



Water Institutions and the 'Revival' of Tanks in South India: What Is at Stake Locally?

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ABSTRACT: In India, the 'revival' of seasonal lake-reservoirs (*tanks*) is part of decentralisation and participatory management reforms regarding surface water, whereby programmes to rehabilitate these centuries-old infrastructures have made mandatory the creation of formal water users associations (WUAs). In Tamil Nadu, South India, WUAs are created without even taking into account the existence of customary institutions' ways of managing tanks, and thus the WUAs either run parallel to the latter, lead to their decline or ensure continuity with them. Conversely, in Puducherry's tank rehabilitation project, customary institutions are purposely neglected in order to empower marginalised sections of the population. The aim of this article is to compare the impact of creating such a formal association on the decision-making process, taking as an example four formal associations. Whatever the project, its success or otherwise lies in the hands of the local elite – either socio-economic or the new political elite – while all committee members are affiliated to political parties. In such a context, we question the stakes behind being a member of a formal user association and, more specifically, how these associations impact water management, how knowledge about water is acquired – especially with regard to groundwater recharge – and how this vital resource is controlled.

KEYWORDS: Tank, management, informal institutions, Water Users Association, India

INTRODUCTION

In India, a 'tank' (*eri* in Tamil) is a seasonal lake-reservoir, partially embanked, from which water is used mainly to irrigate rice fields located downstream. It is also a collective, multiple-use infrastructure that relies on the different resources its ecosystem provides: water, fish, trees, grass, silt, soil, etc. The rehabilitation of these centuries-old water-harvesting infrastructures is part of the decentralisation and participatory management reforms of surface water irrigation in India, for which formal Water Users Associations (WUAs) have to be created. The revival of tanks¹ refers, in its narrower assertion, to the physical maintenance of this ancient irrigation technique, associated with incentives for farmers to manage the tanks themselves. The idea behind such active participation is that involving farmers will "promote and secure distribution of water among its users, adequate maintenance of the irrigation system [and the] efficient and economical utilisation of water to optimize agricultural production" (Govt of Tamil Nadu, 2000). We shall see that none of these objectives is in line with any of the four WUA cases presented here, nor is equity in water access – which is moreover absent from the scope of the policy. What are the actions of the WUAs then? What is a WUA for in the eyes of farmers? What is locally at stake in the creation and running of a WUA?

¹ We shall see that this notion is based on underlying ideological concepts that cause controversy regarding the use of the term 'revival' itself, as well as how to organise the rehabilitation.

For researchers in social anthropology and political ecology, water is a link between people, through which various social and political dimensions are acted out. "Struggles over water are simultaneously struggles for power over symbolic representations and material resources" (Baviskar, 2007). Many scholars have thus proved that managing a collective resource such as water is a source of power. Managing a collective infrastructure such as a tank is no exception, even if its central role may have dwindled with regard to the increase in groundwater use. Before the advent of rehabilitation programmes, tank affairs were managed (and still are when there is no such programme) by customary and informal village institutions, headed by the village elite (Janakarajan, 1993; Mosse, 2003). Given the social and political dimensions of water management, besides the fact that development projects introduce some link with an external authority and power (Mosse, 1999), it is reasonable to put forward the hypothesis that the creation of a formal institution, here through tank rehabilitation projects, offers an opportunity for some individuals to compete for a position of power. One may wonder whether the introduction of formal institutions has changed power relations, whether the latter show any continuity or a complete shift and whether the formalisation of the institution has induced some changes in the decision-making process regarding tank management. Some researchers analysing canal WUAs have concluded that local elites 'capture' WUAs (Mollinga et al., 2001; Reddy and Reddy, 2005) and that power relations are reproduced inside the WUA (Narain, 2003). Like Pangare (2002), we will demonstrate how WUAs may provide an arena in which a new elite emerges. Our findings show that these formal institutions are headed either by the socio-economic elite, as was the case in the customary institutions that managed tank affairs before the rehabilitation process, by an ad hoc institutional structure or by a new political elite, whose members are linked systematically to political parties. These results will raise questions about social dynamics in rural areas, which are driven more and more by political affiliation.

Our findings will also question the participatory and democratic process for managing collective natural resources in a hierarchical society, where the various sections of the population have divergent interests, and routine decision-making is mainly in the hands of the elite. The conflicting interests of stakeholder groups appear to be a key emergent issue in some projects, a situation that prompts some researchers to explain the "low level performance equilibrium in which tanks are trapped today" (Sakthivadivel et al., 2004), these authors believing in drastic rules and strong institutional protocol as a solution for boosting the performance of rehabilitated tanks and, consequently, their institutions. Their position is very similar to that of many socio-economists following E. Ostrom's model, which is based on the functioning of customary institutions and gives recommendations on how to 'craft institutions' for better management. Nevertheless, they do not question why the concerns of stakeholder groups appear to compete with each other today, yet this difference in interests might be nothing new. Moreover, they stress that a solution developed in a specific area could be applied elsewhere. As such, they do not take into account the historical and social context, and thus create apolitical and ahistorical models (Mosse, 2003). The role of the elite and other people in routine decision-making determines the 'effectiveness' of the functioning of the institution, the direct involvement of tank users in major collective decisions being one of the key factors of social equity (Sakthivadivel et al., 2004). However, most examples in the literature about decentralisation, either for forest or water management, present cases where decision-making rests mainly in the hands of the elite. Grasping the social dynamics at stake in the running of formal institutions – the purpose of the present article – is therefore an important element, as it figures throughout the debate on the decentralisation of natural resource management.

Four case studies of WUAs in Southeast India will be the basis of our reflexion. Two WUAs are located in Puducherry district² and the other two, each managing two tanks from different villages, are to be found in Villupuram district in Tamil Nadu. The main differences between these two

² The name Pondicherry, whether in reference to the city, the district or the territory (made up of four scattered districts), changed to Puducherry in September 2006.

administrative units with regard to tanks are first of all that most of the tanks in Puducherry district have not been used for irrigation since the 1980s, though many are still in use in Villupuram district. Secondly, rehabilitation programmes implement different institutional rules. For instance, in Puducherry, some NGOs have been involved in creating and running the formal association, and all sections of the village population have been represented in the association, whereas in Tamil Nadu only farmers can be members of the WUA. Therefore, the Puducherry cases are not at all representative of South Indian tanks for irrigation use, but are of interest for the WUA operation model. We shall see whether or not this difference in WUA models influences the decision-making process, and whether the non-use of tanks for irrigation affects the stakeholders' involvement. Our inferences are somewhat limited due to the water supply context inasmuch that our case studies (bar one) involve tanks supplied by a river, while most tanks in South India are rain-fed. Regarding access to groundwater, this practice is easy in Puducherry district, while our Tamil cases are rather similar to those in numerous areas of this state. However, even if this context is crucial in the understanding of tank use (either for irrigation or other functions), our conclusions regarding the social scenario behind decision making and control over water are relevant for the majority of cases in South India.

In the first part of the paper, we present the context of the 'decline' in tank irrigation and tank institutions in South India, and discuss the notion of a 'revival' underlying the rehabilitation projects. Then, based on data from our case studies, we focus on the social issues that formal institutions have to face, paying particular attention to the social and political statuses of those involved in making decisions about tanks. In the final section, we show the interlinking factors that prompt villagers to stand as members of a WUA committee.

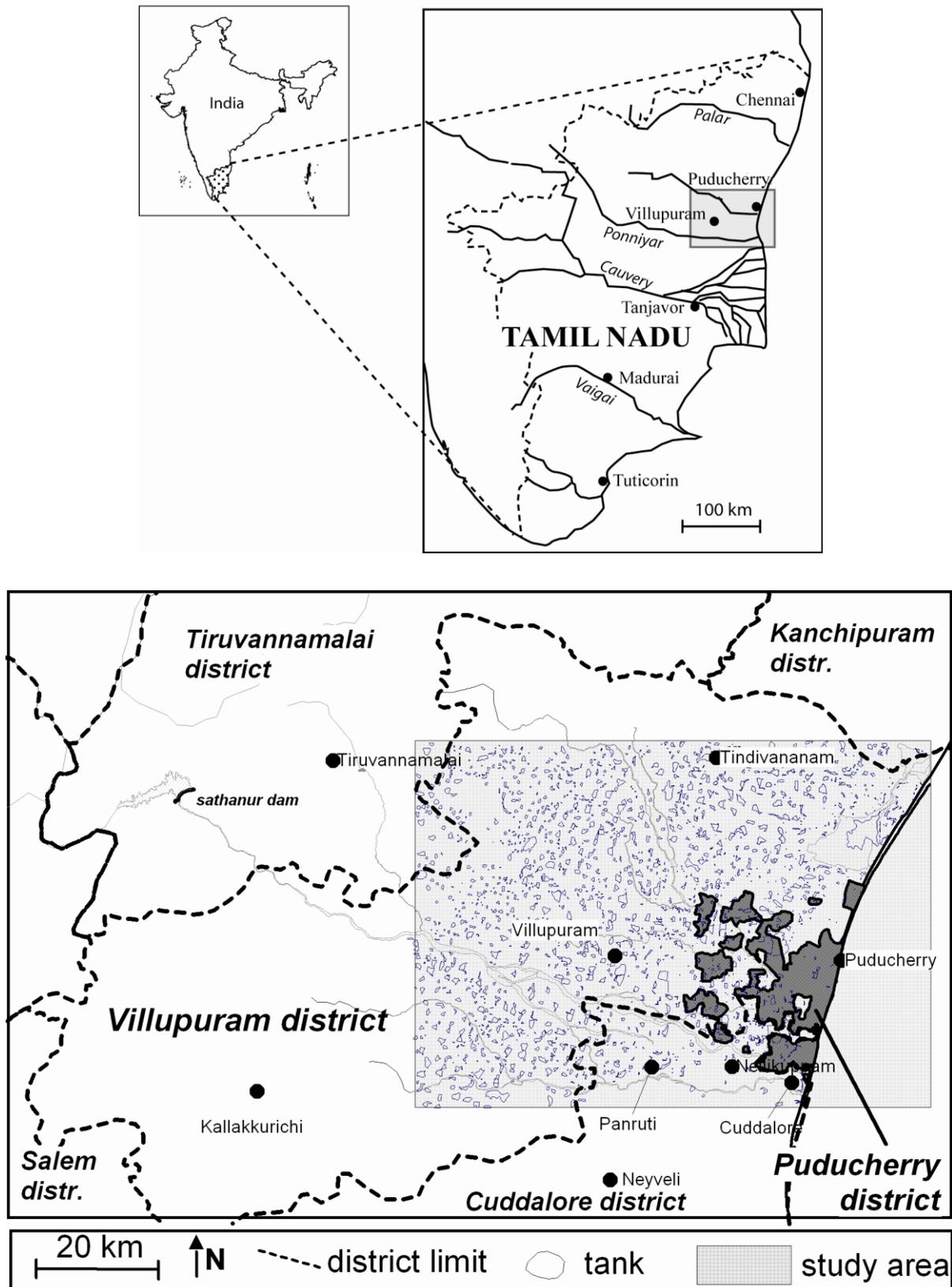
TANK IRRIGATION: AN ANCIENT TECHNIQUE AND THE CONTEXT OF ITS 'REVIVAL'

Village tanks

Tanks³ characterise 'traditional', collective irrigation in South India, since they are centuries-old infrastructures and very widespread. Most of them were built before the 18th century and their development in northern Tamil Nadu is mainly due to two dynasties that reigned from the 6th to 13th century. The oldest tanks date back at least to 200 BC (Ratnavel et al., 2006). There is a very large number of them, amounting to 159,000 and 39,000 in South India and Tamil Nadu, respectively (Vaidyanathan, 2001), for servicing about 65,000 and 15,000 'villages' – villages accounted for in the census, i.e. a *revenue village*, an administrative unit that may be made up of hamlets and/or villages. However, tanks are not evenly distributed over the area, nor is there any uniformity with regard to their size. The eastern part of Tamil Nadu has a greater concentration of tanks than the western part (see maps for South India in Vaidyanathan, 2001). In fact, in our study area (figure 1), there is at least one tank per hamlet or village, ranging from a few hectares to 800 hectares (hence supplying many villages). Tanks have indeed shaped the landscape, their embankments topped by palm trees, which are one of the rare vertical elements distinguishable on the flat landscape, together with the green rice fields to which they supply water and the stretch of water or grass visible to the eye according to the season.

³ The term 'tank' comes from the Portuguese term '*tanque*': water tank, reservoir (Adicéam, 1966).

Figure 1. Localisation of the study area within Tamil Nadu state, South India, and the spread of tanks within the study area.



As an important source of collective irrigation, tanks have always represented a key element in the socio-economic activities of South India, as they explain the historical economic prosperity and population density of such an environment (Mosse, 2003). Tank irrigation has proved to be an ingenious technique in response to South Indian environmental constraints. Their main advantage – given the erratic levels of rainfall during the monsoon, the fact that only two rivers are perennial in Tamil Nadu and that geological characteristics do not facilitate groundwater recharge (Palanisami, 2000; Agarwal et al., 1997) – is that they store rain and surface water. Furthermore, "Tamil people [have] built their civilisation around irrigation" (Ludden, 1989). And indeed, "their recorded history begins only after they learned to grow [wet] paddy" (ibid: 15). Paddy requires irrigation in Tamil Nadu conditions, as the climate is arid or semi-arid in places and the rainy season lasts only four months while paddy cultivation lasts six months. Fifty to sixty-five per cent of the 650 to 1200 mm of annual rain (1000 mm in the study area) falls during the rainy season.

However, tanks are not only used for irrigation. They have multiple functions – economic, ecological and social – especially since their ecosystems provide many resources (water, fish, trees, grass, silt, etc) that benefit different sectors of society other than farmers (Palanisami and Meinzen-Dick, 2001; Shah and Raju, 2001). For example, water is also used for domestic purposes such as washing clothes, bathing and watering cattle; it indirectly recharges groundwater; fishing can be done when there is water in the tank or only muddy soil left at the bottom; grass grows when there is no water in the tank and, according to the type of grass, cattle graze there or the grass is used for thatched roofs. The tank area is also used as a leisure area, for people to play in when it is dry, and tanks contribute to flood control and to protecting the ecology of the surrounding area (Ratnavel et al., 2006). Though irrigation is recognised by all villagers as an important function, landless people find more diversified uses for tank resources than farmers (Reyes-García et al., 2011). Given these diverse socio-economic uses, as well as their cultural and ecological functions, tanks are key elements of Tamil village social life.

An informal, customary local institution⁴ (often called a *titi*, a traditional tank institution) is involved in the management of tank resources (water, fish, grass, trees, etc), even though the tank infrastructure (and its resources) has remained under the authority of the state since colonial times. The customary institution is often a two-tier organisation in which the decision making falls to the village elite, sometimes helped by other persons such as the head of irrigation canals, and menial work is always done by *Dalits* (ex-Untouchables, also called Outcastes, and Scheduled Castes by the administration). This specific function, related to irrigation matters, is assigned mainly on a yearly rotation basis to a Dalit lineage (Janakarajan, 1993; Vaidyanathan, 2001, Sivasubramaniyan, 2006). The elite make decisions regarding irrigation rules or the auction of collective resources. Part of the proceeds from the auction is given to the department in charge of a resource (see below), while the rest is kept for the village – either for the temple(s) or to cover expenses when hosting a political leader or administrative representative or when travelling to meet them in their office. Given the use of these resources, it is obvious why villagers say "the tank is ours" and why these collective resources are seen as common property. Due to the implication of villagers in their management, tanks form "part of the 'public domain' through which social relations are articulated, reproduced and challenged" (Mosse, 1997, 2003). As Leach (1961) explained for a Sri Lankan case study, a tank is not only part of the village, but it is also the village itself. Therefore, tanks hold a privileged place in rural life.

Decline in tank irrigation area: Decline in the institution?

Despite the privileged place held by tanks, their irrigated area has decreased since the end of the 1970s from about 900,000 ha in Tamil Nadu to 575,000 ha in 2005, even dipping as low as 385,000 ha in 2003 (a drought year). However, the tank irrigation area in Tamil Nadu has shrunk to a much lesser extent

⁴ The term 'institution' is taken here as a synonym of organisation, but with its underlying rules and norms that define the institution in the institutional economic literature (see Ostrom, 1992).

than in other states (Sivasubramaniyan, 2006). Over the years, irrigation effected by pumping groundwater (GW) has flourished to become the main type of method used for this purpose (table 1).

Table 1. Change in the relative importance of tank and groundwater irrigation in Tamil Nadu, as a percentage of the irrigated area.

	Tank irrigation	Groundwater irrigation
End of the 1970s	39%	25%
In 2005	19%	52%

Source: Season and crop reports of Tamil Nadu, 1977 to 1979 & 2005/06

Since both types of irrigation often exist in the same areas, the rapid development of tubewells has undoubtedly affected tank irrigation. Indeed, farmers who have been able to invest in pumps have been freed from the constraints of collective irrigation and from surface water availability, which relies mainly on rainfall. Consequently, they have progressively lost any interest in collective irrigation, especially in places where the tank water supply is unreliable and where there is ready access to groundwater, such as in Puducherry district, located in an alluvial area. Figures from the Government of Pondicherry Report (1999) show that the area irrigated by tanks gradually declined from the beginning of the 1960s onwards, and totally dwindled in the late 1970s.⁵ These two steps can be analysed through the motorisation process of groundwater irrigation, and the introduction of powerful, submersible pumps.

In other areas with a different hydrological and hydro-geological context – in the case of our Tamil Nadu studies and most Tamil tanks – tank irrigation has also been affected due to complex social relations and organisational issues regarding water. The common scenario used to explain this phenomenon is as follows: only the wealthiest owners have ever been able to invest in pumps and bores, and now they use their free access to groundwater to sell it to the poorest, to increase their local economic power through these water markets and thereby to maintain their local influence. Furthermore, these owners are often influential people who play an important role in taking collective decisions, especially those concerning the management of water tanks, which in practice they actually neglect (Palanisami et al., 1998; Janakarajan, 1993).

For many authors (Agarwal et al., 1997; Palanisami et al., 1998) the sharp decline in tank management is therefore due to a decline in local institutions – which is itself due to the massive proliferation of motorised pumps. And yet many tanks are still managed by local institutions (Janakarajan, 1993; Vaidyanathan, 2001; Shaktivadivel, 2004). There has been a drop in the effectiveness of these institutions, but this cannot be attributed to a single cause, and so environmental, technical and social factors all have to be considered. For example, the type of water supply, the location of the tank according to the source of water, the level of tank siltation and the degree of encroachment on the canal supply and on the tank interfere with tank water availability. Moreover, the castes' control over the means of production – such as water and land – has undergone changes due to an increase in pump density, to a fragmentation of land, to land transfer from upper castes to lower castes, to land distribution between castes which has affected land tenure, and to the villages' social makeup (Janakarajan, 1993, 2004). All these factors interfere with and explain the varying degrees of decline in the tank institution. Moreover, tanks in South India have long suffered physical damage and maintenance problems, for reasons we shall not develop here (on this topic, see Janakarajan, 1993; Palanisami et al., 2000; Mosse, 2003). During colonial times the British, for example, were already complaining about the lack of involvement on the part of farmers in maintaining their tanks and canals, and thus attempted to impose collective maintenance (Mukundan, 1988; Agarwal,

⁵ Only 4% of the net irrigated area is still irrigated by tank water according to the report by Atkins (2001).

1997; Mosse, 2003). In fact, for Mosse (2003), the surge in the number of pumps has not been the prime cause of the decline, though it has served as a catalyst to heighten this ongoing phenomenon.

Beyond the local dimension

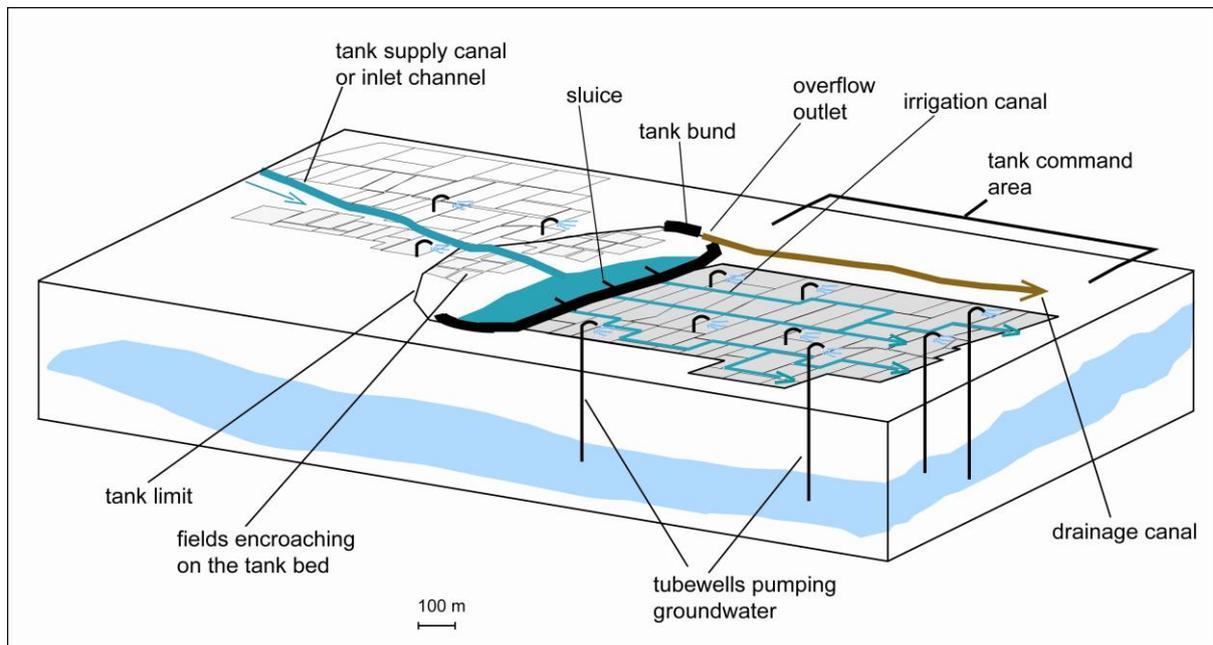
Tanks are often presented as a village irrigation system. The local dimension of a tank cannot be denied, but tanks must not be seen as an isolated technique, either from a technical, social, administrative or political point of view. Hydraulically, they are rarely isolated infrastructures, as they are interconnected and organised into a cascade or chain pattern, with the surplus from the upstream tank feeding tanks downstream. When they are supplied by a channel diverting water from a river, they are called 'system tanks' (ST). When this is not the case, they are filled only by rain, runoff and/or surplus water and are called 'non-system tanks' (NST), representing 90 per cent of tanks in Tamil Nadu (Vaidyanathan, 2001). Water, as a collective resource, has to be shared, which calls for cooperation and set rules within and between villages. Thus, it is practically impossible to understand tank management outside the network of tanks to which it most often belongs.

The control of tank structures and resources, and any subsequent decision making, are officially entrusted to institutions that are not situated at village level. The management authority in charge of tank maintenance is either the Public Works Department (PWD) or the *Panchayat Union*, this council being an elected body representing a group of twenty or so villages. In Tamil Nadu, the institution in charge is determined by the tank supply and the size of the command area. Rain-fed tanks with a command area of less than 40 ha are Panchayat Union tanks. Those with a larger area, or which are supplied by a river (i.e. system tanks) – whatever their command area – are PWD tanks. In Puducherry Territory all tanks, whether STs or NSTs, come under PWD jurisdiction (since 1963, Schenk-Sandbergen et al., 2003). Hence the maintenance and operation of tank infrastructures and inlet channels is the responsibility of institutions situated above village level, while the distribution canals within the command area (figure 2) come under the responsibility of farmers, and often of the village institution. As far as other parts of the tank system and various resources are concerned, the regulations specify different administrative institutions: the water and fish in tanks come under the Fishery Department, the tank bund and sluices the PWD or Panchayat Union, the tank bed the Department of Revenue, and the tank catchment area the Forestry and Revenue Departments. Nevertheless, for any changes or improvement work villagers have to contact the relevant authority and then face a highly complex administrative system, without being certain of ever obtaining permission. Decentralisation policies have done nothing to change this ownership situation, no doubt making it difficult to achieve the objectives laid out in the TN-FMIS Act (Tamil Nadu Farmer Managed Irrigation System Act) that grants legal status to the WUAs and which states it would inculcate "a sense of ownership of the irrigation system" (Government of Tamil Nadu, 2000).

In addition, tanks are rather complex systems, associating technical, social and political dimensions on various scales. Tanks "have been modified in a variety of ways in response to changing state-society relations and agrarian transformations" (Shah, 2003). In addition, "[t]he hydrology has been manipulated politically for centuries, for example, through the layout of drainage networks, the damming and diversion of rivers, the interlinking of tanks, or the repositioning of channels" (Mosse, 2003). The latter author analysed the structure of this technology as a response to power relations either locally or regionally, and in its relation to the state.

Hence, tank management is not only a village matter, since many stakeholders and institutions are involved, well beyond village level. Local institutions are not empowered to function independently, but operate at the discretion of institutions situated above village level.

Figure 2. Sketch of a tank irrigation system, showing the complementary use of groundwater and tank water, and the tank with its bed partially encroached on by private fields.



'Revival' of tanks

During the colonial period, administrators showed some interest in tanks. The British made minimum investments – hence colonial rules to force farmers to participate in maintenance work, but to no avail. The French, in Pondicherry, set up formal water users associations and gave them French names such as *Caisses Communes* and *Syndicats Agricoles*, but these associations were merely in charge of irrigation canals within the tank command area while the administration was involved in tank and supply channel maintenance (Girod, 1938). From then on, state policies overlooked tanks until the late 1980s.

This renewed interest stems from a combination of critical situations: an increase in water demand; a drop in the number of dams being built – a response to changes in water policies induced by the World Bank and by the underlying paradigm related to neoliberalism and to the end of planning large hydraulic systems, with this response also meeting the challenges made by environmentalists and social activists,⁶ and lastly the overexploitation of groundwater due to a number of reasons such as subsidised GW irrigation, which has been promoted since the Green Revolution, and the non-regulated use of pumping, thus leading to a drop in GW level (Dubash, 2002; Prakash, 2005). It was decided in the 1990s to improve existing irrigation structures and to increase rain water harvesting by building new structures or by improving existing ones. Tanks, as irrigation structures and water storage infrastructures, fully meet this dual aim. The state – as well as these participatory irrigation management policies – has used another argument to ensure that its tank rehabilitation policy is accepted. This in fact has been the ideology promoted by environmental activists since the 1980s. For the latter, ancient structures, better suited to local situations, should be revived and users involved, since they know more about local management (see Agarwal et al., 1997).

Reviving tanks implies complex connotations, since they are multifunctional and form a system. Their revival may refer to the rehabilitation of infrastructure, the reinforcement of ancient rules of management or the revitalisation of the management institution. As Mosse (2003) explains, when talking of the revival of tanks, reference is made to two main underlying ideological concepts: that of

⁶ The most vivid impact of these protests is the withdrawal of the World Bank from the funding of the Sardar Sarovar project on the Narmada River.

tradition, of a cultural and collective heritage to maintain and to save, and that of *autonomous* community management. He writes extensively about these concepts underlying rehabilitation projects, and accurately describes the various elements involved in this ideology of 'traditional' community management (Mosse, 1997, 1999, 2003). For him, the ideas of community management, farmers' control and management transfer have their origins in the exigencies of the colonial administration, in the sense that the administration wanted to control irrigation systems but with limited responsibility for maintenance and minimum financial investment in these decentralised tank systems. This idea of community management therefore fulfils (colonial and current) official expectations about an autonomous village with its own institutions organised as a corporate group that can manage collective matters with no financial support from the government, which has meanwhile already acquired ownership of resources and infrastructure. Policymakers, actors in development and the state hence use the Gandhian point of view regarding a need for village governance. "A powerful narrative of the decline of community traditions of water management and the need for their revival has taken root in the public imagination. Even while this narrative loses academic credibility it is found to pervade the everyday thinking" (Mosse, 2003). Mosse demonstrates that the "fate of tank irrigation in the southern Tamil country has been the product of shifting political systems rather than an erosion of community" (ibid).

In this overall process, "tank irrigation systems became defined in terms of empirically impenetrable ideas of custom and tradition beyond the realm of the state" (ibid). In the same way, designating the customary institution as 'traditional' (*tti*) may be questioned, since there have been complex historical changes (as we will see later), and the very way in which these institutions functioned is not always common knowledge or documented. Hence, the rehabilitation of tanks cannot be qualified as a 'revival', a term that carries too many underlying assumptions regarding the age and invariability of the technique and the social relations involved in its management, thus neglecting the impact of the overall socio-economic and political contexts on the running of the institutions.

Some studies carried out in Tamil Nadu have even shown that under certain conditions – when storage capacity is insufficient, the customary institution is defunct, villagers lack any interest in tank water use and the cropping pattern has to be changed – tank rehabilitation is not recommended for irrigation. Instead, its role is merely to provide percolation ponds for the recharge of groundwater (Palanisami et al., 2000, 2003; Sivasubramaniyan, 2006). In the case of Puducherry, for example, the TRPP (Tank Rehabilitation Project of Pondicherry) was launched with European Economic Commission funding in 1999 in order to mitigate saltwater intrusion by increasing the recharge of groundwater and to make farmers less dependent on groundwater – meaning reusing tank water for irrigation. This last objective could not be achieved except in one tank (out of the 84 in the district, that have all been rehabilitated), showing that this TRPP is in no way a tank irrigation revival project. This paper is thus limited to discussions about cases of infrastructure rehabilitation, with a focus on the creation of formal institutions as a part of efforts in participatory tank management.

PARTICIPATORY MANAGEMENT POLICIES: WHO PARTICIPATES?

Our particular interest lies in the social and political statuses of those involved in decision making with regard to tanks and in analysing who becomes a committee member of such formal institutions, especially in comparison with the customary institutions that managed tank affairs before rehabilitation programmes. Moreover, some tanks are no longer used for irrigation, so what is a villager's motivation in becoming a committee member of such a formal institution? In other words, who is a WUA member, why, and is there some continuity or change in power relations? Here we will focus on four cases of formal water users associations (WUAs) that were created in the course of two rehabilitation projects, while specifying whether or not these persons held a position in the former customary tank institution. Two cases – let us call them A and B – are situated in Puducherry, where the TRPP created tank associations in 2001. The other two – called C and D – fall within the scope of the TN-WRCP (Tamil Nadu

Water Resource Consolidation Project) launched in 1995, through which the WUAs studied in Tamil Nadu were created in 2004. Both projects have been implemented by the PWD, and all the tanks studied (bar one, that of village B) are STs, which is rather unusual because most tanks in Tamil Nadu are non-system entities and their rehabilitation is assigned to NGOs. In Tamil Nadu the project is administered directly by the PWD, whereas in Puducherry local NGOs⁷ are involved as facilitators in creating and running the associations. In Puducherry, GW is the only source of irrigation water. However, in the two Tamil Nadu WUAs encompassing four villages, one village (C) is in the alluvial area and uses GW and tank water in a complementary manner, while the others are in the rocky zone, the tank being the main source of water even if some open wells exist. Due to this secure water supply (from the river), tanks still have a crucial role to play in these case studies.

The field study was carried out from mid-2005 to mid-2008. P.I. Prabhakar settled in the villages for a few weeks and used a participatory approach to collect information, while O. Aubriot carried out informal interviews during one- or two-day visits. The data were updated in February 2011 following a series of interviews conducted jointly by the researchers.

The choice of social model

The creation of a formal user association implies set rules and a social model according to social designation and to who is allowed to be a member. The two projects discussed here have opposite perspectives.

In Tamil Nadu, the TN-FMIS Act states that only farmers in the tank command area can be members of the WUA, thus excluding other villagers from the decision-making process and lending more importance to the irrigation function of the tank – which is problematical given that tanks are of great benefit to people other than farmers and that current policies aim at achieving more equitable management of tank resources. Moreover, in the TN-WRCP, the basic unit used to define the extent of the WUA is geographical (500 ha per WUA), thus sometimes combining several village tanks to form one single association – which is the case for associations C and D we studied, C, C', D, D' referring to the village and tank names.

On the other hand, the Puducherry programme (TRPP) envisages empowering excluded sections of the population, particularly women, Dalits and non-farmers, by including them in the tank association committee by means of quotas. The set social unit for creating a formal association is the village, whatever the number of tanks in the village. We will see that in village B, tank association members asked for a separate body to be set up for a tank located near the *colony* or *ceri*, the Dalit residential area, since this tank was encroached mainly by landless Dalit families (a similar situation concerning a request to split the WUA is presented in Reddy and Reddy (2002), where two villages in the WUA had different concerns). This conflict over the eviction of encroachers contributes to clashes that regularly oppose Dalits and other village castes. This highlights the fact that the village is not necessarily the best social unit on which to base a tank association when several tanks are involved, since social opposition between castes may be very strong and jeopardise any eventual consensus necessary for solving problems.

In Puducherry, the choice was to avoid a replica of the previous non-egalitarian customary institution and to include historically deprived sections of the village community in the association, especially since most tanks are no longer used for irrigation, whereas in Tamil Nadu, the power relations are not questioned. The existence of customary tank institutions is recognised by the Act, and such institutions can be formalised as WUAs. However, one of the features of the process of formalising water users associations is that the agency overseeing the WUA – either an NGO or the PWD – does not take into account the earlier structure and running of the so-called traditional tank institution (*titi*)

⁷ The three NGOs involved have all been working on environmental and agricultural issues. They are not openly affiliated to any political party, but are left-wing and have actively contributed to helping women and Dalits gain power in the only tank that is being re-used for irrigation (see description in Raghunath et al., 2008).

(Sivasubramaniyan, 2006) – see, for example, the article by Elumalai (2000) as an illustration of a technicist, top-down approach to policy implementation. The underlying ideas behind these policies are that such institutions, when active, manage the tanks and their resources effectively; that villagers choose as representatives those most involved in tank management. And yet such institutions are run by upper castes and those owning most of the land. These people are usually described as the dominant castes, since they possess all the economic and social power, regardless of their small number in the village. Besides, they rarely take any action related to tanks that might be of help to the poorest or that would be of no benefit to themselves. As Mosse (1999) points out, these "'traditional' systems often function as institutions of upper caste dominance, and are, in fact, vestiges of a much wider set of caste-based privileges and rights over village resources. They are often surprisingly bad at managing common resources and a dubious model for contemporary water users associations".

The Puducherry project is therefore characterised by a will to empower marginalised sections of the population in the hope that they might voice their needs and concerns with regard to the tank, while the Tamil Nadu project does not question the power relations and the Act even denies non-farmers access to any decision making concerning the tank. The Puducherry social model, though representative of South India to a very limited extent, is interesting as far as its ideological aims are concerned. However, the Tamil social model studied is a true representation of South India.

Formal associations and encroachers in Puducherry

In Puducherry, the very first issue that all formal associations (called tank associations in the TRPP) had to address was the eviction of encroachers. Tanks and even inlet channels were partially or fully encroached upon, these common spaces being used by some people for private agricultural purposes (figure 2, and see Prabhakar, 2008 for the process and the social relations involved). The TRPP was particularly strict regarding this eviction order, since along with rehabilitating the infrastructures the aim was to de-silt the tanks in order to ensure their capacity to store water. The process of setting up the associations was therefore heavily marked by this issue regarding the eviction of encroachers.

Before presenting the issues, let us briefly describe the social organisation of these villages, the customary and the formal institutions. Village A was dominated until the 1970s by big landlords from the *Reddiar* and *Pillai* castes (dominant landholding castes), but nowadays *Vanniars*, a cultivating caste of low rank in the caste hierarchy, are preponderant in number in the study area as (small) landowners. Here, this caste is divided into two main lineages. One holds more land than the other and its leaders used to be members of the customary tank institution⁸ and were later elected as the association's committee members. Indeed, the association president, vice-president and secretary are from this lineage. The association president is also the village *panchayat* president (the local elected body) and has held this post for nearly 15 years. The secretary of the association has served as president of the agricultural cooperative society in the village, while the treasurer of the association is a wealthy person from the Reddiar caste. In addition, he owns a large business in the region and has good connections with the political leaders of Puducherry Territory. He is a figure of great influence and has undertaken many activities for the common interest of the village, such as providing rice to landless people at times of natural disasters, setting up health posts in the village and supplying food to school children. All are active members or local leaders of political parties (ADMK for the president, PMC (a regional party) for the secretary and the vice-president, and Congress for the treasurer and the joint secretary). The committee's office bearers are therefore village elites, each with political contacts or administrative responsibilities.

Encroachers, who in tank A were either landless or landowners and were cultivating inside the tank with water from tubewells located in the fields adjacent to the tank, were of course strongly opposed

⁸ When the French left Pondicherry in 1954, the formal institutions they had set up were no longer in place and tanks were managed by customary institutions, governed by the village elite. In village A, it was at first run by one man from the Pillai caste, and afterwards by Vanniars who dismissed him.

to the eviction project. This issue was followed up rigorously by leaders of the other lineage, the one with no power. In fact, at the beginning of the process, the NGO representative was manhandled and four of the people involved in tank management were tied up inside a temple. The committee members admitted that the task of implementing the eviction project had proved to be a very bitter experience, since they had faced the wrath of many villagers cultivating land inside the tank. The social status of these powerful people, their political links with influential persons, as well as their way of dealing with the unrest, were vital factors in their nomination as members of the association. Ultimately, their influence within their respective parties, and the alliance between these parties and the ruling party in government, had a positive impact on facilitating their activities at local level and hence in curbing actions by the opposition. And indeed, ever since tank association A was set up, there has been some tension between the association and the encroachers who were evicted from the tank bed. Association representatives, those from the same lineage as the leading Vanniars, assert that the rival lineage in their caste had exploited the tense situation to set people against the association. Thus, even in the 2006 local elections, members of this rival lineage who contested the elections promised that they would allow the landless, mainly Dalits, to cultivate land inside the tank! Tank encroachment is thus an important element in the local political game.

It is obvious that the political affiliation and historical dominance of castes and lineages have effectively influenced the running of the association in village A. Moreover, although TRPP guidelines stipulate representation by all categories of village people, fieldwork reveals that those selected from among the people lower down the caste hierarchy are those who support politically or economically dominant men. Thus, in village A, the formal institution is dominated by those who ran the customary body, showing no real change in power relations through the creation of the formal institution, even though the rival faction tried to gain a position of power.

Village B is inhabited by various castes, Reddiar, Mudaliar, Chettiar, Vanniar and Dalit. Until the 1980s, the three tanks in the village were managed by one village leader. Since he had no heir, it was decided to assign two representatives per street, hence ten for the five main village streets, each one representing a caste, including the Dalit residential area. Thus, the informal institution evolved from an organisation with only one person taking all the decisions to a group representing various castes.

In this village, street representatives wilfully opted not to take any part in the tank association owing to the pressure to evict encroachers. Hence, the NGO resorted to appointing anyone interested in the tank as an association committee member. Only two of the five tank committee members were from among the street representatives. Many big farmers who cultivated land inside one of the tanks prompted rival village factions (based on political affiliation) to emerge in the village in order to sabotage the setting up of the tank association. Given that members were appointed by an outsider (the NGO) and that the other street representatives wanted no part in the tank association, this is clearly an *ad hoc* association. Fundamentally, it was set up according to exogenous criteria, with members designated by an outsider and no apparent appropriation on the part of villagers. This might explain why members are granted very little legitimacy from the villagers' point of view.

It is worthwhile noting that even though the French created formal institutions during the colonial period, the existence of such formal associations in the past does not necessarily help when setting up new formal associations. Nonetheless, the former existence of these associations is evoked by TRPP engineers, as if it were a success criterion when recreating a village tank association. The idea of an older organisation enjoying a good reputation among farmers is used by the TRPP, even if it has no direct link with the present-day tank association in terms of social make-up (inclusion of women, Dalits, etc. in the present one; more farmers from various castes and with smaller landholdings today), rules (involvement in tank maintenance and rehabilitation), and so on.

Through these two examples in Puducherry it is obvious that encroachment on the tank is an important issue that may prevent some village representatives from becoming part of the formal tank institution, such as in village B. In this village, the social issue pertaining to encroachment is too strong for the elite (the street representatives) to have any interest in acting as office bearers. Moreover, the

members of this ad hoc institution are granted very little legitimacy by villagers. Conversely, in village A, power is still seized by the 'traditional' elite, who have always shown some interest in the tank (for example, taking the initiative to clean the supply channel). The village B' elite lost interest in the tank years ago. Analysing these differing interests falls outside the scope of the present article, but some of the factors that help to explain this difference (following on from Janakarajan's (1993) analysis) are social capital, number of castes, caste landownership and reliability of water supply, which is almost non-existent in village B's non-system tank.

The notion of an election in the setting up of formal associations in Tamil Nadu

In the TN-WRCP, the PWD organised the election of the WUA committee. The process was somewhat similar to a previous development programme run by the Agricultural Engineering Department that set up several farmers' councils (FCs). The modus operandi in setting up these FCs was obviously guided by political party nomination: the local MLA (member of the State Legislative Assembly) would nominate local functionaries as committee members from the corresponding political party in the village. Such a link to political parties obviously influenced the process of determining eligible members when WUAs were set up.

In both C and D's WUAs (combining villages C and C', D and D', respectively), those competing for the post of WUA president spent a lot of money on 'buying' farmers' votes – one spent one lakh⁹ rupees (US\$ 2127) and another 75,000 rupees (US\$ 1830) on their election campaign. In association D, five people competed for the post of WUA president. Competition was between two political parties whereby the four candidates who opposed the current WUA president were all from one political party and the president from the other. The WUA president was already the FC president, showing clear continuity in the process. In association C, the two candidates running for president were from the same village C, from the same dominant landowning caste (Udayar) in the village and with the same political party affiliation. The reasons here for them both standing as separate candidates were personal. The candidate who obtained the post admitted that his prestige would have taken a heavy blow had he been defeated in the election. Members of the informal *titi* who view the election in a negative light abstain from participating. A general notion prevalent in the Tamil villages studied, and also to some extent where WUAs have been set up, is that WUAs have paved the way for competitive politics because of ballot box voting during the election process. Due to their similarity with the election of members of local bodies, those holding political party membership and a position at local level perceive this as a power structure to compete for the WUA. And indeed, in village C, both candidates for president put their respective political members up as WUA committee members.

Consequently, many people in the Tamil study villages expressed the opinion that due to the election process, WUAs mainly attract those who have a vested interest in enjoying the status of an elected member or in making money, not necessarily those genuinely interested in managing irrigation tanks. The legitimacy of the WUA for managing tank affairs from the villagers' point of view is therefore limited, and as Funnell (1994) points out, such intervention may fail to provide a credible and legitimate authority and thus damage the joint cooperation which is vital to the irrigation system.

Institutions, village elite and the decision-making process

In Puducherry, the TRPP has made it mandatory to hold regular meetings. Thus, up to 2008, once a month, committee members met during sessions facilitated by the NGO attached to the village. All categories of people in the village were represented at the meetings – especially in village A – but marginal sections of the population did not air their opinions, so they were not heard. However, there are some issues, such as the use of tank water for irrigation, that are of interest to them – they accepted to speak to us as outsiders – but they would not speak out in front of the elite and caste

⁹ One *lakh* = 100,000. Indian rupees are hereafter written as Rs.

leaders. The existing social system works according to a mechanism whereby persons of low rank in society cannot give voice in front of elites. Even if they were physically present, they could not take part in decision making, although they could at least obtain information about the decisions taken. Therefore, even if various socio-economic sections of the village population take part in the tank association, decision making still clearly lies in the hands of the elite.

Unfortunately, for the last two years (2009-2010), these meetings have not been scheduled. This is due to a lack of external funding,¹⁰ the programme being thus on standby; consequently, NGOs facilitating the meetings do not put pressure on the formal institutions to plan such gatherings. It is therefore impossible to say whether these voiceless people might have seized the chance to really participate in the decision-making process, as such social dynamics take time to evolve. Nevertheless, we can surmise that the issue of using tank water would have been raised in village A, especially as some improvement has been made in the water supply and the tank has been full over the last two years (water remained in the tank for six months). However, in village B, where meetings failed to gather a large audience, changes could not be expected regarding the lack of participation on the part of marginal sections of the population in the decision-making process. Thus, the programme has not been run long enough to fulfil its objective of empowering the voiceless (even though there have been some success stories, see Rhagunath, 2008) and tank matters are still managed by the village elite.

In Tamil cases, decision making and the implementation of work related to infrastructures are carried out by the PWD and the contractors chosen by it. The WUA is not even consulted about the choices to be made, which leaves members of the latter feeling bitter. Even though failure to consult users has been denounced for quite a long time in the literature – "one major difficulty is the fact that the public irrigation establishment is often reluctant to share the authority and control over resources and facilities that true participation requires" (Svendsen et al., 1997) – it is still the case in the examples studied in Tamil Nadu.

Regarding the leadership of the Tamil WUA, various tendencies have emerged on a village scale (even if two villages are combined into one single WUA, the process to seize power operates at village level). In village C', for example, of the four members unanimously nominated, three are caste headmen and the fourth is a politically influential person: tank C' is still managed by the same rural elite in addition to a politically powerful man. However, in village C (combined with village C' into a single WUA), of the five members of the committee (including the president), four are from the *Udayar* caste that ran the *titi*, but only one was actually in the *titi*, and the fifth member is from the lesser landowning caste group (Vanniar), which holds rather a low rank in the caste hierarchy. In this village, the creation of the WUA has been an opportunity for some to gain power, these persons all being active members of various political parties at local level. We can define them as a new political elite. The same situation occurred in WUA D, with the traditional elite seizing office bearer posts in village D, and the new political elite in village D'.

As for the relationship between the WUA run by the new political elite and the *titi*, the WUA is either completely opposed to the latter (in the case of D', where there is competition in terms of their actions), or the *titi* becomes defunct, leaving tank management to the WUA (in the case of C, which totally overlooks irrigation management and where some issues go unsolved). One of the issues raised by Funnell (1994) about intervention in farmer-managed systems pertains to the concern that intervention itself may be counterproductive, destroying the very initiatives that it seeks to reinforce, as in villages C and C'. In our case studies, wherever the customary institution was relatively strong and social cohesion high, villagers were able to find a way to integrate the WUA in their village stakes and to draw benefits from this situation (village A, for instance, planted trees and gravelled village paths, while village D introduced new rules for water distribution). Another process may also take place whereby, even when the WUA is made up of previous *titi* members, caste leaders can use the formal association

¹⁰ As usual, funding is a key incentive for any 'participation' (Reddy and Reddy, 2002) and therefore it casts doubt on the motivation of association members to participate, on their appropriation of the participatory process and on its sustainability.

to change some customary rules and to evict, for example, Dalit water specialists, as is the case in village C'. Formal institutions are then used to redefine rules and power relations.

Thus, when comparing the formal association to the previous *titi* in our four case studies, we can classify them into three separate forms (there may be others in different contexts):

- the WUA (or Tank Association in the case of Puducherry) reflects the customary organisation of the village, with leaders, factions and some rivalry still very active; members of the formal institution and of the *titi* are mainly the same, and the existence of a project has given the institution the opportunity to launch more activities and to improve village infrastructures (cases of villages A, C' and D). It is worthwhile noting that the relationship between customary and formal associations is not linked to the programme, and may be explained by a combination of factors such as social history, caste composition, and land and water access characteristics;
- an ad hoc organisation is set up, with no specific social coherence or meaning and with members appointed by an outsider; such an association is made up of entirely new members, not seriously motivated and carries out minimum participatory work. Case of village B;
- the last form is based on a new organisation where only representatives of political parties are members of the committee because, for them, it is an opportunity to gain new local power. Thus, persons who were lineage or caste leaders, but with no political affiliation, are excluded from the formal association, while those with a political affiliation are included. The participatory management policy is manipulated by local political representatives protecting their vested interests. Cases of villages C and D'.

For Reddy and Mollinga (cited in Pangare, 2002) the rural elite and the politically powerful hijacked the pilot programme of a canal irrigation project in Andhra Pradesh, related to the farmer management irrigation reform. Reddy et al. (2005) explain that the will to secure the position of president for upper castes and big farmers in institutions – which the authors call 'parallel institutions' (WUAs, watershed committee, etc) – is also due to the positive discrimination policy that prevents them from accessing such a position in elected bodies. Pangare opposes this point of view of the capture of various functions by the 'traditional' elite, as he perceives the emergence of a new leadership – a new political elite – that may bring some "fresh air in the political scene" (2002). We will adhere to the arguments of Pangare, based on our case studies.

This new elite can be characterised by members from non-dominant castes, or persons from the leading caste but of lower economic status. They might have access to such posts thanks to their political party affiliation, to the change in land tenure and in power over land and water. Menon et al. (2005) also give some examples where leadership takes on a political aspect. Thus, creating a WUA may be considered a positive process in which new forces can be voiced in this hierarchical society, where it is far from easy to achieve equality. The question that political scientists may be asked is whether this new elite leads to a renewal of dominance, whether it ensures greater equity for the marginalised, whether it is merely a symbolic change or whether it is a necessary step towards full democracy. We can link this process to the 'political society' of Chatterjee (2008), which includes large sections of the rural population who claim their rights not only directly through political bargaining, but also through government policy and development programmes. The participatory management policy, which aimed at remaining apolitical (Reddy et al., 2005) in order to include most of the population, has evolved little by little towards a political process: from social factions to political manipulation. This change is not specific to WUAs, since a similar process has been observed in city associations such as some studied in Delhi¹¹ (Tawa Lama-Rewal, 2010).

¹¹ By analysing participation in Indian politics, this author points out the importance attached to involving villagers in local governance in the various political discourses since the 1930s, even if this idea had never been applied before the

Another aspect concerns tank WUAs that are rarely involved in water managing issues in programmes other than those involving tank rehabilitation. When a programme addressing water issues is run through another local body in the village (such as the *panchayat*) or another new formal institution in programmes aimed at cleaning ponds or channels, or run at watershed level, decisions are not taken alongside the WUA. This shows the limitation of WUA power in water management issues, due to the lack of an integrated approach in government programmes.

These various points raise questions about the decentralisation process: how can participation be made more effective, what kind of institution is the best, is full democracy needed to defend the interests of the poorest, how can an integrated approach to water management be promoted if institutions are scattered? These questions will be of major interest as we examine the reasons that prompt farmers to stand as members of a WUA committee, apart from the political interests just mentioned.

WHAT IS TO BE GAINED FROM TANK MANAGEMENT?

This politically-oriented interest shown by WUA committee members leads us to look at the type of activities these associations undertake, and what lies at stake by becoming a member of the WUA. Moreover, in Puducherry, where most tanks are no longer used for irrigation since they are encroached on and farmers are now used to relying on groundwater, why do committee members show an interest in the rehabilitation programme?

Prestige

Acting as a committee member and undertaking work for the village's benefit is no doubt a source of prestige. Besides, work done to infrastructures is clearly visible and can therefore be seen as a fully complete action. It is only in village B, where an ad hoc institution has been set up, that the elite do not want to participate due to social discord over encroachment. The issue has taken on such proportions that the effort required in order to address the situation properly largely outweighs any prestige that might be gained.

Some activities – that farmers consider to be an achievement – may be undertaken so that committee members experience satisfaction at having completed such an action. For example, in village D (Tamil Nadu), from the revenue made from a tree auction (Rs 40,000), the WUA was able to evict encroachers from the tank by using an earthmover. This was possible thanks to support from the MLA, the PWD and the police. In practical terms, the WUA president sent a letter to the MLA to ask him to support the action, which he did because several policemen arrived in the village along with PWD officials the day the earthmover was used to destroy the illegally made parcels. This initiative acted as a precedent in the district and has encouraged neighbouring WUAs to evict encroachers from their tanks.

In the same village, the WUA has drawn up a timetable for distributing irrigation water in the tank command area and for closing the gate every evening so that water will no longer be wasted at night, since nobody uses it then. However, we will see that this change in the rules is not far removed from the personal interests of the wealthiest.

These improvements are proof for villagers that leaders can bring change and enjoy power relations with high functionaries, all of which might be of help. Moreover, all of these points have positive repercussions on leaders' prestige and their political status.

decentralisation policies of 1992. Tawa Lama-Rewal shows how this idea oscillates between a political and an apolitical interpretation depending on the political tendency wielding power.

Vested financial interests from project funding

When tank rehabilitation projects are set up, funding is used to carry out work on infrastructures. In the Tamil study cases, it was mentioned that leaders of the association would misappropriate money from this funding. One of them even explained: "As all of us had spent money during the elections on campaigning and buying votes, some money has to be taken by us individuals". Buying votes is thus clearly reimbursed from the amount the government allocates for projects. And regarding the candidates who lost the election, they are waiting for another opportunity, either the *panchayat* elections or another similar project election, when they will compete in the hope of winning, in which case they will then attempt to recover the money they spent on this WUA election. This local perception shows the link between programme funding, institutions involved in such programmes and positions of power. There is an interweaving of social, political and financial aspects involved in such posts.

In the WUAs of villages C & C', two main types of work have been sanctioned: the de-silting and cleaning of the inlet channel to tank C (for an estimated Rs 100,000) and the repair of damage to both tank bunds (at an estimated Rs 40,000). It is said that some money was pocketed by those who carried out the work and was used to bribe the MLA and PWD officials. A member of the rival village faction of the WUA president – a faction based mainly on caste, but also lineage among the caste – asserted that such practices are used by contractors, but should not be those of an association using money for collective purposes. Interestingly enough, even if this member was well aware of the misappropriation of the money by the WUA president, he was unable to do anything in terms of reporting it to the higher authorities, since both the president and himself belonged to the same political party. Hence, it would appear that political affiliation creates a strong social bond that leaves no room for criticising its members' actions.

Similarly, only the opposing faction ever criticises the WUA president's decisions. The president is then accused of being guided by his desire to flaunt his authority. This issue regarding the misappropriation of money also reflects a relation of power and opposition between factions.

Revenue generated by tank resources

Formal tank associations are involved in the rehabilitation of infrastructures (bunds, sluices, canals) and in tank de-siltation in conjunction with the PWD. They have all sought involvement in tank resource management: fish, trees, grass when used for thatch roofed huts, and these resources nowadays generate revenue. One of the issues regarding the future of associations is the financial sustainability of these bodies.

In Puducherry, guidelines for generating funds have been proposed by the TRPP. Consequently, tank associations are given three-year usufruct rights over trees and fish in the tank. However, in 2006, local elections took place and since then the local body has been making claims on the revenue made from tank resources. Tank associations have to share the income generated from the sale of these resources with this '*commune panchayat*' (an administrative unit dating from French colonisation) at a ratio of 7:3, given that prior to the creation of the tank association, the revenue generated from these resources was usually managed by the local customary village institution (that also managed the tank) and used for temple and village needs.

In this manner, village A's tank association planted trees on the upstream part of the tank in order to sell the wood after a ten-year growth period, and consequently earn extra money. Nevertheless, palm trees growing on the bund continue to be auctioned every year to those wanting to make local alcohol, and the revenue is collected by caste leaders, with the tank association having no say in this matter. The same association also auctioned the fish in the tank over a two-year period. During the first year, association members decided that the fish would be farmed and sold directly. They appointed guards to watch over the fish raised in the tank, harvested the fish, then transported and sold them to other villages. Only the main committee members (office bearers) were involved in this process. As the office

bearers were from the landowning category, they asked the labourers who used to work in their fields to carry out the task of selling the fish. Owing to the other committee members' lack of involvement in these tasks, the following year a public auction was organised and drew people from faraway, since the tank association announced the auction in local newspapers. A group formed by a few members of the tank association won the auction by making a collective bid. After the fish had been caught, this group presented its accounts to the association, explaining that they had incurred a loss. Consequently, the association – in which they were full members – decided to compensate them by returning the money collected during the auction! This provoked the anger of many villagers, even among some committee members and ultimately sparked off public controversy, with many people expressing their opposition to any compensatory measures. One committee member opted to withdraw from the association, though the officer bearers managed to quell the growing unrest. In 2006, when local elections took place, the WUA abandoned the fight, and consequently nowadays it no longer has any opportunity to generate its own revenue from the fish.

Some other examples from the other villages could be given: the auction of thorn trees in village C, the grass auction in village C' or the fish auction in another village, the latter showing a conflict of interest between irrigators and those who raise fish in the tank – intensive fish farming being a new practice. In all cases, the issue is mainly the sharing of financial products from these collective tank resources between various local institutions.

As Reddy and Reddy wrote in 2002, "self-sufficiency and resource strength is central to the sustainability of institutions. The formal institutions are yet to generate their own funds, while informal ones have succeeded in generating surplus funds". WUAs would like, and have indeed tried, to be financially independent in the same way as customary institutions. Today, however, the WUA does not benefit from tank resources in any of the villages, since the share of common resources has been a source of dissension in each village between the WUA and the customary village institution or the local elected body. Thus, on the one hand, WUAs need to be financially autonomous, but on the other this autonomy creates competition between local institutions and is therefore a source of conflict in most villages.

Control over water and knowledge about water

Most association committee members are tubewell owners. As such, their position in tank management and decision making with regard to the use of water cannot be viewed without taking into account their interest in groundwater control and sales. Indeed, tubewell owners sell to their neighbours the water they pump, making them the 'new lords' of water.¹²

Interestingly enough, only one WUA among the dozen visited had made some improvements to tank water distribution and this was in tank D, where tank water is used in wells. Wealthy farmers divert tank water to open wells and send this water through a pumping system to a second open well in a 'dryfield' area. Thus, tank water is really the main source of water in this village, and the improvement of tank water distribution can be rather cynically analysed as a vested interest for the wealthiest farmers in getting enough water to send to their field in the rain-fed area!

Elsewhere (Aubriot, 2011) we have described how knowledge about tanks and groundwater, about their hydraulic interaction and especially groundwater recharge is produced by tubewell owners, who are the only ones to acquire information about this invisible resource. They check the depth of groundwater when they repair their pump motor or deepen their bore, but this empirical observation is not sufficient to explain the complex hydrological process, especially the GW recharge of deep aquifers. Nevertheless, the lack of scientific data and of the awareness of how aquifers function leaves the door open to any kind of interpretation. It even prevents any protest movement against such an

¹² See a number of descriptions and power relations in Dubash, 2002, and Prakash, 2005 for Gujarat, but also Janakarajan for Tamil Nadu, and even Raghunath et al., 2008 for a Puducherry case where tubewell owners force other farmers to pay them, even if they do not take any groundwater during the rainy season.

interpretation and any decision based on such a construal. Thus, in village A, the WUA members – all tubewell owners – explain how it is better to store water in the tank (rather than use it directly for irrigation), as it helps to recharge GW and enables it to be used for a longer period than tank water. This discourse has no scientific basis and on the contrary refers to a misinterpretation of the empirical observation, since the recharge of deeper and tapped aquifers does not take place locally. We can see here that this production of knowledge about GW recharge by tubewell owners has of course affected decision making regarding tank water use. Tank and groundwater utilisation is associated with such a number of social, economic, political and environmental issues that relevant knowledge about GW recharge can easily be manipulated by some villagers. It is the same for any knowledge related to the benefits of storing water in a tank (that could recharge GW), especially when groundwater is sold yet tank water is free of charge. Remarkably, those who produce this knowledge are those who sell GW; thus, they manipulate it to their own self-interests. The issue here is the fabrication of knowledge, which is linked to control over the resource (both surface and groundwater) and is thus in the hands of tubewell owners, i.e. biggest landowners.

It therefore seems difficult to talk of tank management without referring to the interdependent dynamics of these two types of irrigation, or without analysing tank management through the prism of power and control over water (either tank water or groundwater). This explains why farmers (especially tubewell owners) are interested in becoming members of a tank association, even when tank water is not used for irrigation.

CONCLUSION

The two WUA models and their induced participation discussed in this paper (the TRPP with its principle of participation by all categories of population, and the TN-WRCP with members among farmers only) have shown that the type of model does not interfere – so far – in the decision-making process, since marginalised people cannot voice their interests in the presence of local elite. Moreover, it appears that representatives of these marginalised sections of the population were selected because they were all dependent or associated, either politically or economically, with the village elite who occupy the function of office bearers in the formal association. Thus, they cannot say anything that will count against the elite. We can conclude that participatory issues are linked to the social system and hierarchical relations that are still very strong in the villages studied. Such a system does not allow persons of low rank in society to air their voices before the elite; it does not allow persons from the lower parts of the pyramidal social and economic network to criticise or to present a different opinion from those of the higher echelon. As noted by other researchers, WUAs are 'captured' by the village elite, since the latter retain the authority to make every decision, even in Puducherry, where marginal sections of the population are present in meetings. The Puducherry project did not last long enough to show a consequent shift in this participatory process.

In some cases, power is wielded by a new elite, built up through political parties. The emergence of this new political elite can be seen as a positive aspect, since it may bring some changes to power relations. However, in our examples this new elite group does not address any inequality issues and thus does not defend the rights of the marginalised sections of society. And the marginalised, if they are members of the same party, cannot denounce the leader's practices. The politicisation of the active formal institution is a general process in the WUAs studied: even though the customary institution runs parallel to the formal institution in some places, the participatory management policy has evolved towards a political process, with party affiliation underlying the membership of water users association committee members. The participatory management policy, which aimed at being apolitical (Reddy et al., 2005), has evolved towards a political process, not only for irrigation management but also for programmes of natural resource management, or even any development project, leading to the 'political society' defined by Chatterjee.

In all of our cases, the WUA clashed with local (either formal or customary) bodies regarding the management of the different tank resources, and none of the associations studied could find a way of ensuring its financial independence. However, one of the constraints for the sustainability of the WUA is its financial autonomy. Hence, the future of the institution is not guaranteed without some form of support from outside or without any specific profit from a tank resource that should be allocated to the institution. Even if the law gives rights to the WUAs (as suggested by Upadhyay, 2002), there is still "a lack of certainty of the extent of powers vested with the WUA" (ibid) and a need to develop working relationships between these formal and informal village groups, as well as other local bodies.

Our study, by explaining the participatory and politicisation aspects of water management, provides some insight into the existing debate on the decentralisation process of natural resources, whether forests or water, since these resources are grounded in similar contexts of unequal social and economic power relations. In our case studies, formal associations are taken over by the village elite either thanks to their socio-economic status or to their new political links. The issue is therefore related to prestige and power, and sometimes to economic conditions. Regarding water, an additional aspect has to be taken into account in that water is a moving fluid that can be diverted and also hidden (groundwater). The issue concerning the fabrication of knowledge about groundwater recharge must not be overlooked, as it may induce decision making related to tank use. Consequently, tank use cannot be analysed without considering access to and control of groundwater, especially in places such as our study area where each village is equipped with both types of infrastructure, i.e. tank(s) and wells (either open wells or tubewells). This paper illustrates how a villager's interest in actively taking part in the formal association is thus determined by a combination of local politics, financial benefits, social history, the significance of tank water in local agriculture and control over tank water and groundwater. This explains that the numerous issues at stake in the participation of the committee members of water users associations may be far from the aims of donors or international agencies that support tank rehabilitation. Very few formal associations are involved in improving water management. Village D has met this objective, but our analysis shows that this was merely out of the vested interests of the wealthiest farmers. Water is far from being managed in a better way or in a more equitable way in the examples studied.

Decentralisation in irrigation systems is part of a more general process of power relations (within villages and also between local institutions and higher institutions such as government agencies, political parties, etc) and of the politicisation of society. As long as water is not managed in an integrated way, and unless individuals strive to defend the interests of the marginalised and the poorest sections of the population, tanks will not be managed in a sustainable way to benefit a large portion of the population. The first priority should be to make all villagers members of the institutions. Consequently, decentralisation should be in favour of all users, through an institution that can be in charge of the various water issues in the village whatever the programme, the ultimate challenge being the empowering of the marginalised sectors of society. Recognising the tank as an ecosystem and not only as a water resource for irrigation (either for GW or surface water) would further the cause.

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