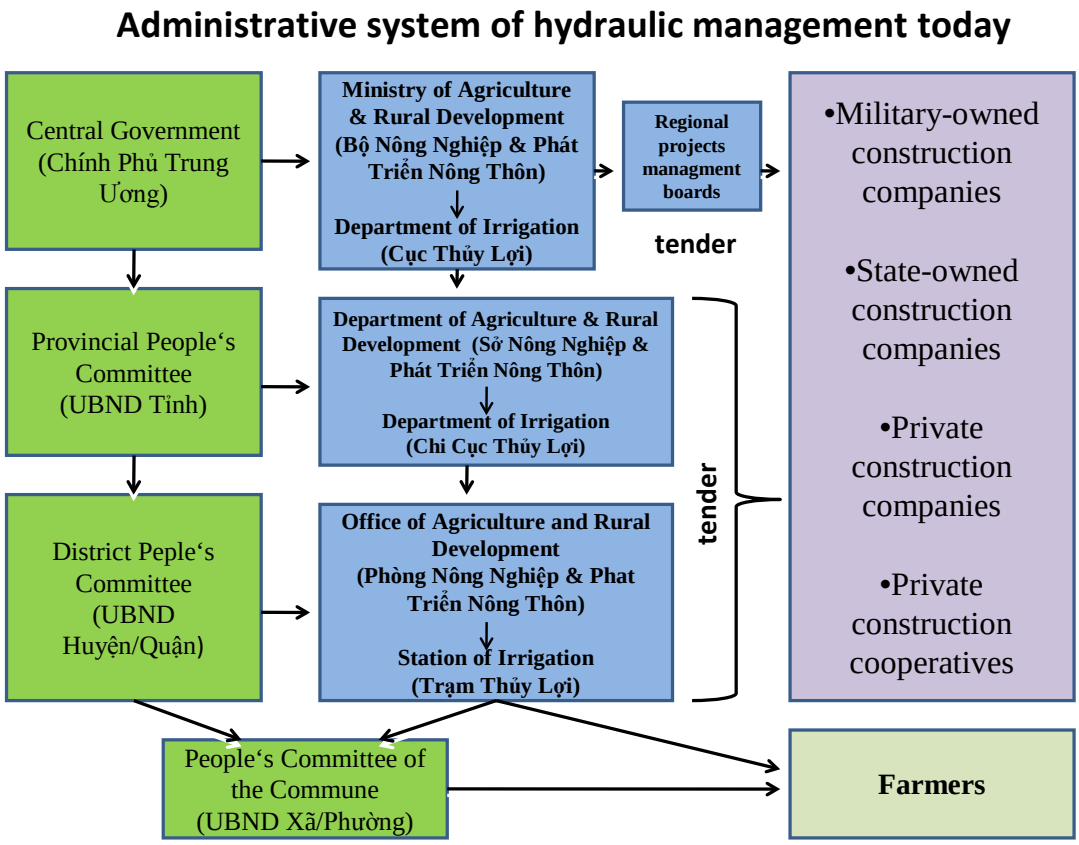
[11] Ban quản lý Đầu tư & Xây dựng Thủy lợi số. During an interview with the management board we found out that during the last 30 years almost all staff has exclusively been sent from the North by the ministry.

[12] Before, provincial irrigation management and exploitation companies existed in many provinces and can still be found in many places in Vietnam. Also compare Fontenelle 2001 or Harris 2006, MARD 143/2003/NĐ-CP.

[13] Interviews with the Agency of Irrigation of Can Tho City (Chi Cục Thủy Lợi Tp. Cần Thơ) and Can Tho Joint-Stock Hydraulic Construction Company.

[14] The irrigation fee (thủy lợi phí) was imposed all over Vietnam in 1992 and was abolished in 2007 again.

Figure 4 Administrative systems of hydraulic and irrigation management after administrative reformation and liberalization.



Source: WISDOM ZEF data.

By the end of the 1990s, pressure as a result of the government's renovation policy of economic liberalization caused new changes in the sector. While before, the irrigation sector was monopolized by an alliance consisting of the state bureaucracy and state-owned hydraulic construction enterprises as it's' clients, now the sector became increasingly opened up through liberalized tender procedures. Then, also private hydraulic construction companies and private construction cooperatives were allowed to participate in tender procedures of hydraulic construction projects.[15] In Can Tho Province, the state-owned irrigation management and exploitation company as well as some other state-owned hydraulic construction companies were converted into joint-stock companies from the end of the 1990s on, which was the result of a nationwide liberalization policy on state-owned enterprises[16]. Therefore today, participation in tender procedures is not exclusively confined to state-owned enterprises any longer. Hydraulic construction has become an almost free market in which all kind of enterprises are allowed to operate in. However, for small-scale project there is still the option to make use of closed tender

[15] Hydraulic works funded by public expenditures worth more than 1 billion VND (60 000 US$) have to be tendered openly for all kind enterprises all over Vietnam (interview with Agency of Irrigation Can Tho City)

[16] Though the company operates under the status by being a joint-stocked enterprise, 51 percent of the equities remain with the state (Interview with the Agency of Irrigation Can Tho City). Furthermore, some other state-owned construction companies have recently been transformed into joint-stock companies (Công ty Xáng & Xây dựng Cần Thơ, Xí nghiệp Tàu Cuốc Sông Hậu.This is the Vietnamese way of privatizing state-owned companies, also known as "equitization" (cổ phần hóa).

procedures, which allow local authorities to address certain companies directly for project implementation, without openly tendering it. [17]

The "equitization" of state-owned hydraulic companies in Can Tho that, however, are in somehow still under the management of state institutions and agencies, was the occasion for some people to set up private hydraulic construction companies[18] in Can Tho. Since 2000, these companies have considerably increased in number due to the availability of new resources released by market access, and therefore competition has become fiercer in the sector today.

Figure 5 One of 70 sluices of the World Bank funded O Mon – Xa No subproject for large-scale hydraulic management in the Mekong Delta

Photo S. Benedikter/H.D. Evers January 2009

While in the first years after the war the size of hydraulic construction projects was rather small, today there is the tendency that such projects steadily grow is size, which is due to new approaches of flood and salinity control in context of the global trend of integrated water resources management (IWRM). During the late 1990s large-scale hydraulic work projects based on the Mekong Delta Master Plan[19] were carried out by the central government (MARD), in many cases with financial support from the World

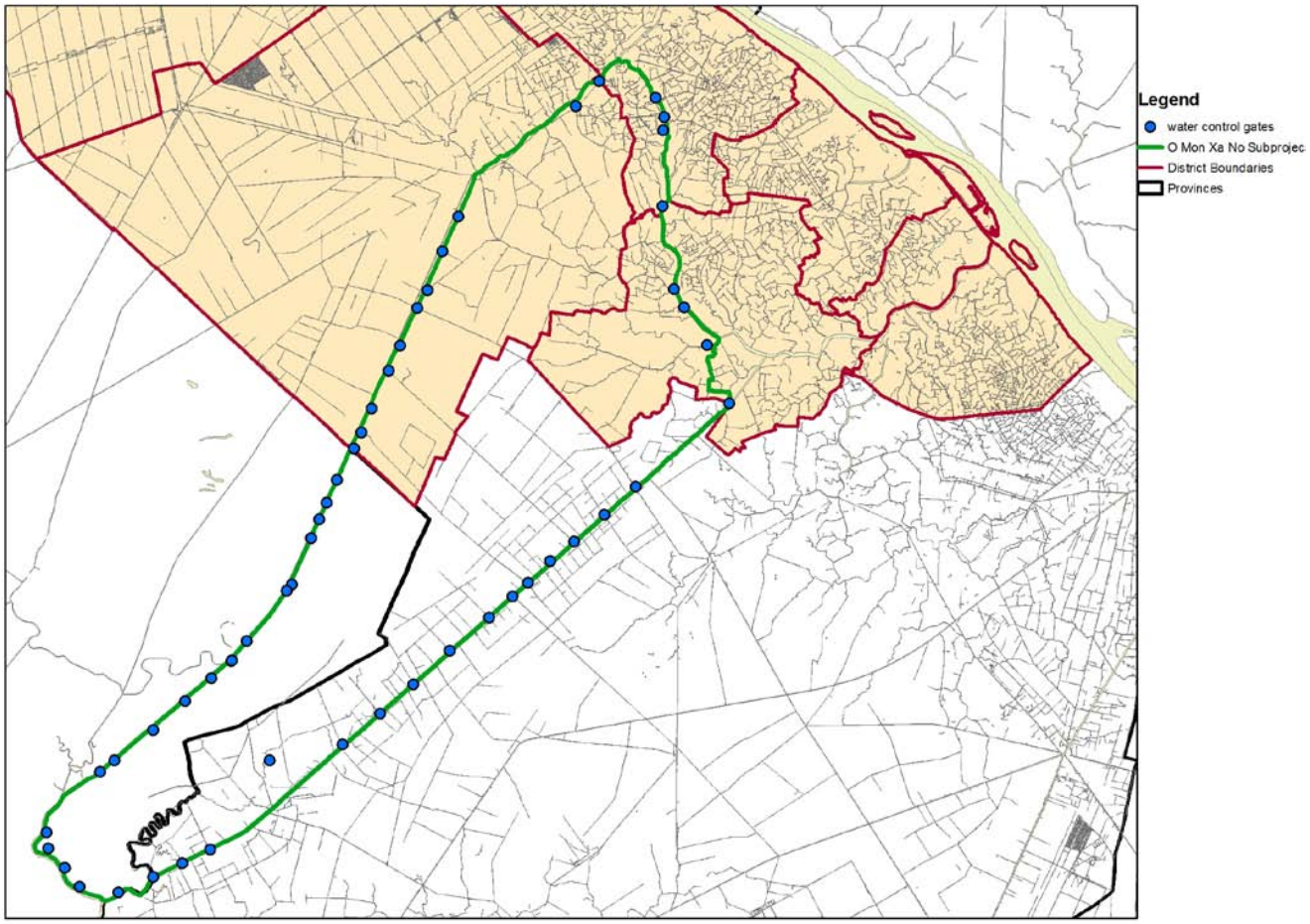
[17] Interviews conducted with the Agency of Irrigation of Can Tho City (Chi Cục Thủy Lợi Tp. Cần Thơ), Can Tho Joint-Stock Hydraulic Construction Company and two other large-scale hydraulic construction companies in Can Tho City.

[18] Hydraulic construction is not the only field of these companies. Some of them also offer services in road and bridge construction, or civil construction (data received through the Department of Planning and Investment of Can Tho City / interview with the Joint-Stock Hydraulic Construction Company of Can Tho)

[19] The Mekong Delta Master Plan was a study done by NEDECO and served as planning document for integrated water resources management in the Mekong Delta based on large-scale hydraulic schemes.

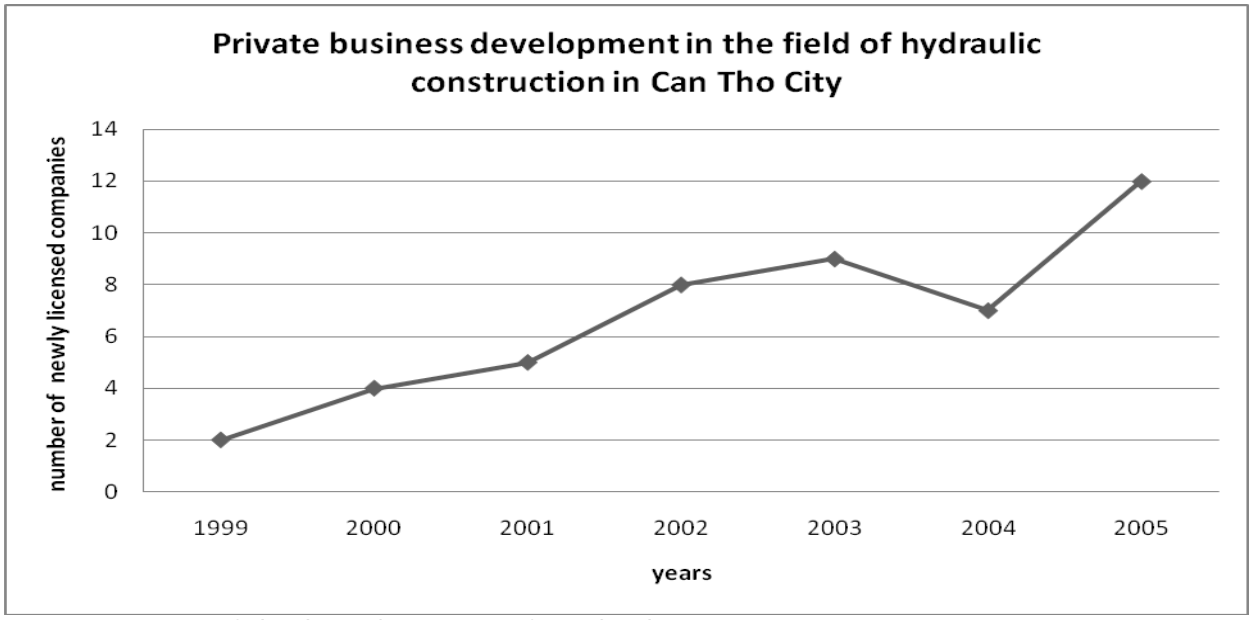
Bank.[20] Often big formerly state-owned construction companies under MARD, situated in the northern part of Vietnam and Ho Chi Minh City, carry out construction projects of large-scale hydraulic works in the delta.

Figure 6 O Mon – Xa No subproject for large-scale hydraulic management, showing water control gates (blue dots)



[20] In the late 1990s the World Bank co-financed the Mekong Delta Water Resources Project, which consists of 6 provincial cross-boundary subprojects effecting large areas of the delta.

Figure 7 Hydraulic construction companies in Can Tho City



Source: Department of Planning and Investment of Can Tho City

Although competition has become fierce during recent years, financial flows into the sector have gradually increased. Solely in the period 2006-2010 the central government is carrying out 13 large-scale hydraulic projects in the delta worth 35 million US$. Another 75 million US$ are disbursed for 45 medium-sized hydraulic management projects out of government funds in the same time frame and, furthermore, there are hundreds of small-scale projects at the district level. This implies that the ecological transformation of the delta will continue in the upcoming years, since monetary resources remain abundance to further feed the bureaucratic polity of hydraulic management and respective construction companies (Long An Government 2008).

Table 1 Can Tho's large-Scale hydraulic construction companies under state and military management

Company name	Company's owner
Công ty cổ phần Xáng xây dựng Cần Thơ	People's Committee of Can Tho City
Công ty cổ phần Xây dựng Thủy lợi Cần Thơ	People's Committee of Can Tho City
Công ty Cổ phần Tàu Cuốc- Xí nghiệp Tàu Quốc Sông Hậu	Ministry of Agriculture and Rural Development
Công ty Cổ phần đầu tư và xấy dựng 40	Ministry of Agriculture and Rural Development
Công ty cổ phần xây dựng 621	People's Army of Vietnam
Công ty 622	People's Army of Vietnam

To sum up, the government's policy of agricultural development based on hydraulic management laid the groundwork for the emergence of new powerful groups in the Mekong Delta, namely a hydraulic bureaucracy and construction enterprises owned by the state and in some cases under the management of the military, which both serve as clients of the state bureaucracy. In other words, technological progress in hydraulic management and large public investments into infrastructure development for water flow control released new resources that have been shared between both groups for mutual benefit. Throughout the years, both groups were able to consolidate their social and economic position constantly and therefore secured their access to resources in the long-run. Although both groups pursue different modes of resources appropriation, (1) bureaucracy: collective mode of appropriation; (2) enterprises: corporate mode

of appropriation, they have built up a tight network for communication and resources redistribution among their members. The coalition between the state bureaucracy and the private sector has become a distinct feature of Southern Vietnam's hydraulic society.

The growing connection of politics (bureaucracy) and business through coalition and even hybridization in the context of Doi Moi, is also pointed out by Gainsborough (2003, 2007), who conducted empirical research on the changing political economy of Vietnam with case studies from Ho Chi Minh City and Tay Ninh Province:

In interviews, company directors frequently explained their success, or why the state did make trouble for them, by reference to their connections to provincial leaders or their reputation because they used to work for the provincial government. That is accessing resources, whether it be money, contracts or information, did not depend on a set of rules which were the same for everyone. Instead, it depends of who you know (Gainsborough 2007: 6).

A similar assessment was given when we conducted an interview with Can Tho Hydraulic Construction Joint-Stock Company, where we learnt that close relationships with those who decide on tender procedures, which in fact is the hydraulic bureaucracy, are needed to survive in a market that is increasingly competitive:

> "To win tender procedures depends mainly on two factors, to be cheaper than others and to have good relations[21]"

Furthermore, we were told that it is rather difficult to succeed for those who are unable to integrate informal means in their business strategies (không đi ban đêm được), whereas those who go informal ways do better.

After the party-state promulgated economic reforms towards a more marked-based economy, resources monopolized by the coalition of the state bureaucracy and state-owned enterprises, became now also available for a newly emerged group, namely private business. Since economic liberalization, many new enterprises have emerged and entered the marked for hydraulic construction. Therefore the arena was enlarged by a new strategic group thereby increasing the dynamics of the sector.[22]

3.4. From Green to Blue Revolution – Agricultural Diversification and the Emergence of New Groups

Before 2000, agricultural production was predominately based on intensive mono-cultural rice cultivation in the delta. This began to change the first time by the end of the 1990s, when the central state announced a new policy of rural development with stronger focus on diversification of agricultur. Concepts like the VAC-model (*vườn*, *ao*, *chuồng* →garden, pond, stable) designed for increasing and diversifying production of small-scale famers pushed agricultural diversification towards new forms of farming system that, beside from rice, consists of upland crops cultivation, irrigated fruit orchards or vegetable production (Tran Thanh Be et al. 2007). With the occurrence of shrimp farming in coastal areas and fish farming in freshwater zones by the late 1990s, aquaculture has experienced significant growth during recent years in the delta. This is mainly because Vietnam was able to improve its access to global markets considerably; in particular after the US ratified a bilateral trade agreement with Vietnam in 2001 the country's integration into the world economy has sped up dramatically and made new resources available. Aquaculture has benefited very much form economic integration due to the access to new markets in the EU, Australia, Russia and Asian countries (Tran Thanh Be 2007).

In context of this blue revolution (aquacultural boom), new occupational groups emerged out of the agrarian scenery of the delta, for instance, fish farmers in the in fresh water zones and shrimp farmers in coastal areas. Furthermore, the upswing of aquaculture came along with a strong growth of export-oriented processors of aquatic products as a new field of entrepreneurship.

In Can Tho City, which is located in the freshwater zone of the delta, fishery was always an important source of income. However, before in Can Tho fishery was mainly based on wild fish in rivers caught for subsistence or sale at local markets. Today the situation has changed dramatically with up to 95 percent of total fishery output produced in fish farms, mainly catfish for export. Likewise, the number of fish processing companies has increased explosively within recent years only up to 28, of which 22 are specialized on catfish processing for export (see map). Most of these newly established processing facilities are owned by entrepreneurs, who operated in other sectors such as real estate or food processing before. When they saw the availability of new resources in the sector of aquaculture due to accesses to global markets, their attention was then drawn to the fishery sector as a new field of operation. Today aquacultural sector has set up an own business association (VASEP) for pushing through their individual interests.

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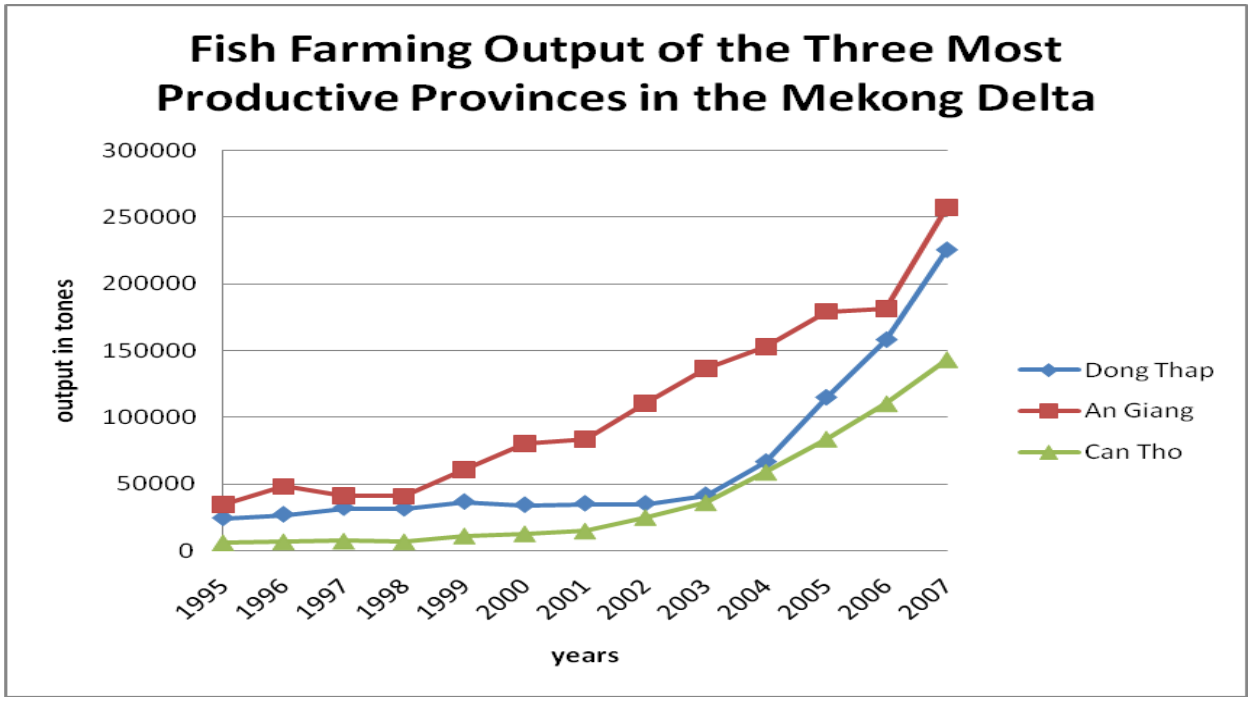
[21] Interview with the management board of Can Tho Joint Stock Hydraulic Construction Company (Công ty Cổ phần Xây dựng Thủy lợi Cần Thơ): "Đấu thầu dựa trên 2 yếu tố chính, đấu giá rẽ hơn và có mối quan hệ tốt là trúng".

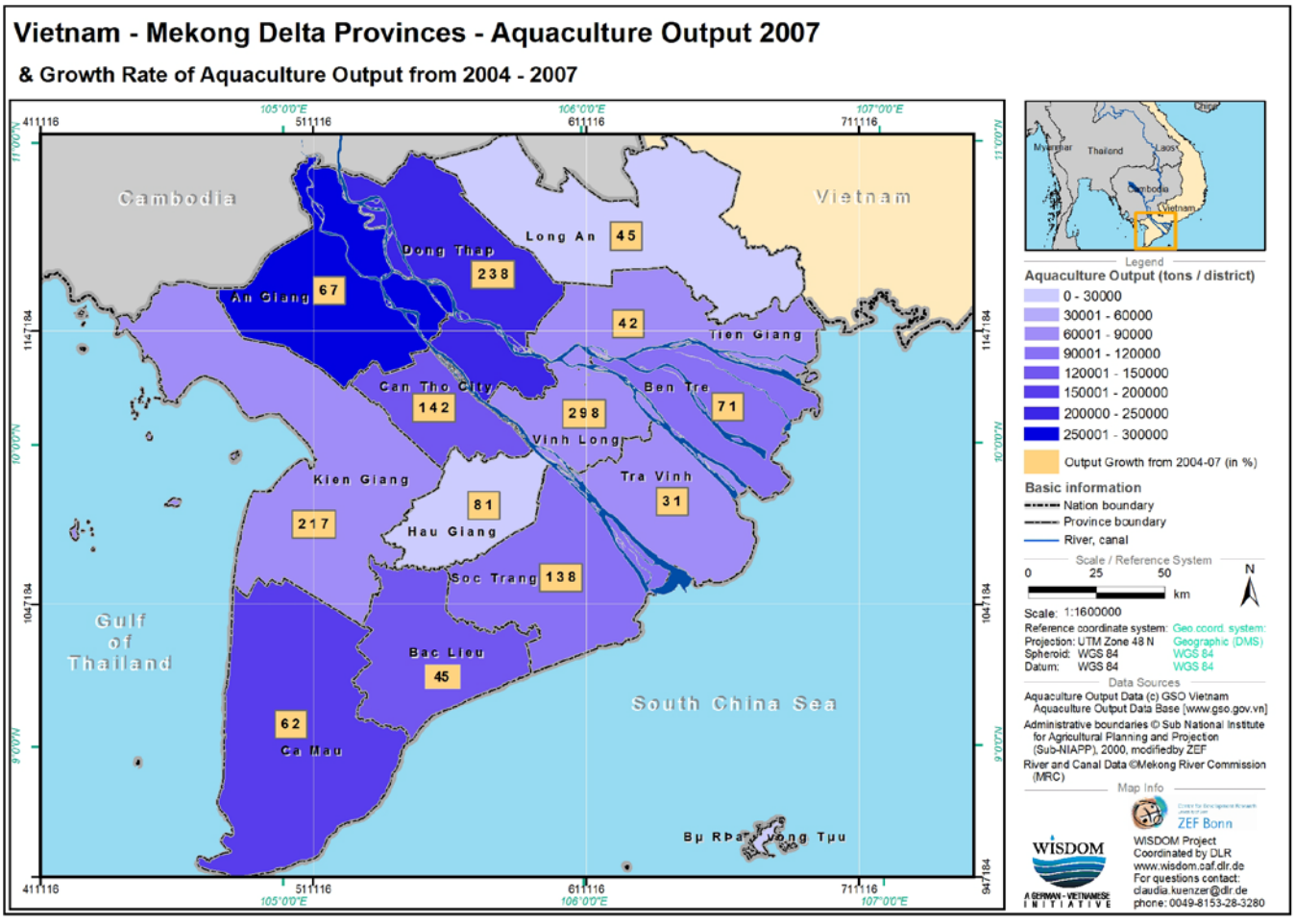
[22] So far it remains unclear who recently has set up all these private hydraulic construction enterprises and what is the social background of this new entrepreneurship. Further research is necessary and already under way to throw new light on this process.

Figure 8 Fish Farming Output



Source: Vietnam General Statistic Office

Figure 9 Aquaculture Output



Fish farming is capital-intensive and highly risky in terms of sudden price fluctuations on the market and diseases in fish. In this sense, only rich people are able to accumulate enough capital to get into business and successfully make it there in the long run. When the catfish farming boom reached the upstream-located districts of Can Tho City by beginning of 2000, better off rice farmers and urban dwellers started to invest their capital in catfish farming and thus diversified their activities or even switched completely to fish farming. Today, about 80 percent of grown fish is produced by small and medium-sized family businesses, while 20 percent comes out of large-scale fish farms, respectively. For the future, it is predicted that intensive fish-farming in large scale farms will dominate the sector due to growing quality standards imposed on foreign export markets. Large farmers are rather able to deal with this problem and to ensure high quality products through steady investments in new technologies by benefiting from an economy of scale.[23]

Figure 10 Irrigation Canals and Waterways, Can Tho City

Dykes make the difference. View from Nui Sap during the wet season, located in the borderland between Can Tho and An Giang province. While in An Giang high dykes enable triple rice cropping, Northern Can Tho still relies on fishing after the second crop in flooded areas.

Photo S. Benedikter October 2008

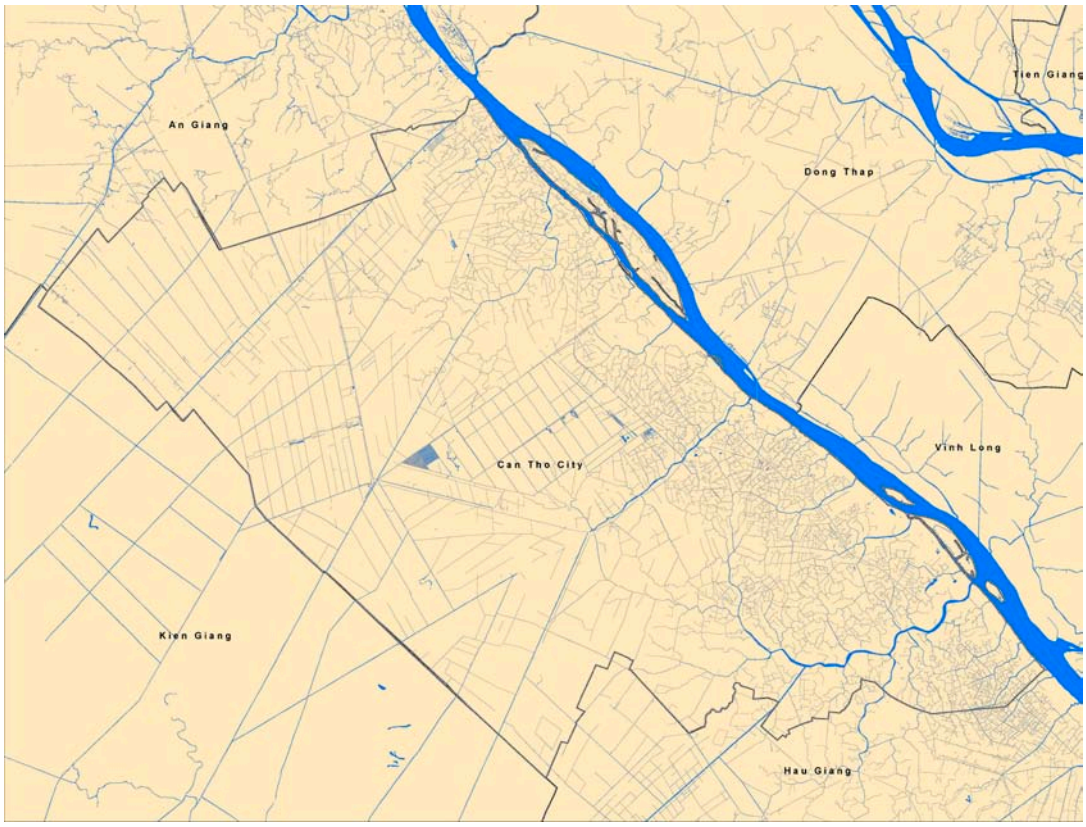
In contrast to the hydraulic construction sector, the fishery sector is entirely in the hands of private business at different scales. For the future, experts draw a picture of further rapid modernization and professionalization of fish farming, which more precisely means that large-scale farms are expected to replace many of today's small and medium-sized household-based fish farms.[24] This process might then

[23] Interview with the Agency of Fishery of Can Tho City (Chi Cục Thủy Sản Tp. Cần Thơ), Can Tho Fishery Association (Hiệp Hội Thủy Sản Tp. Cần Thơ) & Can Tho City Farmer's Union (Hội Nông Dân Tp. Cần Thơ)

[24] Interviews with the Agency of Fishery of Can Tho City (Chi Cục Thủy Sản Tp. Cần Thơ) & Can Tho Fishery Association (Hiệp Hội Thủy Sản Tp. Cần Thơ)

inevitably lead to the formation of an alliance consisting of fish farmers and processors as business man, or powerful processors will totally absorb fish farming.

Figure 11 Irrigation Canals and Waterways, Can Tho City



Coming back to the rice sector, the Mekong Delta, traditionally, is a region where big landownership was widely common before the war ended (Brocheux 1995). This is also reflected in the Vietnamese expression of "Công Tử Bạc Liêu"[25] or how the Vietnamese call the sons of those who made it to become big landowners (*đại điền Chủ*) in the delta during the days of French rule and thereby created a new elite of natives under foreign occupation. Though, big landownership partly was smashed after the war by the new socialist government in the South (Vo Tong Xuan 1995), nowadays, there are tendencies that landownership enjoys a revival after years of command economy and collectively-organized forms of production. Ironically, it was confirmed by several agencies under the Department of Agriculture and Rural Development of Can Tho City that the state's policy currently put a strong focus on fostering mechanization and professionalization, including to strengthen large farmers that are able to produce more efficiently than small-scale farmers. The appearance of new forms of big landownership or even landlordism seems to be a strong feature in several provinces of the delta, where in recent years high-dyke embankments[26] and sluices were set up to control water flows in flood prone areas for pushing triple rice cropping. From 2000 to 2007 the number of large-scale farms has increased dramatically by 70 percent, comprising not only rice farmers but also large-scale fish farmers and shrimp farmers (GSO 2008). This might indicate a correlation between increasing hydraulic management on the one hand and changes in land distribution on the other, since small scale farmers often are not able to survive within high dyke system, and are therefore forced to give up and sell their land to better of farmers.[27] Since

[25] Today the expression is widely used among Southern Vietnamese to describe the type of „rich playboy "or the new rich.

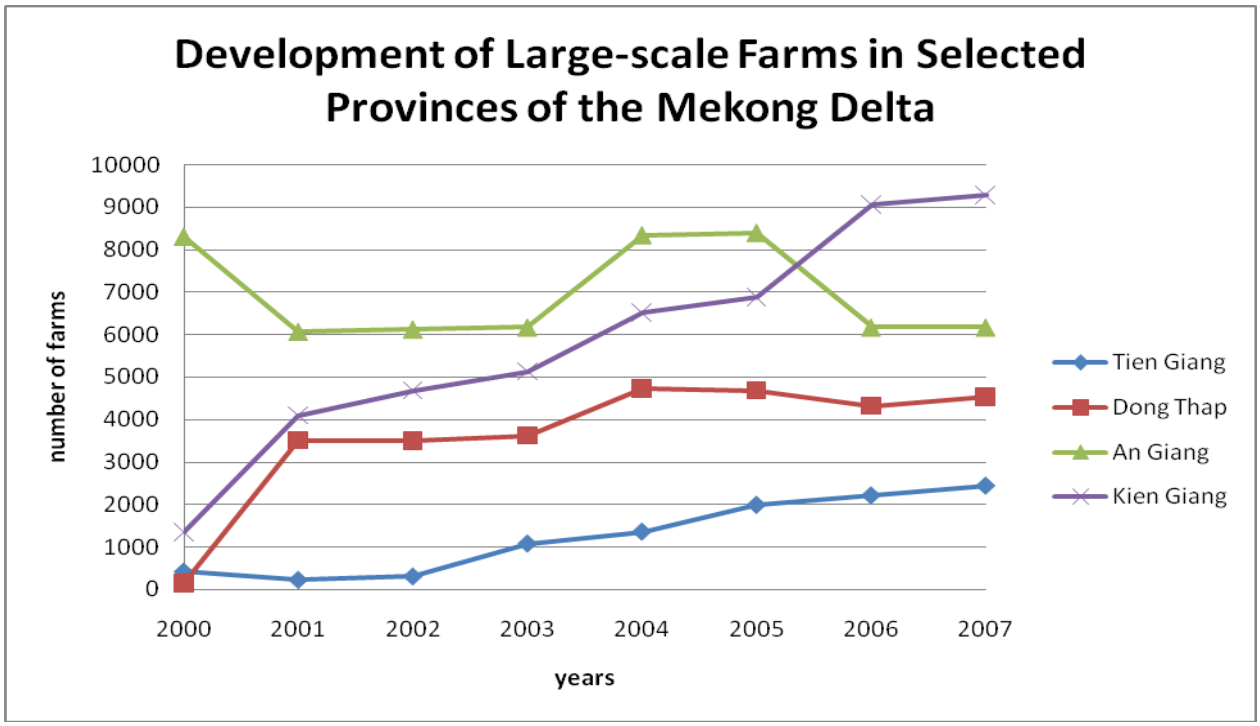
[26] In the Mekong Delta, we may distinguish between two kinds of dyke systems: (1) August dykes protect the summer-autumn crop from floods. After the harvest water can enter the dyke. (2) Within high dykes crops can be grown all year round.

[27] Closed dyke systems, like in An Giang, have negative impact on the environment and soil fertility, since water flow in and out the system is constrained. Fertile alluvial soil cannot get into the system in sufficient quantity,

private land property became legal again, some farmers managed to constantly accumulate land, possessing 50 hectares of paddy fields or even more in some cases by now.[28]

For the future, the government is certain that big farms will be the predominant mode of production in the long-run, while today's small-scale farmers should find new income sources in other sectors, like industry or construction, or simply become agricultural wage labourer on their formerly own land.[29] Such a scenario might lead to the formation of a new powerful strategic group in the landscape of the Mekong Delta, big landownership or landlordism.

Figure 12 The Emergence of large Landowners as a Strategic Group, 2000-2007



Source: General Statistic Office

4. Conclusion

The successful transformation of the Mekong Delta, into Vietnam's rice bowl and centre for aquaculture took place within the past three decades, when human interference into the delta's ecological system constantly increased. Since the Second Indochinese War ended and Vietnam reunited, human society brought the delta's environment steadily under their control, in particular with respect to water management for irrigation and flood control, whereas before the war the population was well adapted to their natural environment. This was mainly the result of the socialist government's new policy on fostering agricultural for achieving food security for a growing number of Vietnamese people by taping the delta's great potential resources in agriculture, in particular mono-cultural rice production. While in the Red River Delta hydraulic management of agricultural production has been going on for hundreds of

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which demands higher application of fertilizer and pesticides which is costly, especially for small scale farmers. Moreover, small-scale farmers located within dyke systems cannot rely any longer on wild fishery due the absence of natural wetlands during the flood season and even that certain species extinct. (Howie 2005, Duong Van Nha 2006).

28 Interview with the Farmer's Union of Can Tho City (Hội Nông Dân Tp. Cần Thơ).

29 Interviews with the Farmer's Union of Can Tho City (Hội Nông Dân Tp. Cần Thơ), the Agency of Agricultural Cooperatives and Rural Development of Can Tho City & the irrigation station of Vinh Thanh district (Trạm Thủy lợi Vĩnh Thạnh). Informal talks with researchers of the Mekong Delta Development Research Institute (MDI).

years, in the southern Mekong Delta this system has been introduced only recently, creating a "modern hydraulic society" with water-related strategic groups.

According to Wittfogel's argumentation, setting up large-scale hydraulic works such as canals and dykes, requires strong state-based planning and coordination enforced by bureaucratic rule. Exactly this happened after 1976, when the new socialist state began to implement its project of transforming the Mekong Delta into a human-regulated environment based on hydraulic management. Growing public expenditures flowing into hydraulic infrastructure and maintenance works created a strong bureaucratic polity of hydraulic management, which follows the socialist state's principle of "democratic centralism".[30] This, more or less, means that state management structures are based on strict hierarchically structured planning and decision making processes running through all administrative levels.

When the green revolution came to the delta just after the war ended, first hydraulic construction works were mainly carried out by farmers who provided manpower under state coordination. Later on, when state investment increased and projects started to grow in size and complexity, state-owned hydraulic construction companies equipped with respective technical devices appeared and developed into clients of the hydraulic bureaucracy. As result an alliance comprising of bureaucracy and state-owned companies emerged for mutual benefit in terms of resources acquisition and distribution.

Table 2 Strategic Groups

	Strategic group	Group members	Resources
From unification to renovation	Hydraulic bureaucracy	State bureaucrats in state management organizations in the field of hydraulic management, including all levels of administration (Ministry of Agriculture and Rural Development & relevant sub departments, agencies of irrigation of the provinces, irrigation stations in the districts)	Government expenditures and ODA for maintaining and building hydraulic works
	State-owned and military-owned hydraulic construction companies	Managers and other staff of state-owned and military – owned hydraulic construction companies	Government expenditures and ODA in the hydraulic construction sector
From renovation until now	Private hydraulic construction companies	Managers and staff of private hydraulic construction companies	Government expenditures and ODA in the hydraulic construction sector
	Aquacultural sector	Fish and shrimp farmers, manager and staff of processing companies, exporters	Land and water for production, access to export markets abroad
	Big landowners	Growing number of large-scale famers	land and water for agricultural production

After the socialist party state promulgated its renovation policy in 1986, private economic activities officially become legal again, opening up new business opportunities. As a result, many private hydraulic construction companies were set up as government expenditures and ODA became available for a new social group, private entrepreneurship (Heberer 2000). Investigations on the management of hydraulic

[30] In Vietnam „democratic centralism" implies that democratic decision making processes officially take place at the very center of the centrally-organized party state and resulting policies then are enforced by state bureaucracy through rigid top-down-processes (Porter 1993).

construction companies and respective state agencies revealed that, however, networking among the hydraulic bureaucracy and large-scale construction companies under state management still seems to dominate the hydraulic sector, though market liberalization and "equitization" of state-owned enterprises has been going on for several years by now. This is due to the fact that only the legal form of the enterprises has changed during recent years, whereas the individuals holding key positions in enterprises and state management agencies are still the same persons.

At the beginning of the 1900s, private forms of property became legal again and a new rural development policy was announced by the central government in Hanoi. As a consequence, agriculture began to diversify and new resources became available in other water-related sectors as well. The emergence of aquaculture, benefiting from an increasing demand of fish on global markets provided an opportunity for private entrepreneurs to enter the field and to form a new strategic group, struggling to further expand business activities.

Fairly similar is the development of private landownership that appears to lead to a revival as a new strategic group in the Mekong Delta. As illustrated above, there is probably a strong correlation between a growing number of hydraulic schemes for agricultural production, mechanization of agriculture and a growing number of large landowners and fish farmers.

Eventually, more in-depth research is needed and under way to fully understand what are the precise strategies of each group and how do they concretely interact with each other with regard to modes of resource appropriation, collective strategies and action. Additionally, there is need to investigate the social backgrounds of group members in order to understand their historical development process and finally social change and power structures. By combining certain aspects of Wittfogel's theory of hydraulic societies with strategic group theory we hope to have gained some inside into the dynamics of the fast changing society of Vietnam's largest river delta.

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