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Benedikter, Simon and Waibel, Gabi

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Authors' addresses

Simon Benedikter
Center for Development Research, University of Bonn, Bonn, Germany
Walter Flex Str. 3
53113 Bonn, Germany
Email: simon.benedikter@uni-bonn.de, el_simeon@gmx.de

Dr. Gabi Waibel
Center for Development Research, University of Bonn, Bonn, Germany
Walter Flex Str. 3
53113 Bonn, Germany
Tel.: ++49.228.736707
Fax: ++49.228.731972
Email: gwaibel@uni-bonn.de

www.zef.de

The formation of water user groups in a nexus of central directives and local administration in the Mekong Delta, Vietnam

Simon Benedikter and Gabi Waibel

Abstract

Vietnam's agrarian system has profoundly changed since the government initiated its renovation policy in 1986. Various policy directives and institutional reforms have been aimed at increasing the production of cash crops for the export markets and ensuring the nation's food security. The government has undertaken considerable investments in irrigation and water control to boost local rice production, especially in the Mekong Delta. Today, a large water bureaucracy plans, implements and maintains the hydraulic infrastructure, but farmers have to contribute to funding and managing the irrigation systems. In this context, water user groups started to emerge from the 1990s onwards. This study on the trajectory of group development in Can Tho City shows that party-state authorities strongly stimulate group formation processes and organise the collaboration between farmers and the state. As a result, water user groups have become an integral part of local water management and instrumental in meeting the state-mandated production targets in agriculture.

Keywords: Water resources management; Vietnam; Mekong Delta; water user groups; irrigation; rural production; decentralisation

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1 Introduction

For several decades, the development of large-scale water control and irrigation infrastructure has been a common practice to boost agriculture production in many parts of the world, including Vietnam. Although centralised water systems have been successful in some regards, the sustainable management of these facilities has proven to be difficult. In particular, the investment, operation and maintenance costs of the irrigation systems have turned out to be high and the performance capacity tends to deteriorate over time (Meinzen-Dick et al. 1997: 18). As most of the larger systems were solely managed by the state, critics argued for decentralisation and the stronger involvement of water users in the management process (Ostrom 1990, Molle et al. 2009: 339-340). From this, the concept of water user associations emerged as an alternative option for managing water systems at the local level and, from the 1980s onwards, the establishment of water user associations was globally encouraged. Yet, their impact varied greatly.

Various scholars who investigated the performance of these associations during the 1990s found that it was the institutional setup which really matters: First, the political institutional framework, consisting of water laws and water policies; and second, the association's internal regulations and management practices (Bandaragoda 2000, Subramaniam et al. 1997: xi-xiv). In addition, it became clear that the wider political context not only defines and limits the space for water policy reforms but also strongly shapes their outcome. In post-Soviet Central Asia for instance, thousands of large water user associations were established in a top-down and bureaucratic manner and, as a result, they were unable to meet the assigned responsibilities. Case studies from Uzbekistan, in particular, revealed that the water user association model was not fully adopted but rather shaped in a way that it would fit the country's state-controlled system of water governance (Veldwisch 2008: 147ff.; Abdullaev et al. 2010: 1036).

These findings, among others, raised questions about the particular characteristics and practices of water governance in authoritarian regimes (see e.g. the special issue of *Water Alternatives* 2010, Vol. 3/ 3). The one-party state of Vietnam, where decision-making powers are solely held by the Vietnam Communist Party (VCP) and its state organs, has been one of the discussed examples. Water resources management in Vietnam is, to date, under strict state control and irrigation constitutes the dominant concern. This is because the government puts special emphasis on rural production (both for export and national food security) and undertakes high investments in order to double or even triple rice cropping in the country's deltas and coastal plains. Although central planning still prevails (Huu Pham Cong 2012), local state agencies have increasingly become in charge of managing the systems on the ground. With the expansion of the hydraulic infrastructure, water users gradually engaged in groups to organise pumping and drainage activities. These groups differ from the above-mentioned water user associations, as they were initiated by the farmers themselves and less formalised. During the last decade, however, the state has become increasingly engaged in promoting the development of water user groups. Taken as a whole, the water control and irrigation management nexus has become more and more complex and so far, there has been little research on the corresponding practices, in particular at the local level.

This paper therefore aims at investigating the contemporary institutional setup of irrigation management in the Mekong Delta, South Vietnam. By taking the rise of water user groups as a starting point, the paper draws on a survey and other empirical research in Can Tho City, Mekong Delta, where such groups started to emerge during the 1990s. The development of these groups is considered in two respects: first in the specific ecological context of rural production in the Mekong Delta (which will be explored in the following section), and second in the context of economic and administrative reform as well as political practice in Vietnam. In the latter, we briefly describe the contemporary political system and outline the main institutional reforms in the water sector since the renovation policy (*Đổi mới*) of 1986. We then analyze how these reforms have been applied in the study area, drawing particular attention to the interface between local state management and

farmers. With regard to water user groups, we will highlight three aspects: first, the local history and profiles of water user groups; second, state interventions in an attempt to formalise and manage the groups; and third, the groups' (and more generally, farmers') contributions in cost and labour to the development and maintenance of the water infrastructure. Finally, we relate the emergence of water user groups in Can Tho City to the overall framework of the government's rural production and food security policy and critically review the rhetoric of community participation in the field of water resources management.

2 The Mekong Delta: Ecology, agricultural policy and natural resources management

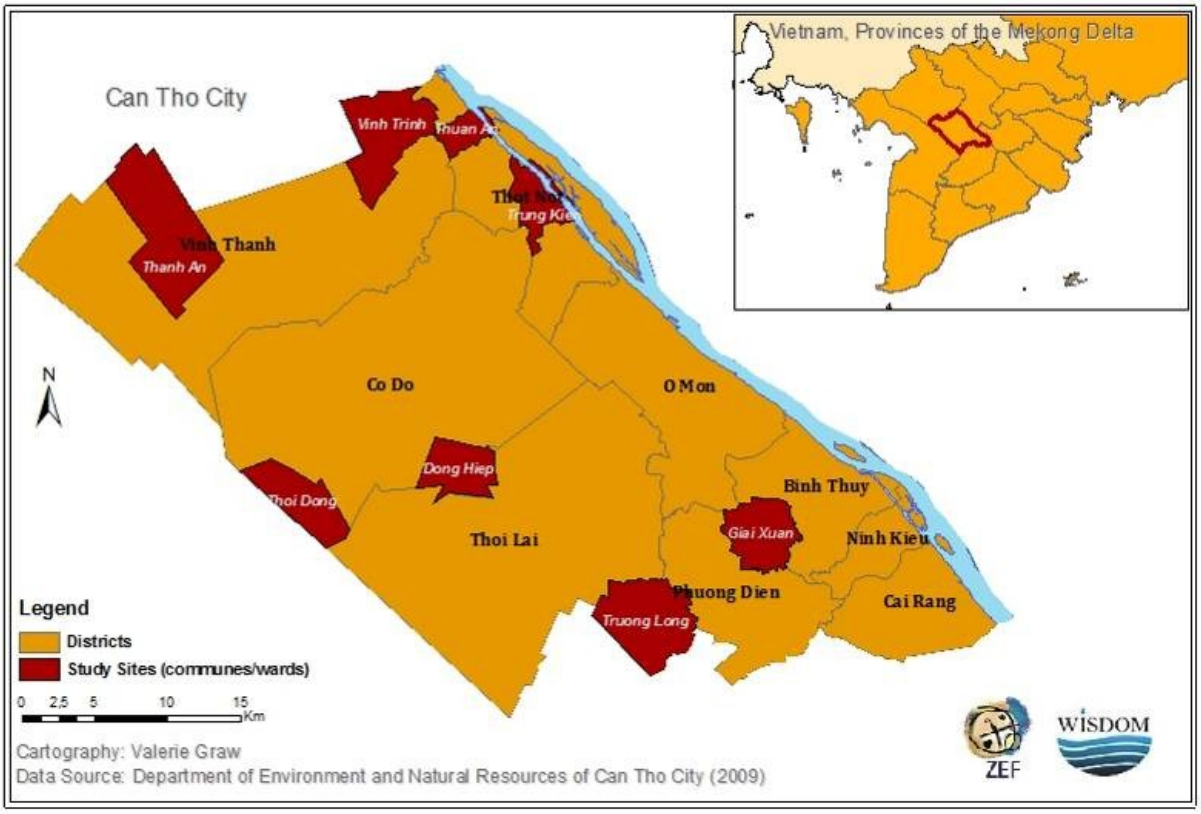
The Mekong Delta is a particularly water-rich area where the alteration between rainy and dry seasons and annual flooding dominate the water-flow regime (Nguyen Van Sanh et al., 1998: 20). The delta is known for its unique river-water civilisation, where people settle along the waterways, live in elevated houses, trade goods on watercourses and combine farming with fishery (Miller, 2003; Le Anh Tuan et al., 2007: 22-23). Water, therefore, has always played a predominant role in the local economy with investments in water transportation, for instance, starting in pre-colonial times (Biggs 2004). Water engineering, which was introduced by the French in the late 19th century and gathered momentum after Vietnam's reunification in 1975, represents another important strand of local water-related history (Biggs 2004, Kakönen et al., 2006: 23; Evers and Benedikter, 2009: 432). Until the 1970s, most farmers planted floating and rain-fed rice, but with the Green Revolution, greater cropping intensities and higher yield varieties were introduced and, as part of the socialist agricultural policy, their adoption was enforced (Ngyuen Huu Chiem, 1994; Trung Dinh Dang, 2010: 91). Related state investments in water control and irrigation systems were substantial and even increased after 1986, when the rural production system gradually changed and ambitious economic growth plans were being implemented. Reforms to the rural credit system and the increasing availability of agrochemicals proved to be effective stimulants for promoting farmers' productivity (French Government, 2004: 10-11). Moreover, dyke constructions, aimed at protecting rural farms from flood disasters and improving opportunities for double and triple rice cropping, were continuously enhanced (Pham Cong Huu, 2012) and salinity control measures were set up in coastal areas to increase freshwater availability (Käkönen, 2008: 207). As a result, an extensive network of hydraulic infrastructure, comprising more than 13,000 km of axis and primary canals, 13,000 km of flood control dykes, over 900 sluice gates and more than 1,000 pumping stations cut across the landscape (Vietnam Netherlands Cooperation, 2011: 29). Thus, the delta is nowadays labeled as 'man-made' (Biggs et al., 2009: 203) and naturally, farming practices have changed.

To date, 85 per cent of the delta is still used for agriculture and the region provides about half of the country's rice yields and 90 per cent of its export tonnage (Le Anh Tuan et al., 2007: 18-27). In addition, local farming systems diversified and, since the 1990s, aquaculture, forestry and horticulture have also expanded (Vormoor, 2010: 11-14). Altogether, the region plays a leading role in Vietnam's food security and national economy on the whole. Moreover, ambitious growth plans, such as the 'Mekong Delta Master Plan', aim at developing the delta into a "global centre for agricultural production" by 2050 (Prime Minister, 2009). To achieve these goals, water resources management, land use planning[1], technical innovations and industrial food processing and preservation have to be strengthened (ibid).

[1] Land use is regulated by the central and local governments. With regard to agriculture production, local state agencies are responsible for identifying suitable land for rice production and thereafter strictly protecting these areas (Nguyen Hieu Trung, 2006: 1). Land use certificates and other legal provisions are means of enforcing the proposed land use. Markussen et al. (2009: 5) found that although reforms of the Land Law 'nominally granted farmers the right to decide what to grow […] in practice it is very difficult for farmers to change or remove restrictions on their plots'. According to the Mekong Delta Master Plan, 1.8 million ha should be cultivated as paddy land by 2020. In addition, 27% of the agricultural land should be reserved for vegetable, fruit and maize cropping, as well as aquaculture and livestock breeding (Government of Vietnam, 2009). The current land use plan of Can Tho City, where rice cultivation remains predominant, also shows the tendency to decrease rice land in favor of crop diversification. Moreover, integrated farming models, in which rice and fish production are combined, for example, have recently been introduced (Pham Cong Huu, 2011).

The study area of Can Tho City, a municipality which, in administrative terms, is equivalent to a province, is located in the heart of the Mekong Delta. Situated in the alluvial soil and freshwater zone of the delta (Nguyen Duy Can et al., 2007: 82), Can Tho City possesses fertile land and enjoys freshwater resources suitable for the cultivation of rice, cash crops and fish. Compared to other parts of the Mekong Delta, Can Tho City is only moderately affected by flooding and rarely by salinity intrusion[2] (UNDP and MARD, 2001: 2). The municipality is divided into nine districts (five rural and four urban)[3].

Figure 1: Can Tho City: Administrative boundaries and the 8 case study communes



Field research between 2008 and 2010 aimed at capturing the institutional set up of local water management agencies at municipal, district and commune/ward levels. In this respect, cadres of respective state agencies were interviewed at all three levels. In addition, 2 group interviews with farmers and community representatives were organised in each of the 4 selected districts (in total, 8 communes were included; see map above). In the same communes, 64 water user groups were

[2] Floods tend to occur every year during the rainy season when three major factors coincide: a high flow discharge from upstream, heavy and continuous rainfall and high tidal flow from the sea (Le Anh Tuan et al., 2007). The most flood-prone districts of Can Tho City province are Thot Not, Vinh Thanh and O Mon district, with inundation levels ranging from 0.6 – 1.5m, lasting for about three months during the peak of the rainy season (UNDP and MARD, 2001: 7).

[3] Following the classification into rural and urban administrative units, districts and communes are viewed as rural entities, while the respective urban units are classed as wards and towns. In addition, communes are divided into hamlets (villages). Boundary shifts and administrative rearrangements of districts and provinces are highly frequent (Waibel, 2010: 16 f.).

identified and thereafter included in a questionnaire-based survey. Considering that this was the first investigation of water user groups in the study area, the survey was explorative in nature. It basically aimed at capturing the history and evolution as well as the current activities and management practices of the groups. The complementary information drawn from the interviews allowed for a better understanding of what happens beyond the groups' boundaries.

The main characteristics of the four districts where the research was conducted are summarised in the table below.

Table 1: Characteristics of districts in the study area

	Rural/urban Classification	*Population*	*Area (km²)*	*Population Density (pers./km²)*	*Aquaculture Production (tons)*	*Agricultural Production (tons)*
Vinh Thanh	Rural	154,225	410.35	375	21,084	1,485,070
Thot Not	Urban	197,853	171.29	492	69,770	597,610
Co Do	Rural	181,187	401.83	450	19,746	1,464,899
Phong Dien	Rural	104,945	123.59	849	3,586	346,704

Source: Provincial Statistics Office of Can Tho City, 2008; District Statistics Offices, 2007

3 Vietnam's one-party state and Đổi mới reforms in the water sector

The Vietnamese political system is still characterised as "Leninist" (Fforde, 2009), bureaucratic (Porter, 1993) and "soft authoritarian" (Thayer, 2009), and the state's omnipresence[4] aims at maintaining control over all spheres of social and political life (Koh, 2001). However, economic liberalisation, decentralisation, the introduction of 'rule of law' principles and other administrative reforms initiated with *Đổi mới* ('renovation') in 1986 provided space for the development of private entrepreneurship and other forms of non-state organisations, including associations, which were prohibited prior to *Đổi mới*[5]. As a result, the institutional landscape has been gradually changing from mono-organisational socialism (Thayer 1995) to increasingly pluralism. Powers are nowadays "*more scattered*" (Gainsborough, 2010: 166-167); yet, a significant retreat of the state cannot be observed (ibid: 169). The related contestations and evolving practices, which will be discussed in this paper, are conceptualised as 'everyday politics' (Kerkvliet 2005). These *everyday politics* are, on the one hand, characterised by social forces which indeed can influence national policymaking and, on the other hand, by manifest weaknesses of central state power at the grassroots level (Koh, 2001)[6]. The one-party state shows strength by monopolising political power, but has obvious weaknesses regarding the coherence of governance in its decentralised system.

3.1 Đổi mới water sector reforms

This section briefly outlines some of the key elements of Vietnam's water sector reforms and how these reforms have been implemented over recent years. According to Vietnam's first water law, promulgated in 1998, water is solely managed by the state and state management functions were to be re-organised. Subsequently, the Ministry of Agriculture and Rural Development (MARD) was given the responsibility for water services, while the newly established Ministry of Natural Resources and Environment (MONRE) was in charge of water resources management[7]. Water policies, which are developed in Hanoi, are binding for all levels of public administration, including the provinces (municipality), districts and communes (ward, town) (Dixon, 2004: 17; Molle and Chu Thai Hoanh, 2008: 30). At the provincial level, ministries are represented by their respective departments (e.g. Department of National Resources and Environment (DONRE)), which are then divided into specialised centres and agencies. Provincial departments function and operate under the authority of the provincial People's Committee. The latter holds executive state power within its jurisdiction and,

[4] Party cells are established in all state agencies, organisations and state enterprises with more than five staff.

[5] The most important new legal provisions in this regard were the Law on Cooperatives (1996), the revision of the Civil Code (2005) and the Enterprise Law (2000).

[6] Kerkvliet (2003: 40-45) showed that farmers successfully resisted state-imposed agricultural collectivisation efforts and Heberer and Kohl (1999: 165-175) found that citizens started to engage in informal private sector activities even before these became legalised. *Đổi mới,* in fact, confirmed market-based economic principles and the return to household-based production at a point in time when they were already practised by parts of the population. In this view, major economic and other reforms came as a (late) state response to social practices.

[7] MARD is in charge of hydraulic infrastructure, irrigation, aquaculture, disaster prevention and water service delivery, while MONRE is responsible for the management of land, water and the environment, including water resources assessment, water allocation and the management of surface water, groundwater and water quality (Nguyen Thi Phuong Loan, 2010a; Waibel, 2010: 8). A new water policy, issued in 2006, introduces IWRM (Integrated Water Resources Management) principles and provides for a number of regulations and sanctions for water control and protection (ibid: 34-39).

through decentralisation, gained increasing autonomy, at least in the fiscal and administrative domains (Benedikter, 2008; Vietnam Consultative Group Meeting, 2009). The provincial authorities also hold the power to direct district administrations[8].

Provincial authorities enjoy some degree of sovereignty with regard to their institutional set up (Vasavakul, 1999: 168-170) and there is "substantial room in practice (though not necessarily legally) to 'reinterpret' centralised guidelines" (Fritzen, 2006: 9). An Integrated Water Resources Management (IWRM) process, for instance, has been formally adopted by the government but only partially implemented at the local level (Waibel et al. 2011). Similarly, provincial legal frameworks in the water sector tend to diverge (Nguyen Thi Phuong Loan 2010a).

3.2 Mass organisations and entrepreneurship in the field of water resources management

Table 6 (annex) illustrates that, with the exception of water quality control, organisations and actors other than state agencies fulfill numerous tasks and responsibilities in water management (as is exemplified in the case of Can Tho City). These include the mass organisations which, since their establishment in the 1930s, have been given the mandate to enforce Communist Party policies at local levels. In order to fulfill this mandate, mass organisations operate branches along the same administrative lines as the state. Following *Đổi mới,* they also have adopted more practical tasks, such as micro-credit delivery, and both the government and international donors often call upon their cooperation when they implement projects (ADB, 1999: 3-6; Norlund, 2007: 10-11). With regard to the water sector, the most important mass organisations in Can Tho City are: the Farmers' Association, which promotes irrigation and aquaculture activities; the Women's Union, which provides health education as well as credits for water supply and sanitation; and the Red Cross, which supports flood and disaster mitigation programmes (Interview 09.06.2010 in Can Tho).

Furthermore, private investors have gradually surfaced. The *socialisation policy*, in particular, enhanced the transfer of state functions, such as water services, and associated costs to the private sector and citizens. Though state-owned enterprises have not automatically vanished, as Painter explains:

> The stance and viewpoint of Vietnam is that socialisation of some activities in the public sector […] can be by no means considered as privatisation. Socialisation will be conducted under the principle that 'the work is shared between the State and the people, and the State will take the principal role, exercising State management functions' (Government Steering Committee, 2000b: 18) (Painter, 2005: 274).

The establishment of provincial irrigation and drainage management companies (IDMCs) and the shift towards water pricing policies in the late 1980s (Barker et al., 2004: 27; Fontenelle et al., 2007: 170) is just one example of this shift; formerly, hydraulic works and maintenance have been under the auspices of the central state. Furthermore, the Ordinance on Exploitation and Protection of Irrigation Works (National Assembly of Vietnam, 2001) has created business opportunities in drainage and pumping services as well as well drilling. In addition to private entrepreneurs, cooperatives (which are defined as '*types of enterprise*'[9]) also engage in this sector, although as our

[8] At the district level, 'offices' fulfill the respective state management functions, and some of these also have operational units at the commune level, such as health stations and agriculture extension services.

[9] Following one important *Đổi mới* reform, membership in agricultural cooperatives became voluntary in 1988 and thereafter drastically reduced. In Can Tho City, the number of cooperatives fell from 3,969 in 1986 to 1,132 in 1996 (DARD of Can Tho City, 2008). However, with the new Law on Cooperatives, promulgated in 1996 and amended in 2003, cooperatives were redefined as 'a type of enterprise', obliged to undertake business registration and submit written reports to the local government (Government of Vietnam, 2004). These so-

data indicates, they have experienced problems in successfully managing their organisation and businesses. Other private and semi-privatised firms offer maintenance works in some of the communes (Evers and Benedikter, 2009). With regard to domestic water supply, a few entrepreneurs have recently (2004) started to establish rural water supply stations at the district level, while cooperatives withdrew from this field of operation a couple of years ago (interviews with state agents in O Mon District, 23./24.03.2009). Finally, the state-run IDMC of Can Tho City (founded in 1992) was dissolved in 1999 and converted into a joint stock water engineering company (interview: Can Tho Joint Stock Hydraulic Engineering Company, 11.11.2008).

3.3 The involvement of water users

The Grassroots Democracy Decree[10], issued in 1998, is so far one of the most significant instruments for strengthening the local governance system beyond the provincial level (Benedikter, 2008: 66-74; Fritzen, 2006: 3f.). The decree provides for stronger involvement of people's voices in local politics and, to some extent, for the development of community- and participatory-driven approaches (Bach Tan Sinh, 2002: 122; Zingerli, 2004: 56). In the context of water resources management, this policy provided the grounds for participatory irrigation management (PIM) (MARD, 2004b) and the promulgation of new legislation on cooperative and water user groups (e.g. Decree 151 on Cooperative Groups (Government of Vietnam 2007)). In Can Tho City, PIM has however not been adopted to date (Pham Cong Huu, 2011: oral communication). Nevertheless, it is widely acknowledged that farmers, households and community based organisations (CBOs) are involved in managing the water resources for production and domestic use (Nguyen Xuan Tiep, 2008b: 297-299).

CBOs are a rather recent phenomenon. Surprisingly, the first survey on civil society organisations in Vietnam stated that more than a hundred thousand community-based groups existed in the country (Norlund et al., 2006: 48). Detailed information on these groups was however lacking. Nevertheless, the growing institutional diversity is considered a challenge by many state organs (Vasavakul, 2003: 25-26). Kerkvliet et al. (2008: 14) for instance report from the south of Vietnam that "local officials are overly suspicious" of the wave of newly emerging groups, as they "do not know how to handle" them[11]. According to MARD (2004a), the development of groups in the agricultural sector should nonetheless be encouraged. The water sector therefore provides an interesting case study for investigating the state-farmer interface.

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called 'new-style-cooperatives' are still ideologically supported, strongly promoted and state-sponsored. In 2008, a total number of 59 agricultural cooperatives were registered with the Agency of Agricultural Cooperatives and Rural Development of DARD in Can Tho City (DARD of Can Tho City 2008).

[10] Grassroots Democracy Decree 29/1998/ND-CP, later amended by Decree 79/2003/ND: Inherent to the decree is a famous quotation of Ho Chi Minh: "People know, people discuss, people execute and people supervise".

[11] The range of community-based groups in Can Tho City includes for instance clubs, which aim to promote the joint interests of their members. From various districts, the existence of agriculture extension clubs, gardening clubs, nutrition, population and HIV/AIDS clubs, sports clubs, legal clubs, and culture clubs (poetry, traditional music) was reported (Interviews with state officials in March 2009). In addition, the formation of micro-credit groups started from the mid-1990s, when banking reforms and the breakdown of rural credit cooperatives led to the establishment of self-help groups at the hamlet and commune levels (Seibel, 1992: 64; 77f.). The establishment of such groups was promoted particularly by mass organisations and clearly reinforced when, in the course of *Đổi mới*, microfinance schemes became a prominent instrument for poverty alleviation (Bloh, 2007). Many micro-credit groups in Can Tho City use loans to invest in improving sanitation, basically by constructing latrines at the household level (Reis and Mollinga, 2009). These micro-credit groups mostly operate under the guidance of the Women's Union and have a predominately female membership.

4 The local history and profile of water user groups

4.1 History of group development

In Vietnam's postcolonial history, state-society relations were strictly organised. From the late 1950s, the collectivisation of rural households was rigorously enforced by the communist regime and continued after reunification (1975), though with little success, particularly in the Mekong Delta[12]. With *Đổi mới* and the return to household-based agricultural production, membership in agricultural cooperatives and groups became voluntary (1988) and the number of these old-style cooperatives significantly decreased. Thereafter, farmers enjoyed the freedom of individual production, and group development remained weak (Le Meur et al., 2005: 37 f.; Nguyen Ngoc De, 2006: 73-74).

The spread of high-yielding rice varieties and multiple cropping schemes, however, increasingly required collective efforts in water management (Le Meur et al., 2005, Nguyen Duy Can et al., 2007: 77). Farmers whose fields were located in the same polder or dyke compartment, for instance, acknowledged the need to coordinate irrigation and drainage activities and began to engage in new group formation processes. These pumping and production groups emerged outside the official policy line, since the same farmers had formerly rejected the state's collectivisation campaign and likewise were reluctant to join the new-style cooperatives promoted by the state during the 1990s as an alternative model (Fforde, 2008: 17-20). The evolvement of 'informal cooperatives' was, by consequence, politically sensitive: as Hicks (2004: 297) reports from Long An, central-level officials remained rather critical and suspicious when poor farmers decided to pool their meager resources and engaged in informal group formation processes.

In Can Tho City, CBOs first emerged in the mid-1980s, but for about a decade the total number of groups remained small. Group formation truly accelerated in the mid-1990s, during which severe floods caused dramatic production losses and state agencies finally encouraged farmers to improve upon local collaboration (group interviews with farmers, Oct. 2010). Consequently, a considerable number of production and irrigation groups were set up and, as provincial statistics indicate, this process gathered further momentum during the following decade, when the number of production groups more than doubled (DARD of Can Tho City, 2008: 18). With reference to our results, these new dynamics in group formation coincide with the expansion of the secondary and tertiary canal and dyke systems across the entire province.

[12] While the membership quota of households in Northern Vietnam reached 96.7 per cent in 1979, the quota in the Mekong Delta remained rather low with 24.5 per cent in 1980. Farmers obviously resisted forced collectivisation, although nevertheless, by 1983, over 27,000 collective production units were operating across the delta (Ngo Vinh Long, 1988), benefiting from state supply of fertilisers and seeds (Nguyen Ngoc De, 2006: 71-72). LeMeur et al. (2005: 34 ff.) found that most collective production groups and cooperatives disappeared later on, even before any official dissolution was enacted by the state. Yet, some of the collective groups survived but faced a sharp reduction in their membership (Nguyen Ngoc De, 2006: 77). To date there are significant differences between water user groups in the south and in other parts of Vietnam. In northern and central Vietnam, water user groups are part of a complex water control management system, which functions under irrigation and drainage management companies (IDMCs) and/or state agencies; these groups have a long tradition and developed over decades (personal communication with researchers from Can Tho University).

Figure 2: Date of group establishment

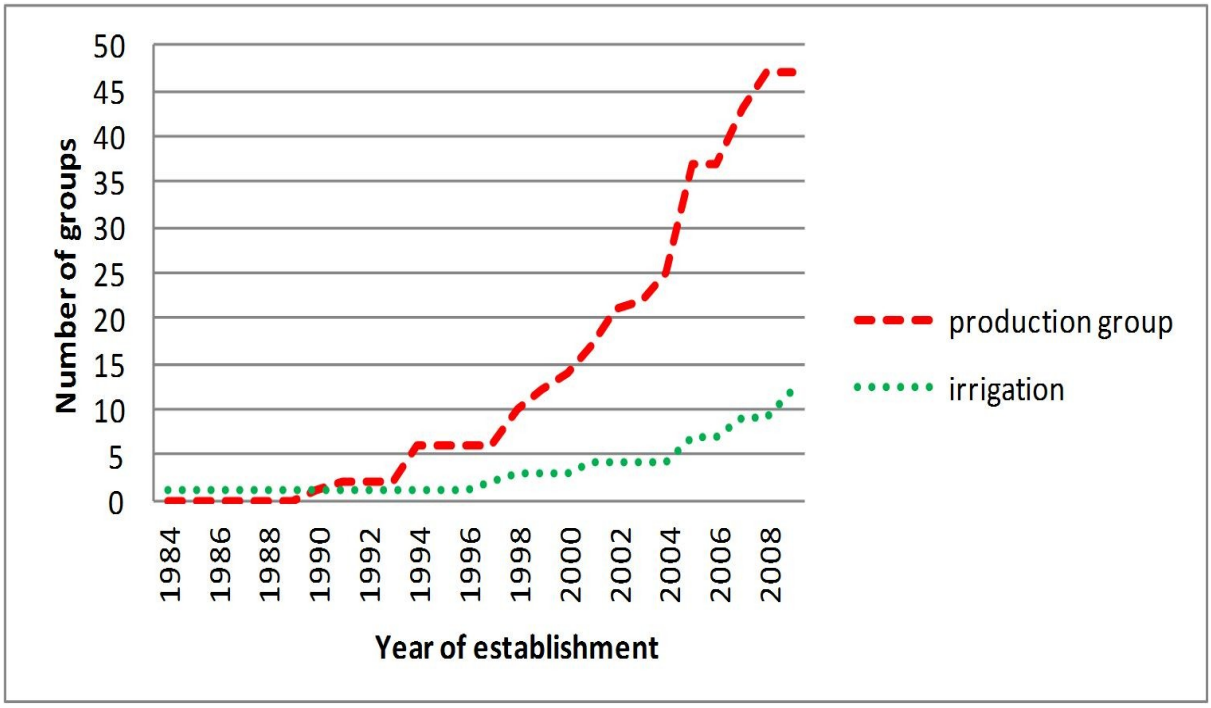


Figure 2 represents the findings from our survey, which covered a total of 64 water user groups. The sample includes: 47 production groups (*tổ hợp tác sản xuất*), 12 irrigation groups (*tổ hợp tác bơm tưới*) and 5 other groups (one club (*câu lạc bộ*), and four groups which stated that they were involved in both production and micro-credit activities. Despite similar features, irrigation and production groups differ in several respects. Irrigation groups are loosely structured, concentrate on seasonal water management activities and generally dissolve at the end of collective pumping campaigns. More than half of the production groups, in contrast, operate throughout the year and show a comparatively higher degree of diversification in group activities. These features are characteristic of production groups across the whole of the Mekong Delta (Nguyen Ngoc De 2006, 76f.).

With respect to their founding history, 36 out of the 64 groups in the sample stated that they had been formed out of previously existing groups such as (state-imposed) agricultural collective groups (*tập đoàn sản xuất)* and agricultural cooperatives (*hợp tác xã*) while a large number of the groups started as a new initiative.

There is ample evidence that the role of state organisations is of crucial importance in terms of mobilising, assisting and instructing people to organise in various types of groups. In six out of the eight study communes, local officials frequently summon community gatherings, in which they try to convince peasants to voluntarily cooperate in groups and organise training on the usefulness of, and benefits that arise from, team and group work, in order to encourage group formation. In fact, 38 out of 64 groups surveyed reported that local authorities, namely the commune People's Committee and the hamlet head, or the commune branches of the Farmers' Association and/or the Women's Union, invited them to establish their own group. Differences in group formation patterns can, however, be significant: half of the production groups were initiated by local governments and an additional 20 per cent followed a mass organisation's call for group establishment. In the case of the irrigation groups in contrast, two-thirds (66%) were set up through their members' own initiatives.

Official reports show that the provincial government of Can Tho City intends to intensify its campaign for mutual collaboration among farmers and also improve the legal conditions for group

development (DARD of Can Tho City, 2008). These efforts are embedded in the state-promoted concept of the 'collective economy (kinh tế tập thể)', which ideologically stems from the pre-reform era but is still maintained as a key economic principle of the socialist-oriented market economy, as emphasised by the political leadership at the latest 11th Party Congress (Tạp Chí Cộng Sản, 21.08.2011*).* With regard to rural production, the collective economy paradigm suggests that collaboration among farmers should be institutionalised; it is assumed that farmers' collaboration will produce higher yields than household-based, individual production systems; and state agencies are supposed to promote cooperatives, cooperative groups and clubs. The policy implementation is perceived as follows:

> With respect to the situation of the *collective economy*, at present, Vinh Thanh district has nine agricultural cooperatives. This means an increase of six cooperatives compared to 2007. […] there are 357 cooperative groups and 23 clubs operating in the field of agriculture with a total number of 9,779 members. […] It is planned to further consolidate and re-establish collective production groups in all hamlets of the districts' communes and towns (Vinh Thanh district Office of Agriculture and Rural Development, 2009).

It must nevertheless be noted that bottom-up reporting is crucial for local state cadres who, as a consequence, have a strong interest in matching planning targets. The fact that communes or hamlets with a high number of such CBOs are rewarded as model villages might further encourage local officials to promote as many groups as possible, though in many communities groups exist merely on paper (Nguyen Quy Hanh, reporting from his fieldwork in 2010-11 in Can Tho City, oral communication 16.11.2011).

The herein described bureaucratic approach spells out two aspects of group support: first, groups are considered a crucial part of any socialist-oriented economy under market conditions; and second, the state pursues its strong interest in promoting groups as an ideological/political imperative.

Regardless of the role of state agencies in CBO development, the respondents' motivation to set up groups encompasses the anticipation of economic benefits, time-savings and learning opportunities. With regard to economic benefits, production and irrigation group members in the survey expected to be more productive and raise their income due to cost and time-savings, as well as the sharing of knowledge and experience. Beyond the financial dimension, all groups are interested in technical innovations and training, as well as various forms of information – which they hope to access through their affiliation with state agencies and mass organisations.

4.2 Group profiles and activities: Towards diversification and consolidation

Production and irrigation groups in Can Tho City are established by neighbouring farmers who cultivate land on both sides along a canal and/or within a dyke compartment. Thus, access to land constitutes an important precondition of membership in production (77%) and irrigation groups (91%). Membership in the group is generally defined by the head of the household (83%); in two cases both the head of household and his/her spouse were registered as individual members. Group size differs and production groups can be relatively larger; a minimum of 10 members, however, seems to be standard. In all production and irrigation groups, men are in superior numbers and about one-third of all the groups do not have females at all. In contrast, a single women-only group was identified and only one group had a comparatively equal number of females (16) and males (20). In all groups, membership is tentatively stable.

Table 4: Membership profiles of production and irrigation groups

	Production groups (total: 47)	*Irrigation groups (total: 12)*
Minimum number of members	10	14
Maximum number of members	145	47
Average number of members	35	29
Average number of female members	4	4
Average number of male members	31	25
Number of groups with 100% male members	13	7

In the study area, farmers tend to specialise in rice, gardening, fishery or aquaculture. The main purpose of the groups is to collectively organise pumping and drainage during the flood season, as well as carry out irrigation repairs and protection during the dry season (February to April). Pumping costs (hiring of pumps and oil for pump operation) are shared among members, while individual contributions depend on the actual size of irrigated land per household. Financial contributions of members are particularly relevant in irrigation groups (66%), though of less importance in production groups (36%). The groups do not hold land titles on behalf of the group and rarely possess collective assets – only one-third of all the groups indicated they have a pump, and just five (8%) said they operate their own pumping station.

Approximately half of the groups also engage in group activities in agricultural production, and three groups (5%) have purchased agricultural machines. Collaboration in farming includes land preparation, seed production, integrated pest management and fish breeding. In addition, labour exchange for harvesting is collectively organised. Apart from the productive field, a considerable number of groups engage in social welfare and community work as well as education. The operation of savings and credit schemes rounds off the groups' activity profiles. Finally, social welfare contributions of group members are considered an important factor in successful group performance, since the majority of groups consider poverty as the most important challenge.

Table 5: Activities of production and irrigation groups

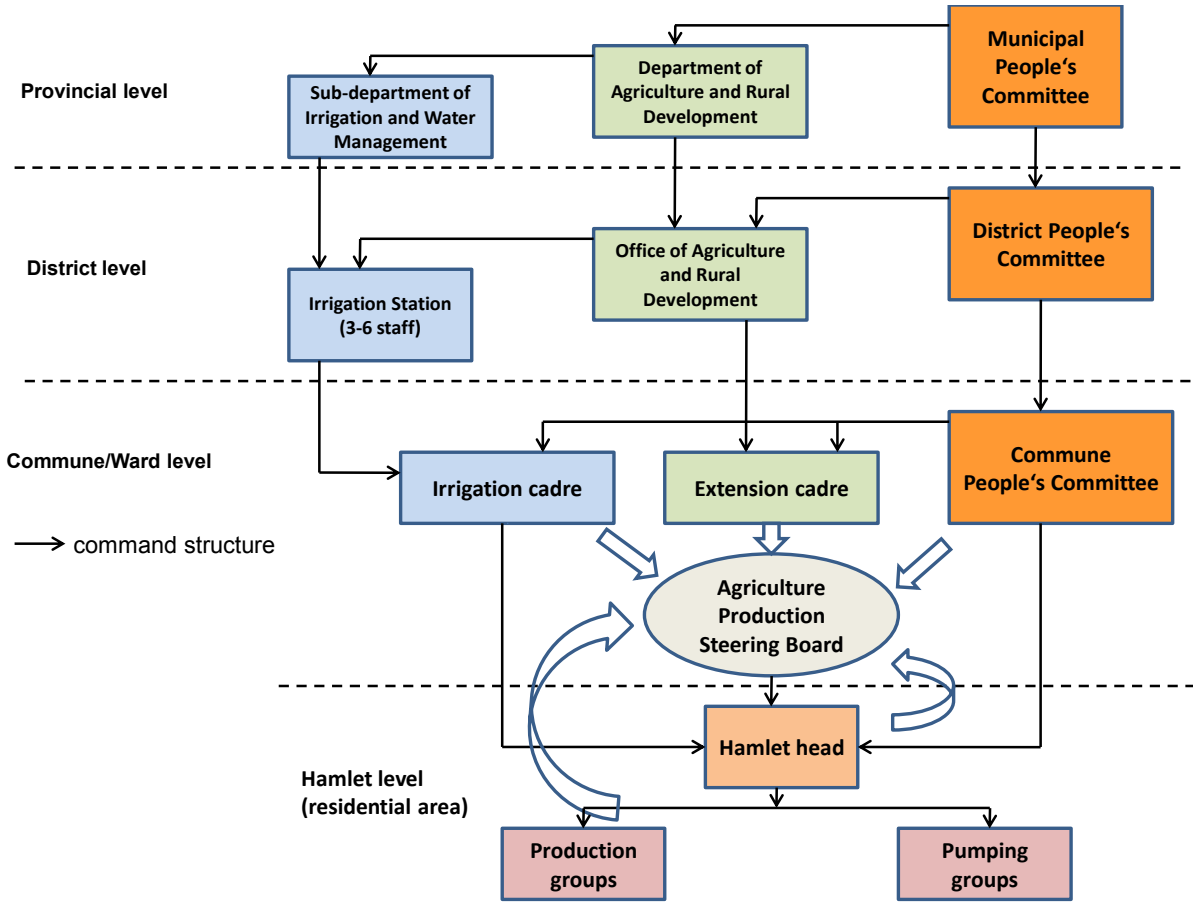
Groups main activities	*Production groups*	*Irrigation groups*	*Production and irrigation groups (total)*
Irrigation and drainage (pumping)	96 %	92 %	95 %
Irrigation work maintenance	89 %	92 %	90 %
Agriculture production	51 %	42 %	49 %
Social welfare and communal work	36 %	58 %	41 %
Education and training, incl. health education	47 %	33 %	44 %
Saving and credit schemes	34 %	8 %	29 %

To date, water user groups continue to emerge. How these groups interrelate with local agencies and other actors in the management of water for agricultural production will be discussed in the next section.

5 CBOs in the institutional set up of local water governance

With regard to production and irrigation groups, the interface of local government and CBOs in the water sector encompasses several dimensions, such as administration, regulation and command, support and demand systems. These are embedded in the existing local government structure, in which CBOs can be considered an integral part, as figure 3 illustrates.

Figure 3: Organisational setup of irrigation management in Can Tho City (example from Vinh Thanh and Co Do districts)



Source: Designed by authors

Figure 3 shows that parts of the interface between local state and water user/production groups are hierarchically organised under the guidance of various local state agencies. The respective People's Committees take final decisions on all plans and funding arrangements, since they have to approve the work plans of the different agencies. Furthermore, People's Committees provide for the legislation of water user groups, including regulations on the establishment, organisational profile and operation of groups, partly based on Decree 151[13] that defines the organisation and activities of cooperative groups such as production groups (Government of Vietnam 2007).

[13] Decree 151 stipulates that cooperative groups (tổ hợp tác) are financially autonomous organisations (*tự chủ tài chính*) that are organized and operate according to the principles of voluntariness (*tự nguyện*), equality (*bình đẳng*), democracy (*dân chủ*) and common welfare of its members (*cùng có lợi*). The decree further defines cooperative groups that need to have a minimum of 3 members and need verification from the People's Committee of their commune (Government of Vietnam, 2007).

In line with Decree 151, the majority of groups reported that their registration with local authorities and mass organisations constituted a common practice in group establishment procedures; that is, all production groups and 75% of the irrigation groups were officially registered. Newly established groups are supposed to submit a list of members and information on the (elected) group leadership via the hamlet heads to the commune People's Committee. The committee then assesses the group's principles and objectives and finally issues a decision to verify the group's legal status. Furthermore, the Farmers' Association is assigned to engage with the groups. As a result, almost all production groups (97%) and 75 per cent of the irrigation groups in our sample indicated that they were operating under the umbrella of the Farmers' Association. These data suggest that CBOs are increasingly subject to a process of formalisation, which is legally manifest in the promulgation of Decree 151 in 2007. In 2009, representatives of the Farmers' Association even made clear that *informal groups* did not exist in their communes, which indicates that the Party's longstanding efforts to *assimilate* such groups into the body of mass organisations (Marr, 1994) proved effective. The representative's declaration is very interesting, since research in other provinces of the Mekong Delta produced evidence of the co-existence of formal and informal groups (Fforde, 2008; Andrew Wells-Dang, 2012 oral communication).

A group's activity with regard to farming and pumping requires the approval of respective specialised agencies. In Vinh Thanh and Co Do districts, an Agriculture Production Steering Board has been recently established at both the commune and district levels, in order to assume overall guidance on agriculture affairs in the context of the collective economy paradigm. The Board assembles leaders, staff and representatives of all institutions involved in agricultural production, namely:

- The Chairman of the commune People's Committee
- The irrigation cadre
- The commune extension cadre
- Leadership of the Farmer's Association (commune level)
- (By approval of authorities) selected representatives of farmers
- Hamlet (village) heads

The board monitors the implementation of land use and agricultural production plans and oversees related activities. This includes the development and approval of cropping patterns, and pumping and drainage schedules as well as the management of hydraulic works. At the commune level, the hamlet heads then inform the irrigation and production group heads to implement instructions given by the village board. Thus, in view of achieving their aims and targets, the establishment of production and irrigation groups in all communes is considered a pivotal instrument. The implementation of the official cropping calendar, for instance, is much easier when farmers work together to pump, seed and combat pests (District Office of Agriculture and Rural Development of Vinh Thanh, 2009). Therefore, irrigation and extension cadres convene a series of meetings with farmers' groups in order to harmonise their respective seasonal work plans. They also strongly argue for adopting a common cropping schedule, in order to reduce the risk of crop damage. Finally, they arrange for common pumping campaigns. In cases of internal group conflicts (as needs for pumping and drainage depend on the farmers' locations and naturally differ), local authorities intervene and try to settle the disputes.

While material support for agriculture production remains marginal, the vast majority of the groups reported that through their membership they gained access to training opportunities (75.8% of groups), advice (62.5%) and credit schemes (37.5%). The latter are offered by either mass organisations or local agencies, often in collaboration with the Social Policy Bank. From the commune People's Committee, production groups occasionally receive oil to operate their water pumps, while extension services offer subsidies for the purchase of seeds. Pest and disease management, as well as monitoring visits, were mentioned as advisory services provided. Advanced cultivation techniques are disseminated in the form of training, to which group members (registered with the Farmers' Association) seem to have privileged access.

6 Financial and labour inputs: Cost 'sharing' practices

Water regulation in the sense of the provision of fresh water for rural production remains the predominant and most cost-intensive domain of water resources management in Vietnam, and the Mekong Delta in particular (Waibel et al., 2012). Related national investment programmes focus on disaster prevention, salinity control in coastal areas and flood control in the upper delta. This encompasses dams and water-control structures at all levels. As part of the fiscal decentralisation strategy, initiated in 1986, costs are shared among the central and local governments and farmers (Biggs et al., 2009: 207). As the following table shows, proportional contributions from the central state budget are thereafter reduced (Consultative Group Meeting, 2000: 83):

Table 2: Allocation of capital investment in water resources development (hydraulic infrastructure)

Year	*Central budget share*	*Local budget share*
1980	68%	32%
1990	65%	35%
1998	57%	43%

Source: Calculation by authors, based on data from the Ministry of Water, 1994; Consultative Group Meeting, 2000

The Mekong Delta investment plan for water control activities 2006-2010, for instance, foresees the following contributions: 5 trillion Vietnamese Dong (36%) for the central government, 6 trillion (43%) for local governments and 3 trillion (21%) for landowners and villages (Prime Minister, 2006). The ministry's portfolio covers large-scale constructions, while local agencies plan and decide on projects with smaller budgets (up to 5 billion Vietnamese Dong). Required farmer contributions are fixed by policymakers, since participatory planning approaches are still lacking (Pham Cong Huu, 2011). With regard to water supply for rural production, for instance, the government provides for the creation and maintenance of main and secondary canals in the delta, while the responsibility for tertiary and lower level canals is left to the water users, namely peasant communities (Nguyen Xuan Tiep, 2008a: 233). The example of Can Tho City demonstrates that the farmers' financial contributions are quite significant:

Table 3: Can Tho City budget for water resources development and infrastructure from 2006 to 2008, aggregated

	Investment (in million Vietnamese Dong)	*Ratio in percents*
State funds (different sources)	56,077	83%
Irrigation fee[14] (paid by farmers)	2,965	4%
Farmer's "voluntary" contributions	8,429	13%
Provincial budget in total	67,471	100%

Source: Sub-department of Water and Irrigation Management (DARD Can Tho City), calculation based on various annual reports

The administrative and fiscal decentralisation in the hydraulic sector started as early as the 1980s, when the central state established provincial irrigation and drainage management companies (IDMCs) responsible for hydraulic head works operations and maintenance (Barker et al., 2004: 27; Fontenelle et al., 2007: 170). As financially self-sufficient public service providers, the IDMCs started to collect irrigation fees from farmers. In the Mekong Delta, IDMCs were first set up in Soc Trang, Can Tho and Vinh Long provinces during the 1990s, which was considered a significant step in shifting costs to the local level (interviews with provincial authorities in 2009). Subsequently, the share of local government investment in hydraulic infrastructure has continually increased in recent decades (see Table 3).

Farmers also have to contribute cash and manpower to the construction and maintenance of irrigation infrastructure, which includes tertiary canals, border dykes and small ditches (interviews with district state agencies in Can Tho City, 2009). With the introduction of double rice cropping and the spread of water control structures, an irrigation fee (*thủy lợi phí*) was introduced (in 1984 and first collected in 1991) in order to devolve some of the emerging investment costs to the farmers. However, the controversial levy was difficult to collect and was finally abolished in 2009 (Ministry of Finance, 2009).[15] The impact of the decision has not been examined yet, but findings from our research suggest that alternative mechanisms are in place to allocate water users' financial and non-

[14] The irrigation fee was removed in Can Tho City in 2009.

[15] Despite nationwide regulation, only about two-thirds of the provinces collected the irrigation fee from 2004 – '06 (Nguyen Xuan Tiep, n.y.); in Ca Mau, Mekong Delta, for instance, local authorities considered the fee inappropriate for the given natural-ecological conditions for farming, and in Soc Trang farmers refused to pay (the head of the sub-department of Irrigation and Water Management of DARD, Soc Trang, interview 19.05.2009). The required amount depended on the size of the irrigated land and the local farming system itself (vice head of sub-department of Irrigation and Water Management, DARD Tien Giang, My Tho, interview 03.06.2009). Therefore, irrigation fees varied. The lowest rates were charged in mountainous areas (VND 566,000 (US$28) per hectare per crop), while the highest amounts were collected in the Red River Delta (more than VND one million ($50) per hectare per crop) (*Vietnam News*, 19.02.2011). Irrigation fees were often estimated as too high, in particular for poor farmers, and significant gaps in view of covering the costs for maintenance and new investments still remained. With the abolition of the irrigation fee, local officials were not only relieved from collecting the fees but also received direct and comparatively higher funding from the central government (interview, vice head of Sub-department of Irrigation and Water Management, DARD Can Tho City, 10.11.2008).

financial contributions to construction and maintenance works. In Can Tho City, water users' Obligations, as defined by local governments for instance, include the following (results from group interviews in all study communes):

- Digging of on-farm and tertiary canals by hand (provision of manpower: one person per household for a specified number of days); alternatively, and in the case of the use of machines, a monetary fee is collected. In contrast, public labour campaigns (formerly common in the delta) have almost vanished.
- Dredging of on-farm canals; all costs and labour input covered by farmers.
- Financial contributions for the implementation of the annual canal dredging plan of the district People's Committee (primary and secondary canals).[16]
- Financial contributions for the construction of new and rehabilitation of existing dykes.
- Development and implementation of seasonal cropping calendars, including pumping.
- Participation in meetings organised by mass organisations and local state agencies, where plans for dredging, pumping and cropping are approved and/or training on the usefulness of team and group work is delivered.
- In view of managing the above-listed tasks, CBOs increasingly come into play.
- Water management and community-based organisations.

The management of hydraulic infrastructure appears to be a complex and expensive task. As mentioned earlier, being spatially defined by a canal grid or square-shaped dyke walls, irrigation and production groups constitute the smallest unit of hydraulic management in the Mekong Delta. In Co Do district, for instance, production groups are organised according to physical hydro-agricultural structures such as dyke polders that serve flood protection. Within their polders, dwellers assume tasks in managing and maintaining the infrastructural interplay of canals, dykes and sluices for water regulation. These groups therefore constitute an integral part of the hierarchical structure of hydraulic works operation and maintenance, ranging from the ministerial to the hamlet level (Doan The Loi, n.d.).

Local agencies oversee the secondary and tertiary canal system and the People's Committees compile annual canal dredging plans. The plans' development is based on a consultation process in which all stakeholders are supposed to be involved. Firstly, hamlet heads collect farmers' requirements for the rehabilitation of existing canals and submit them to the commune People's Committee. Secondly, the committee assigns the irrigation and transport cadre to conduct a survey, estimate costs and draft a dredging plan. Thirdly, a series of meetings with farmers is organised in which the draft plan and farmers' contributions are discussed. Based on the slogan '*state and people work together* (*Nhà nước và nhân cùng làm)*', investment costs are shared between the state and the farmers, although shares can vary and depend on the project size and scale. The final approval is issued by the district authorities.

So-called '*farmer's voluntary contributions*' are then collected by the hamlet heads from each production and irrigation group. Depending on the investment scheme, state authorities sign contracts with dredging companies on behalf of the groups. If several groups are involved in the dredging exercise because a longer canal cuts across their land, the commune People's Committee

[16] The required contribution is calculated on the basis of land ownership: for 3 meter-large rice fields an amount of 80,000 VND must be paid. The total amount to be collected by local agencies can be considerable: In 2008, for example, farmers in Co Do, Vinh Thanh and Thot Not districts contributed about VND 2.5 billion for canal dredging and embankment/dyke rehabilitation (DARD of Can Tho City, 2009; various annual reports).

coordinates the activities and manages the funds. During the implementation process, farmers participate in monitoring and supervision as well as in the final inspection and acceptance of the dredged canals.

Dykes constitute another important part of the local water control system. Dyke projects are similarly planned and funded as secondary and tertiary canals, and farmers also have to contribute cash and labour. This is required for both the upgrading and the construction of new dykes. Farmers' approval of dyke projects cannot be taken for granted, as Howie (2011, 243f.) reports from neighboring An Giang province:

> The proposal needs grass-roots agreement, if people disagree […] even if there was a 51% vote in favour it will not get built. The 51% will not make the investment if they know the other 49% will not pay their share. There is no way to force the 49% into paying. If 70% agreed then [it is] likely everyone would pay. Completely different to the time before *Đổi mới*, when the government would have made the decision and invested the money.

Dyke rehabilitation works usually go hand in hand with canal dredging, using the silt dredged out of canals to consolidate and update dyke walls that run parallel to the corresponding canal. Usually, both activities are carried out simultaneously during the dry season, when the water level in canals and rivers is at its lowest level. In Can Tho City, these annual "*dry season irrigation rehabilitation campaigns*" are coordinated by district and commune authorities and constitute an integral part of the ever-expanding array of hydraulic infrastructure (Miller, 2003: 256; Biggs et al., 2009: 216). CBOs actually organise the financial and workmanship contributions, but in case of unforeseen damages, local authorities can also provide additional funds for rehabilitation works. Beyond these low level interventions, dyke system development remains a strategic and major concern of provincial and central authorities.

7 Conclusion

The recent evolution of Can Tho City's rural production and water resources management systems provide a good example of the implementation of a centrally planned agriculture policy, following the paradigms of economic growth, food security and old-style command and control principles typical for the sector (Asian Development Bank, 2008: 47). Heavy investment is still being undertaken to expand the existing water control system and central agencies maintain their authority over large-scale infrastructure projects. At the same time, economic deregulation, privatisation, socialisation and (fiscal) decentralisation have shifted related financial responsibilities from the central state to local level administrations and society. With regard to farmers and water users, the state maintains a leading role in directing and controlling their respective activities. The establishment of Agriculture Production Steering Boards, which manage water resources and issue agricultural land and production plans, provides a good example of corresponding institutional reform. Furthermore, mass organisations have become increasingly involved in managing state and farmer interfaces.

A second strand of the paper showed how local farming systems have been subject to change. As individualism and a frontier spirit (Jamieson, 1995: 5) were characteristic of the region, settlements in the Mekong delta grew along canal and river banks and were traditionally loosely structured. Prior to the Green Revolution, water management for agrarian use was basically done at the household level, because "nature provided a system of irrigation that required almost no extra labour and little organised cooperation between individuals and communities on shared waterways" (Biggs et al., 2009: 213). Efforts of the government to implement collectivisation after 1975 more or less failed. Nonetheless, the modernisation of rural production triggered the need for farmers to organise on-farm canal digging and maintenance as well as drainage and pumping activities.

The paper further analysed the emergence of different types of water user groups in the Mekong Delta. Although a number of CBOs originated from the old-style cooperatives or collective groups, this seems to be rather the exception than the rule. As the literature and survey data suggest, a number of CBOs began to informally emerge as loosely structured groups from the 1990s onwards. The government later on produced a corresponding legal framework, such as the guidelines for the establishment of water user groups and Decree 151, and related agencies subsequently issued directives for the lower levels of administration to engage in the promotion of such groups.

Group formation became subject to administrative procedures. Nowadays mass organisations and district offices hold records of CBOs operating in their constituencies and, officially, informal groups no longer exist. Nonetheless, local statistics seem to be inaccurate in that a substantial number of registered organisations exist merely on paper. Local authorities have also raised concerns that group activities are fragile as they are mostly seasonal and temporary; moreover, they have complained about a lack of willingness among farmers to engage in community-based collective activities.

The narrative of the surveyed groups also suggests that apart from encouraging group formation, mass organisations and state organs attempt to monitor their activities. As has been argued, CBOs are actively used by the state to mobilise revenues and the labour force. Moreover, agriculture policies and new technologies are actively disseminated through training programmes, which first and foremost target farmers registered with the Farmers' Association and provide them with training that coincides with rural development and agriculture extension policies of local authorities. Finally, local authorities appeal to farmers to adopt their operations to a joint cropping pattern and pumping scheme, which are designed to meet the planned production targets.

Linking the threads of rural development policy, agrarian change and CBO development, the current dynamics at the grassroots reflect a process which, referring to Kerkvliet, can be understood as '*everyday politics*' (2005): By inscribing the emergence of CBOs into its *collective economy* agenda

and incorporating CBOs into the traditional system of *state corporatism*[17] and respective local governance structure, the state has merely responded to an already existing reality, namely the development of informal groups. Initially, these groups lacked a legal foundation, since the government of Vietnam restricted and critically oversaw the development and operation of civic organisations. Since then, the legal framework has been modified and water users and other production groups are being promoted as integral parts of rural development policy. Thus, the practice of top-down state management and collectively organised production has by no means vanished from the state agenda, despite the return to household-based production.

The process of water user group evolvement in the Mekong Delta bears some affinities to other post-socialist and state-centric regimes. In Central Asian countries, as well as in Vietnam, the state obviously remains the dominant force in water resources management, despite the many administrative and economic reforms. With the introduction of *grassroots democracy* and participatory approaches to community development the Vietnamese state aimed at integrating water user groups and other self-initiated CBOs into formalised governance structures of the Leninist state model and created a range of mechanisms to manage the groups-state interface (reporting schemes, meetings and trainings, visits and observations, among others). Only groups that register with their local authorities are considered legal entities, which is also a precondition for gaining access to government support schemes. What has really changed is the rhetoric, notably pronounced in the idea of *voluntarism (tự nguyện hợp tác)* and *people's participation*. Indeed, participation appears increasingly in terms of monetary contributions, but not necessarily in terms of decision-making power:

> In many cases, the people's participation is "legalized" with a stamped document of the People's Committee although it does not show fully people's comments. Consequently, the work [hydraulic works] constructed with the improper planning and design will be ineffective and people's responsibilities for investment, construction and management are not linked to their benefits. (Nguyen Xuan Tiep, 2008c: 241)

The fact that local authorities are increasingly dependent on farmers' *voluntary* contributions to cover constantly growing investment needs in water infrastructure might have enhanced the bargaining power of farmers and farmers' groups. With reference to Scott's concept of hidden rural resistance (Scott 1985) and Kerkvliet's accounts of peasant-state relations in Vietnam (2005), farmers do not necessarily conform to state directives but find ways to resist state decisions and produce bottom-up pressure. For the Mekong Delta, Miller (2003: 255) reported from Tra Vinh that farmers abandoned unpopular canals constructed by the state. In Soc Trang and Can Tho City, state officials reported that farmers were reluctant to pay the irrigation fee and made its collection an unprofitable procedure (interviews in 2008 & 2009), while peasants resisted communal dyke planning projects in An Giang (Howie, 2011). In the coastal province of Bac Lieu, farmers who were in disagreement with central state policies on rice intensification even demolished large-scale salinity control structures to access brackish water for shrimp farming (Duong Van Ni 2012).

Through their refusal to make payments and give consent, and other forms of hidden resistance, farmers may be able to force local authorities to improve upon investigating and considering water user needs in their constituencies. Within the hierarchical structure of water resources management, however, local authorities are bound to fulfill planning targets defined at higher levels. Decision-making, production and investment plans thereby remain subject to contestations which play out at the interfaces of state bureaucracies and in the local governance arena.

Nevertheless, in the increasingly centralised water management environment, paradoxically the state makes use of the idea of decentralisation to shift investment and recovery costs in water

[17] Term used by Kerkvliet to define one of the three dimensions typically used to characterize state-society relations in contemporary Vietnam (2003: 30).

infrastructure to the local level and society. Howie, for instance, reports from An Giang about the centralisation of water scheme management in the context of high-dyke constructions. Decisions were imposed on farmers and formerly cooperating pumping groups dissolved when the state took full control over water regulations through head works (Howie, 2011: 291-293). Nevertheless, this is not a contradiction of what has been found in Can Tho City, but rather a complementary feature. Liberalisation of the rural economy and the spread of modern hydraulic agriculture come with clear limitations for farmers, and the central state is able to impose its food security/agriculture policy through a number of mechanisms. Thus, in the case of rural production, water users' CBOs are wedged between tendencies of centralisation and decentralisation. As a result of more liberal policies, CBOs have also identified a range of benefits from group formation. As many of them also develop complementary activities in the areas of savings schemes and social welfare programmes, new prospects for collaborative engagement at the community level may emerge in the future.

Annex: Table 6: The institutional landscape of local water management in Can Tho City

Mandates, tasks and activities	***State agencies in***			***Non-state actors***
	Provinces/municipalities	Districts/wards	Communes/towns	
Water quality monitoring and environmental management	Department of Natural Resources and Environment (DONRE): Centre for Environmental Monitoring; Agency of Mineral Resources, Water, and Hydrometeorology	Office of Environment and Natural Resources	People's Committee	
Rural water supply and sanitation	Department of Agriculture and Rural Development (DARD): Provincial Center for Rural Water Supply and Sanitation (CERWASS)	Office of Agriculture and Rural Development (partly irrigation station)	People's Committee, managers of rural water supply stations under CERWASS	Women's Union, Farmer's Association, saving and micro-credit groups
Urban water supply and sanitation	Department of Construction (DoC): municipal supply and sewage company	Subsidiaries of the municipal water supply and sewage company	People's Committee, subsidiaries of municipal water supply and sewage companies	Women's Union, Farmer's Association, saving and micro-credit groups
Irrigation and drainage services, hydraulic works maintenance (canals, sluices, pumping stations, dykes)	DARD: Agency of Water Resources & Storm and Flood Control	Office of Agriculture and Rural Development (irrigation station)	People's Committee (irrigation service)	Agricultural cooperatives, pumping cooperatives, farmers groups, Farmer's Association, private and formerly state-controlled dredging, and construction firms
Disaster prevention (flood and storm control)	DARD: Agency of Water Resources & Flood and Storm Control	Office of Agriculture and Rural Development (irrigation station)	People's Committee	Red Cross, mutual aid groups
Aquaculture and fisheries	DARD: Agency of Fisheries and Aquaculture	Office of Agriculture and Rural Development (aquaculture station)	People's Committee (agricultural extension service)	Aquaculture cooperatives, Association of Fisheries, fish processors, fish farmers
Water-related health issues	Department of Health (DoH): Centre of Preventive Heath	Office of Health	People's Committee (health station)	Women's Union, saving and micro-credit groups

Source: Composition by authors, based on research in Can Tho City, 2009 to 2010 and the work of Nguyen Thi Phuong Loan, 2010a; 2010b

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