

Self-reliance versus State Responsibility

Sustaining Lift Irrigation Systems

KULBHUSHAN BALOONI, VINEETHA MENON, SHILPA M ASOKAN

Drawing insights from the management of lift irrigation systems—established prior to and in the early stage of decentralisation of governance in Elamkulam gram panchayat in Kerala—how water users and local self-government have not taken full responsibility for sustaining the systems despite irrigation management transfer and decentralisation campaigns to develop local initiatives is examined. Despite the differences in water users' associations in terms of genesis and self-reliance, many are seeking state support for sustaining the systems. In obtaining state support, associations that are capable of adapting to new decentralised institutional arrangements appear better-positioned, compared to those that lack such capabilities.

Reducing the role of the state and transferring the rights and responsibilities of irrigation systems to water users have received much attention in literature in the recent years (Vermillion 1991; Brewer et al 1999; Suhardiman and Giordano 2014). Farmers' participation in the management of irrigation system was advocated for in developing countries from the late 1960s, taking into account the fact that inadequate financing leads to ineffective management and system deterioration (Brewer et al 1999). From the 1970s to the early 1990s, the issue of irrigation system deterioration was sought to be addressed largely through foreign-funded irrigation rehabilitation projects, but by the 1990s, foreign funders began to show reluctance to continue funding irrigation system rehabilitation (Brewer et al 1999).

It is under this situation that in international policy discourses, farmers' participation in the management of irrigation systems began to appear favourably and irrigation management transfer assumed unprecedented significance in policy discussions (Meinzen-Dick 1997; Vermillion 1997; Brewer et al 1999). The rationale for irrigation management transfer from the state to water users' associations (WUAs) included relieving the state of the financial burden for the maintenance of irrigation systems, possibility of raising additional revenues from water users, encouragement of user groups to take over maintenance and management of water allocation, and the collection of water cess (Meinzen-Dick 1997; Brewer et al 1999).

The government-managed irrigation systems are generally viewed as poor performing ones (Mukherji et al 2009) due to the failure of irrigation infrastructure, as a result of deferred maintenance and poor institutional arrangements for infrastructure management (Svendsen and Meinzen-Dick 1997; Groenfeldt and Sun 1997). Our argument is that despite the transfer of rights and responsibilities, whether under government-managed or other types of institutional arrangements under the decentralisation of governance, local institutions do not show self-reliance, but continue to depend upon the state for the sustenance of irrigation infrastructure, especially in the case of irrigation systems set up during the pre-decentralisation period. Menon et al (2005) have highlighted that among institutions with similar design principles in the same policy and ecological setting, some fail while some others succeed. They note the importance of institutional environment, flexibility in rules and regulations, enforcement mechanism, and nesting and networking of such institutions, that also call for certain capabilities of the actors and institutions. Not all local

The authors would like to thank the reviewer for their insightful comments and suggestions.

Kulbhushan Balooni (kbalooni@yahoo.com) teaches at the Indian Institute of Management Kozhikode. Vineetha Menon (menon.vineetha@gmail.com) was formerly with Kannur University, Kerala. Shilpa M Asokan (shilpamasokan@yahoo.com) is with Stockholm University, Stockholm.

irrigation institutions seem adept at such nesting and networking, or tapping of financial resources by negotiating structural opportunities.

Distinct Experience of Kerala

It is in this historical context of diverse considerations in irrigation management transfer, and in the specific context of decentralisation of governance in Kerala, that the article explicates the above argument on the lack of self-reliance of local institutions and their continued state dependence. The experience of Kerala is very distinct, in that decentralisation was implemented as a “people’s campaign for decentralised planning” for local democracy and development (Isaac and Franke 2000; Venugopal and Yilmaz 2009), the spirit of this campaign being the idea that decentralised planning would be at its best with people’s involvement in planning and governance.

Therefore, it focused on the capacity building of local people and institutions, and grass-roots-level institution building, to enable people to develop self-motivation, initiatives and self-reliance to plan for their future and to implement their decisions, realising the motto of local self-governance. Accordingly, 40% of Kerala’s plan outlay for projects and programmes was deployed to local self-governments (LSGs) or gram panchayats, to be used locally for development. This was not a mere devolution of funds from the state to local governments, but a new step to build “a new democratic civic culture” (Isaac and Franke 2000: xiii), that would make decentralisation much more than administrative reforms. A deep social commitment is expected to build such a civic culture. The state also deployed its officials to the panchayats for local-level development, including the development of irrigation infrastructure.

In the context of such a campaign to develop local initiatives and self-reliance, one would expect that local irrigation institutions—whether transferred from the state to water users or grass-roots-level institutions set up by the water users of their own initiative and drive—would manage these without relying on the state, and that as was expected under the policy of irrigation management transfer, these institutions, as user groups, would take over the maintenance, collection of water charges, etc. By 1986, Kerala had adopted the irrigation management transfer policy (Brewer et al 1999) and the People’s Plan Campaign for implementing decentralisation of governance was in full swing by 1996 (Isaac and Franke 2000). In this context, the functioning of irrigation institutions in Kerala presents an interesting case.

We have selected Elamkulam gram panchayat in Malappuram district, as this district had the largest number of irrigation institutions set up by Kerala during 1986–94, a period when the policy of the Government of India was to increase agricultural productivity and food security, by investing heavily in irrigation infrastructure. In Malappuram, there are 51 lift irrigation systems (LISs) with a command area of 7,342 hectares (ha), which constitutes 17% of the command area under LISs in Kerala. When irrigation management transfer policy was effected, Elamkulam gram panchayat presented a variety of

responses to the policy, as the new civic culture for decentralisation had been internalised in different ways by different local institutions. The capabilities for local self-governance were also diverse. To capture this variety and to draw lessons, the ensuing sections of the article are structured as follows.

Following the introductory section, the article first describes the study area and methodology, and then moves to a discussion of the genesis and evolution of LISs in Elamkulam gram panchayat, by classifying them under the pre-decentralisation and decentralisation periods, and highlighting their distinctiveness. The section that follows elucidates the challenges and strategies of the LISs to sustain their systems, as each one of them responds differently to the responsibilities under irrigation management transfer and opportunities provided under self-governance. A discussion on self-reliance versus state responsibility highlights the major findings of this study followed by conclusions.

Study Area and Methodology

The Elamkulam gram panchayat is spread over 2,131 ha. It has 4,495 families, primarily smallholders (92%). The major crops cultivated include paddy and perennial plantation crops, such as coconut, areca nut, banana, rubber, and cashew nut. The agricultural land constitutes 93% of the total geographical area of Elamkulam. Paddy constitutes 48% of the total cropped area in a year. Farmers are shifting to perennial plantation crops, which now constitute 38% of the total cropped area in Elamkulam. In the larger agrarian context of Kerala, the changing cropping pattern from paddy cultivation to perennial plantation (commercial) crops (Jeromi 2003; Joseph and Joseph 2005; Rejula and Singh 2015), is on account of paddy cultivation becoming a losing proposition, with labour scarcity and prohibitive labour cost (Nair and Menon 2006).

Hydraulic lifting devices, such as electric pumps drawing water from the Thoothapuzha river flowing through Elamkulam, are the primary means of irrigation, as farms are located at a higher elevation. Therefore, the role of LISs in sustaining agriculture in Elamkulam gram panchayat is crucial. There are eight LISs in Elamkulam, five installed during the pre-decentralisation period (before the 1980s) and three during the decentralisation period (after the 1980s). Of the five LISs in the pre-decentralisation period, three were installed by a co-operative bank—the Elamkulam Service Co-operative Bank, and two were initiated by the farmers of their own volition and motivation. Two of the former (Elamkulam and Muthukurussi LISs) and both of the latter categories (Muthuvattoor and Thekkinkaadu LISs), were included in the sample.

Of the three LISs installed during the decentralisation period, one system—a unique case included in our study—was set up by the state government and transferred to the LSG, and then from the LSG to the water users. Of the remaining two LISs, both installed by the LSG and then transferred to farmers’ associations, one was included in the sample (Thadikkal Kadavu LIS). After the decentralisation of governance, all six LISs in the sample are *de jure* LSG institutions, managed by the WUAs tapping into the development funds of the LSG, but in the

de facto everyday functioning of these institutions, they exhibit different characteristics. These differences can be traced to their genesis on the one hand, and to the history of farmers' participation and the extent of their self-motivation on the other. The salient features of the selected six LISs are shown in Table 1.

Methodologically, an in-depth qualitative study was conducted in Elamkulam gram panchayat, using interview techniques and the collection of secondary material. Interviews were conducted with the water users, especially the members and office-bearers of the executive committee, such as the chairperson and secretary of the selected LISs. The narratives of water users on the genesis of the LISs were collected. Details of the management profile of each LIS and the condition of the water pumps, in terms of technical and functional aspects, water conveyance and distribution management, number of water users, irrigated area, crops irrigated, rules and mechanisms regarding the fixing of water charges and the degree of flexibility in them, challenges and coping mechanisms and a host of other details were collected. Officials of the Elamkulam Service Co-operative Bank, state departments of minor irrigation, and agriculture and panchayat functionaries were also interviewed.

Genesis and Evolution

This section discusses the genesis and management of all the six LISs in the sample selected for this study, analytically categorised as the pre-decentralised LISs and decentralised period LISs. Pre-decentralisation period institutions are discussed under two subcategories: farmer-initiated LISs and cooperative bank-initiated LISs. Similarly, decentralisation period LISs are subcategorised as LSG-initiated and state government-initiated.

Table 1: Salient Features of Lift Irrigation Systems in Elamkulam Gram Panchayat

Lift Irrigation System	Pre-decentralisation Era			Decentralisation Era		
	Elamkulam	Muthukurussi	Thekkinkaadu	Muthuvattoor	Ramanchady	Thadikkal Kadavu
Organiser	Elamkulam Service Co-operative Bank	Elamkulam Service Co-operative Bank	Farmers' association	Farmers' association	State government	Local self-government
Year of establishment	1974	1975	1976	1978	1983	1998
Period of establishment: prior to or in the formative phase of decentralisation of governance	Prior to	Prior to	Prior to	Prior to	Prior to	Formative phase
Executive committee members	7	7	7	7	14	13
Water users	80	60	84	50	600	100
Service area	26 ha spread over two wards ^a (13, 14)	24 ha spread over two wards (7, 8)	57 ha spread over two wards (8, 12)	51 ha spread over one ward (9)	202 ha spread over five wards (5, 6, 7, 9, 10)	40 ha spread over two wards (12, 13)
Pump(s) (number x horsepower)	2 x 15	1 x 60	1 x 100	1 x 40	6 x 125	2 x 20
Number of defunct pump(s)	1	0	0	0	3	1
Number of pump operators	1	1	1	1 ^b	6	1
Water distribution through	Reinforced concrete canals	Earthen canals	Reinforced concrete canals	Earthen canals	Reinforced concrete canals	Reinforced concrete canals
Water charges for perennial crops (₹)						
Members	23/hour	45/hour	90/hour	35/hour ^c	315/ha/annum	20/hour
Non-members	23/hour ^d	45/hour ^d	110/hour	45/hour	315/ha/annum ^d	20/hour ^d

^a There are 16 wards in Elamkulam gram panchayat.

^b One of the executive body members has voluntarily taken the role of pump operator.

^c Water charge for the founder members of this lift irrigation system.

^d No clear-cut demarcation between members and non-members.

Source: Compiled by authors.

The diversification and distinctiveness of the LISs are largely related to their genesis and specific management challenges and crises, as well as the capabilities of specific WUAs and the local conditions.

Different WUAs face different challenges; their capabilities in bringing about the convergence of resources are also different. In the sample, it is found that there are differences among irrigation institutions, not only in terms of the water users' commitment and self-reliance, and owning up to the responsibility for sustaining their institutions and irrigation systems, but also in the awareness about potential sources of empowerment and the strategies that can be adopted to cope with crisis of their system. These can be traced to factors like the agency of the installation of the LIS, its genesis and its evolutionary course.

Pre-decentralisation Period

Farmer-initiated LISs: Through self-initiative and motivation, the farmers of Thekkinkaadu and Muthuvattoor formed a registered WUA and set up the Thekkinkaadu and Muthuvattoor LISs, respectively. These local initiatives of irrigation management were made prior to the decentralisation of governance in Kerala, and before the international policy context of prioritising irrigation management transfer to WUAs. According to the narrative of Sreenivasan, whose father Shankaran Nair was one of the founder members of the Thekkinkaadu LIS:

There was heavy dryness in Kerala in the 1970s and agricultural fields were drying up. My father and other members of the local temple committee, all of them farmers, found that they could no longer contribute rice to the local temple for *nivedyam* [daily ritual offering of food to the temple deity]. They could not also raise money for running the daily affairs of the temple. They realised that increasing agricultural

productivity somehow was essential. Therefore, they got together and decided to set up a lift irrigation system in 1976 and they formed a WUA. (personal interview, 2012)

Farmers in this LIS, which irrigates two wards of the panchayat, were self-motivated, and apart from their own motivation in raising funds as their own contribution based on the extent of irrigated area, had the capability to tap into external financial support for this irrigation system. They could raise the fund for a high-lift pump (100 horsepower [hp]), and employ a pump operator and a water distributor to irrigate 57 ha. This is the only case in the panchayat where a WUA showed initiative and drive to persuade a non-governmental organisation (NGO) to extend approximately 75% of the capital cost for infrastructure, the high-lift pump and laying the pipelines.

According to M M Ashttamoorthy, the founder member of Muthuvattoor LIS:

In 1978, eight of us, all farmers of Muthuvattoor, raised ₹2,00,000. We had mortgaged our lands for a bank loan and set up the Muthuvattoor lift irrigation system. We agreed to share liability equally. Later in 1986, two more farmers joined the group. They also put in money to contribute to the capital. Together, the 10 of us constituted the executive committee of the lift irrigation system. Even today, all 10 of us are the executive committee. (personal interview, 2012)

Due to the efficiency of the pump and accessories, by the late 1980s, there was an increase in the number of water users in this LIS, as the service area increased from 40 ha to 51 ha, spread over one ward only. Forty more farmers, who owned land in adjacent areas in the same ward, joined this LIS with member status. This LIS developed a cohesive WUA that imbibed the principle of self-help. Besides self-help, the social commitment of water users has been visible in these farmer-initiated LISs.

Cooperative bank-initiated LISs: In the 1970s, the Elamkulam Service Co-operative Bank in Elamkulam gram panchayat commissioned the Elamkulam and Muthukurussi LISs. The cooperative bank was motivated to finance irrigation, in order to raise a third crop of paddy and increase agricultural productivity and farm income. It was expected that this would enhance people's perception towards the bank, while ensuring that farmers have the capability to make repayments of the loans the bank advanced to them. The bank invested in two LISs and became the owner of the assets, which included two lift pumps (15 hp each) for Elamkulam LIS and one pump (60 hp) for Muthukurussi LIS. The service area for each of these LISs is spread over two wards of the panchayat.

According to Soman, the branch manager of the Elamkulam Service Co-operative Bank:

The Bank's Board of Directors used to call a meeting of the farmers and decided on various aspects regarding the lift irrigation systems. In the initial years, the bank made all the decisions protecting its interests. In those days, when the farmers ran into difficulties for the maintenance of lift irrigation system or paying electricity bills, they used to apply to the bank and the Board of Directors decided in each application. I do not know of any other cooperative bank getting involved in irrigation. Elamkulam gram panchayat was unique in that we also got involved in marketing farmers' agricultural produce by organising *onachanda*

[special markets during the annual Onam/harvest festival]. But when difficulties started emerging, like when there was no proper maintenance work or difficulty in paying electricity bills, the bank decided to form stakeholder committees and entrust the lift irrigation system to them. In the initial years, our involvement in irrigation was essential for agricultural productivity. But today, even if it is not there, people can get by. Those who have money set up private lift irrigation, and even sell water to others. (personal interview, 2012)

Today, running of the LISs has been entrusted to a *padasekhara samithi* (a grouping of farmers of a locality who own 10 or more cents of agricultural land), whose executive committee has 10–11 members. If a locality has any member or board of director of the cooperative bank, they could be a member of the padasekhara samithi and also the executive. The farmers of each locality are grouped under different padasekhara samithis.

Decentralisation Period

State government-initiated LISs: The minor irrigation department of Kerala commissioned a LIS (Ramanchady LIS) in 1983, but the management of this LIS was transferred to the LSG, in line with the rules of decentralisation of governance and handed over to water users for management. A WUA has been formed and there is a nominal executive committee comprising of members elected by the water users from amongst themselves. This is the largest irrigation initiative in the panchayat with a service area of 202 ha, extending over five wards of the panchayat, with a capital investment of ₹80 lakh. The WUA in Ramanchady expects the LSG to solve any management or operational issues, instead of showing any self-initiative. In the words of Valiya Thodi Hamsa, the then convenor of the executive committee of Ramanchady LIS:

For the first eight years the lift irrigation system was working well, but then on there was problem of pump maintenance and no funding from the state government. At first, for any small maintenance we used to contribute around ₹100 per member on an average, but big maintenance was a problem, as there were state regulations on inviting tenders for maintenance work. Coming up with own funds for maintenance did not succeed as by the time they thought of it, the agricultural season was over and farmers lost interest. Between 1988–1999, lift irrigation system was literally defunct and agriculture was entirely rainfed. In 1999, a lift irrigation *samrakshana samithi* [protection committee] was formed to resurrect lift irrigation. However, the samithi could not do much. Some farmers started opting for private lift irrigation. (personal interview, 2012)

Contrary to the opinion that the state or LSG is not providing financial assistance to the Ramanchady LIS, the branch manager of the Elamkulam Service Co-operative Bank, Soman, expressed his opinion that all the LSG funding was going only to this LIS. In reality, irrespective of genesis and management, the LIS users are unhappy that expected funding support is not coming from the LSG. The LSG is unable to fulfil its new-found responsibilities due to a combination of factors. Among them, the water users' lack of accountability is the primary one. In the case of Ramanchady LIS, the LSG has been unable to find additional funds for the continued employment of pump operators—whose numbers exceed by six times the number of

pump operators in other systems—as a result of the legacy of the transfer of the irrigation system from the state government, along with the employees. These pump operators, not being water users themselves, have the mindset of being mere employees and having no involvement or interest to sustain the system, do not own up to the responsibilities.

Local self-government-initiated LISs: In 1998, in the decentralisation period, when the LSG of Elamkulam established the Thadikkal Kadavu LIS using funds from the state government, the water users did not contribute to the capital cost of the LIS. According to the president of Elamkulam gram panchayat, N Vasudevan:

Setting up an irrigation institution was seen as an LSG responsibility because this lift irrigation system was set up primarily to solve the drinking water scarcity in the acute summer in its service area. We were expecting that irrigating the farms would help the groundwater recharge through seepage and drinking water availability in wells could thereby be augmented. (personal interview, 2012)

This diversion of state funds was possible for irrigation purposes despite the irrigation management transfer to water users, as this fitted well with the watershed-based development strategy of Kerala's decentralisation, which encourages integrated and coordinated efforts for watershed development. According to this strategy, the state, the LSGs and the people have to contribute to develop a watershed. As in the case of the most recent Thadikkal Kadavu LIS, the technology used in the water pumps in this system is new and more efficient, and it has received the greatest state financial outlay compared to other systems. The service area (40 ha) of this LIS extends over two wards of the panchayat. The management of this LIS was transferred to the WUA, in line with irrigation management transfer and decentralisation, and the water users meet once in every six months. However, they have not owned up to the responsibility for maintaining the system, belying the expectations of both the irrigation management transfer and the decentralisation campaign.

Sustainability Challenges and Strategies

Earlier research has highlighted various attributes required for the sustainability of irrigation systems. While some like E Ostrom (1992) and P Pradhan (1989) have noted that small size irrigation systems contribute to better performance, compared to large irrigation systems managed by agencies, others like W F Lam (2001) have foregrounded consensus in formulating definite rules as contributing to the sustainability of irrigation systems. Still others (Kulkarni and Bokil 2003; Lam 1996; Kolavalli and Brewer 1999; Menon et al 2005) have highlighted the participation of water users as important for the success of irrigation systems. Water users' participation at all levels of the system and in all aspects of management, including fixing and payment of water charges, is an essential ingredient for ensuring the long-term sustainability of LISs (Menon et al 2005).

While all of these factors are important in different contexts for sustaining irrigation systems, there are several other

considerations that also impinge on the decision-making of water users, as can be seen from the foregoing discussion of LISs in Elamkulam gram panchayat. For instance, as the state government rules do not allow any flexibility in fixing electricity charges, WUAs have limited options before them to meet the additional expenses incurred to sustain the LIS, which include increasing water charges, raising one's own resources or mobilising external funds. Different LISs are found to have adopted different strategies.

In the pre-decentralisation period farmer-initiated Thekkinkaadu and Muthuvattoor LISs, the obsolete and inefficient irrigation infrastructure established in the 1970s has contributed to the increasing operational expenses. In the case of Muthuvattoor LIS, water users are unable to attend to the wear and tear of the machinery, due to the financial burden involved. This has substantially lowered the discharge capacity of the single low-lift pump (40 hp), naturally causing performance deterioration, although the water users in this system have come up with small funds that are within their budget. Even levying additional charges apart from water charges to meet the exigencies has not helped them sustain the system. If a major replacement of machinery or accessories is made (that is naturally to be expected in a situation where only temporary unavoidable repairs are undertaken), it is bound to cause a financial crisis that neither the self-reliance nor the leadership capabilities of these water users would be able to overcome.

Due to the flexibility in rules, the water users in both the farmer-initiated Thekkinkaadu and Muthuvattoor LISs have been able to fix different water charges on the basis of crops, extent of area irrigated, duration of irrigation and membership or non-membership. While water charges in the case of perennial plantation crops was fixed on an hourly basis in the case of these farmer-initiated Thekkinkaadu and Muthuvattoor LISs, in the case of paddy it was based on irrigated area, as multiple-day irrigation is best for paddy fields. In the case of Muthuvattoor LIS, water charges for the founder members was ₹35 per hour, compared to ₹45 per hour for other members. However, in both these systems, the WUAs struggle to come up with the financial resources required to meet the expenditures. Despite the flexibility in rules that allow differential fixation or enhanced water charges, the sustainability of this system has not been ensured, and the founder members are still indebted as their lands continue to be mortgaged.

Compared to the farmer-initiated LISs of the pre-decentralisation period, the decentralisation-period LISs are found to have fixed lower water charges for perennial plantation crops. This is partly due to the relatively less operation and maintenance (O&M) costs in the newly installed irrigation infrastructure in the decentralisation-period LISs. In the case of Ramanchady LIS—installed by the state government, and subsequently transferred to the LSG and water users—crop-specific differential rule is adopted. Annual water taxation in the Ramanchady LIS is computed on the basis of the irrigated area, which is paid by water users along with the land tax. Nevertheless, as all the farmers in the service area are water users, there is no differential water taxation regime here. For perennial

plantation crops, water charges are levied at ₹315 per ha on the basis of the extent of irrigated area, whereas in the case of the farmer-initiated and cooperative bank-initiated LISs, the water charges are computed on an hourly and usage basis, are comparatively higher than the rest and have more revenue to cover the O&M expenses.

However, in the cooperative bank initiated-LISs, despite the identical genesis and characteristics of both these LISs, water charges are fixed at different rates (₹23 per hour in case of Elamkulam and ₹45 per hour for Muthukurussi), on the logic of the difference in pump capacity. More importantly, raising water charges was not a favoured option, as some water users are already disgruntled because they must pay annual water charges, even when they do not use the water or its supply is erratic, or does not reach their farms.

Raising Funds for Additional Costs

In the case of Thadikkal Kadavu LIS—installed by LSG during the decentralisation period and transferred to the WUA for irrigation management—the executive committee of this LIS has tried to get the LSG to meet the maintenance costs through additional taxation, rather than increasing water charges of water users alone. The LSG's capacity in raising additional resources to meet the increasing expenditures of sustaining the system is limited, as it cannot raise water charges due to the state regulation regarding the water charges tied to land tax collection. The state government does not have to deal with the face-to-face political negotiations on a day-to-day basis in governance, compared to the LSG, WUAs and cooperative banks. The inflexible rules of the state do not take into account local realities, and its fixed policy framework is based on considerations of cost-effectiveness and regional agrarian scenario.

In the local face-to-face interactional settings, the WUAs, functionaries of the cooperative bank and LSG, all appear very reluctant to increase water charges to meet expenditures due to the fear of unpopularity. Thus, increasing the water charges in the face-to-face context of decentralised democracy is not easy, as is expected by the state in irrigation management transfer. The LSG, WUAs and cooperative banks, which are very much engaged in such face-to-face political negotiations on a day-to-day basis in their decision-making, are often motivated by considerations of local realities and political gains over cost-effectiveness. For the LSG, added taxation is the least preferred option due to the poor financial situation of most of the water users. Also, as the LSG functionaries admit, it may cause unpopularity for them and they will have to pay when they face their electorate. Therefore, raising additional resources to combat the O&M costs and ensuring the sustainability of LISs becomes a major challenge. The cooperative bank is found to divert funds either from the general profits it has accrued or from its multipurpose development funds to cope with increasing the O&M costs. It has also been successful in tapping state funds by making use of the opportunities provided under the Kerala Irrigation and Water Conservation Act, 2003.

Social capital—defined here as the goodwill and reciprocity among locals—is a motivating factor in the decision-making in the local, face-to-face interactional settings. It is very evident, especially in the case of small-sized WUAs like in the Thekkinkaadu LIS, where the intensity of the interactions is accentuated. In the farmer-initiated LISs, due to their own financial contribution and initiative, and the lack of expectations from both the LSG and the state government, the water users have shown great participation and self-reliance, but they have shown differences in their networking capabilities in the pre-decentralisation period. While the water users in the Thekkinkaadu LIS were able to tap external funds from an NGO to raise 75% of the initial capital investment, the water users in the Muthuvattoor LIS had to mortgage their lands for a bank loan to raise the initial capital for their LIS.

Water users in Muthuvattoor LIS have shown further self-reliance, with an executive committee member volunteering to take up the role of pump operator in order to bring down increasing operational expenses. The executive committee of the farmer-initiated Thekkinkaadu LIS has shown sensitivity to the economically weak tailenders irrigating paddy farms, by lowering their water charges on the ground of their poor economic status, overlooking the cost-benefit calculations in irrigation systems while they have the maximum water charges (₹90 per hour from members and ₹110 per hour from non-members) among all LISs. Also, when electricity charges increased over time due to an unanticipated decision of the state government, while some of the systems coped with the eventuality by increasing the water charges, the Thekkinkaadu LIS decided not to increase the water charges despite the loss of income.

The increasing expenditures offset the self-reliance and motivations of the water users in the farmer-initiated LISs, and it is found that the self-reliance of water users is not sufficient to sustain them. Moreover, unlike in the case of the cooperative bank-initiated LISs, also of the pre-decentralisation period, the farmer-initiated LISs have not been able to tap any external funding in the decentralisation period, despite the remarkable self-reliance and initiative these systems had shown in the pre-decentralisation period. The difference in the capabilities of the water users in the two farmer-initiated LISs was evident even in the pre-decentralisation period. While the Thekkinkaadu LIS could raise majority of the capital outlay from an NGO, in the Muthuvattoor LIS, the water users had to mortgage their private lands. The mortgage continues to be a major liability that challenges the sustainability of the Muthuvattoor LIS, in the face of the increased wear and tear of irrigation infrastructure.

In the decentralisation period, while the Thekkinkaadu LIS has also successfully tapped state government funds for the replacement of old machinery, the land mortgage of the Muthuvattoor LIS water users continues to be a liability. Comparing the cooperative bank-initiated LISs to the farmer-initiated LISs, it is found that the water users in these LISs fail to show any self-reliance. They believe that their responsibility is confined to the regular payment of water charges. Any additional

resources needed to sustain these two LISs are expected to be borne or raised by the Elamkulam Service Co-operative Bank.

Deteriorating Infrastructure and Sustainability

In the decentralisation-period Ramanchady LIS, the deterioration of irrigation infrastructure is a serious problem. Three of the six high-lift pumps (125 hp) that had been installed in the Ramanchady LIS had ceased to function. Even as the operational pumps are reduced by half, the main canal of this LIS has been extended further, thereby increasing the number of water users. This has adversely affected farmers at the tail end of the canals. To cater to the increased demands, a high-lift pump was installed by the state, but this leads to high energy expenditure. This is in addition to the excess demand on the infrastructure over the years. This exorbitant energy expenditure, after irrigation management transfer, is to be raised by the LSG, but the LSG does not have the local resources to raise self-generated funds.

In addition, to ensure adequate supply of electricity, the LSG had decided to purchase a 250-kilowatt transformer, but this transformer was lying idle at the time of our survey, as the LSG could not come up with additional funds to install it. The LSG was involved in a process of negotiation with the state government for additional funds for this purpose, without considering an increase in water charges. The water users in this LIS have taken up no financial obligations towards the O&M costs, even to pay the excess charges that accrue on account of their own excess water usage. In the decentralisation period, the water users of the LSG-initiated Thadikkal Kadavu LIS expect the LSG to meet the O&M costs.

Besides, there are common emerging challenges for the LISs. The increasing numbers of private irrigation arrangements in the service area of the LISs is a major challenge to their sustainability. The state government policies have been in support of the exploration and development of groundwater through borewells, tube wells, filter point wells, open wells and other types of wells, as is evident from the 50% state subsidy provided to small farmers towards drilling cost. In addition, the state government has been subsidising electricity charges to low-lift pumps (5 hp). As this is typically availed by small farmers who install private pumps, in effect, the state government's funding policies are de facto favouring private lift irrigations.

According to information from the assistant engineer of the Kerala State Electricity Board who works in the study area, there has been an increase in the number of farmers who claim electricity subsidy in Elamkulam gram panchayat. Now, electricity subsidy is claimed not only for low-lift pumps, but also for high-lift pumps. However, there is a restriction that the subsidy will be limited to 250 units only, after which normal commercial rates would apply. As many of the water users began to resort to private lift irrigations, the water users' commitment to the sustenance of the LISs has further deteriorated.

Sand mining has emerged as yet another unanticipated challenge to the sustainability of the LISs. Excessive sand mining in the riverbeds in Elamkulam has resulted in a shift in the course of the river, leading to low water availability during

summers at the water pumping sites of the LISs. In the case of the Thekkinkaadu LIS, the LSG had to raise additional expenditure to combat the changing course of the river from excessive sand mining by building temporary check-dams across the river. This issue of sand mining adds to the complexities in the decentralised face-to-face decision-making on LISs by the LSG, where economic and political interests come to loggerheads and water users' interests are often not protected.

Self-reliance versus State Responsibility

India's concern for food security in the post-independence era led to a prioritisation of heavy state investment in irrigation infrastructure. This included many major, medium and minor irrigation systems. However, the major and medium irrigation systems in India that comprise the network of dams, canals and other such projects require substantial financial outlay and have reported under-performance and failures (Gulati et al 2005; Sengupta 2001). The National Water Policy, 2012, also highlights the grossly inadequate maintenance of existing irrigation infrastructure, that has resulted in the wastage and underutilisation of available resources.

In this context, minor irrigation works and other small local-level irrigation methods, that include groundwater development schemes and surface water development works such as LISs and storage tanks, have come up favourably. This is reflected in the National Water Policy of 2002 and 2012; these policies emphasise the development and management of water resources on hydrological unit and participatory basis, which are in line with the 73rd and 74th amendments of the Constitution for local self-governance. However, the present reality is that many minor surface water irrigation systems are under the threat of becoming defunct (Kulkarni and Bokil 2003; Sharma et al 2015; Sridhar 2015).

In our analysis of the LISs in Elamkulam gram panchayat, we find that different categories of LISs have been facing different challenges to their sustenance, and have been devising their own strategies to sustain themselves. The decentralised institutional arrangements in LISs are faced with the challenge of meeting high, recurring O&M costs and replacement costs of some of the capital-intensive machinery, due to their financial incapacity. In this context, we find that the issue of self-reliance versus state responsibility emerges prominently in both pre-decentralisation and decentralisation period LISs, albeit defined and redefined differently in the two periods. The self-motivation and initiatives of the water users of the LISs of the pre-decentralisation period seem to dissipate under the formalised institutional arrangements of decentralisation, as they moved into the decentralised period. This situation is not just spurred on by the financial exigencies of the failing lift irrigation infrastructure, but also due to a shift in the water users' understanding of governance responsibilities under decentralisation, from self-reliance and people's collective action to a new definition of people's vigil in ensuring good governance.

In the pre-decentralisation period, we have seen that the water users have shown great self-reliance, participation, initiative, leadership and self-help. We have observed that

there are instances of water users volunteering to operate the pumps themselves, in order to reduce operation costs. There are also instances of water users using the flexibility in rules to lower water charges, for the economically weak tailenders irrigating paddy fields, and showing social commitment. We have also seen that water users have installed the LIS by mortgaging their own lands and have incurred the risk of long-term indebtedness. However, in the post-irrigation management transfer and decentralisation phase, the same water users appear very disillusioned with their inability to sustain their LISS. By this period, there has been a gradual attrition in the irrigation infrastructure and a concomitant increase in the recurrent and unanticipated O&M costs, and the WUAs find it difficult to raise the resources to sustain them and have been looking towards state support for this extra expenditure.

In the case of the LISS installed by the LSG in the decentralisation era, there is the expectation that the LSG will take up the entire governance responsibility to ensure the sustenance of the LISS, despite irrigation management transfer, and the water users' self-reliance appears reduced—they decline to bear any part of the capital cost. Instead, water users try to put political pressure on the state government to provide additional funding to the LSG. As already noted, even in the decentralisation period, the LSG's capacity in raising additional resources is limited and is subject to state rules and regulations.

It is seen that self-reliance is not a constant, whether in the case of water users or the LSG. As for the water users, it is found that the voluntary moral commitment arising from their exigencies that initially mobilised them towards a collective, has slowly eroded into a formalised institution under decentralisation, that is eligible to receive state funding. This has motivated the water users to move away from the principle of self-help, towards greater reliance on the LSG's financial support, defining it as the LSG's governance responsibility. This is clearly seen in the case of the Thekkinkadu LIS, in which water users fail to contribute their share; their self-reliance appears to have eroded and they look towards the LSG for support to sustain their LIS infrastructure. Although the LSG replaced an old pump in 1997 on the condition that the water users would contribute 10% of the costs, this expectation was not fulfilled by the water users.

Provisions in the Law

A comparison of the farmer-initiated LISS and the cooperative bank initiated-LISS of the decentralisation period shows that while the former are struggling to cope with their inability to sustain their LISS which have become a liability for them, the cooperative bank has been encouraging the transformation of WUAs into various development committees, that are eligible to receive development funds from various state schemes under decentralisation and also using the provisions of the Kerala Irrigation and Water Conservation Act, 2003. The LSG has also been trying to encourage different categories of LISS to set up such committees, so that they may utilise the funds released to it by the state government for development activities as per the provisions this act.

The Kerala Irrigation and Water Conservation Act, 2003, provides for irrigation works to be entrusted to various WUAs or cooperative societies. Moreover, it has broadened the definition of water users to include under its rubric "any individual or body corporate or a society or an institution or an association using water for any purpose from a government source of irrigation" (Government of Kerala 2003: 4). This act stipulates that

[where] the government consider it necessary so to do, they may, subject to such terms and conditions as may be specified by them, entrust the construction or maintenance or both of any irrigation work, to any local authority or to any cooperative society or other society of farmers or to any other body corporate benefited by that irrigation work, and may, at any time, resume such work: provided that no work entrusted to a local authority or a cooperative society or a society of farmers or to a body corporate shall be resumed without giving such local authority or cooperative society or other society or body corporate an opportunity of being heard. (Government of Kerala 2003: 7)

The above proviso in the 2003 act provides the opportunity for the pre-decentralisation-period farmers' associations to operate as both de jure and de facto WUA of decentralisation, transforming their original institutional arrangements. Only some WUAs have been able to take advantage of this broad definition and the provisions of this act. Those irrigation institutions that are capable of using the provisions of the state legislations and rules are able to sustain themselves better. Unfortunately, the farmer-initiated LISS of the pre-decentralisation period, that had shown great self-reliance and motivation, have been unable to transform their WUA to new developmental institutions.

The LSG's position in owning up to the responsibility in sustaining the LISS has not been uniform. While it has shown commitment to find ways to sustain the LISS installed during the decentralisation period, viewing it as part of its governance responsibility, in the case of pre-decentralisation period LISS, whether installed by the farmers or state or cooperative bank, it looks towards the state government for support, as the O&M crisis of these old irrigation infrastructures causes recurrent financial emergencies. The state government on the other hand, places emphasis on the decentralisation of governance, planning and irrigation management transfer, and expects water users to fulfil the expectations of civic duties and self-reliance.

Earlier literature has shown that financial support is seen as an entitlement by the farmers (Lam 2001) and that fewer incentives lead to water users' poor participation in irrigation management and poor performance (Kulkarni and Bokil 2003; Lam 2001). Our study, however, shows that contrary to the literature, rather than an indicator of the performance of the LISS, financial support to water users and the LISS is seen as an indicator of the governance performance of the state and LSG by the water users, and they appear to have redefined self-reliance and self-governance as vigil and activism in ensuring good governance.

External support, however, does not ensure the effective functioning of irrigation systems (Kolavalli and Brewer 1999). With reference to the unaffordable O&M costs, Gulati et al (2005) have remarked on the gap between the actual and desirable performance, which poses a threat to the sustainability of such irrigation systems. Our study has shown that while water users expect the LSG to come up with the funds to support their LISS

as a part of good governance, the LSG looks towards the state to meet the O&M costs not only because it is unaffordable, but also because of the irregularity in the disbursement of the limited state funds deployed to LSG, and the inflexibility in state rules that do not allow the reappropriation of sanctioned funds at the discretion of LSG functionaries, even for purposes like urgent maintenance work, thereby belying water users' expectations of good governance. We have seen that despite differences in the WUAs in terms of genesis and self-reliance, there is an increased dependence on state for sustaining the systems, whether as a part of the expectation of governance responsibility or due to the inability to raise their own resources to meet the huge O&M expenses in the case of old irrigation infrastructure.

Conclusions

Our study, based on our analysis of the management of LISS—established prior to and in the early stages of the decentralisation of governance—in Elamkulam gram panchayat in

Kerala, highlights that neither irrigation management transfer nor decentralisation campaigns in themselves seem to have fostered self-reliance or capabilities of the water users in the new decentralised period of institution building. Those water associations that are capable of adapting to new decentralised institutional arrangements, appear better-positioned to tap the avenues provided by state rules and regulations, and in obtaining state support. We would like to highlight that local-level dynamics may impinge upon the expectations of self-reliance and participation management under irrigation management transfer and decentralisation of governance. Local capability building for networking and new institution building to take advantage of the new avenues offered under decentralisation, may be vital in fulfilling the expectations under irrigation management transfer and in sustaining irrigation systems. We also observe that inflexibility in rules could be inimical to the good governance of local self-governments.

REFERENCES

- Brewer, J, S Kolavalli, A H Kalro, G Naik, S Ramnarayan, K V Raju and R Sakthivadivel (1999): *Irrigation Management Transfer in India: Policies, Processes and Performance*, New Delhi: Oxford & IBH Publishing.
- Easter, K W (2003): "Asia's Irrigation Management in Transition: A Paradigm Shift Faces High Transaction Costs," *Review of Agricultural Economics*, Vol 22, No 2, pp 370–88.
- Government of Kerala (2003): "The Kerala Irrigation and Water Conservation Act, 2003," http://www.irrigation.kerala.gov.in/images/knowledgecenter/act-rules/kerala_irrigation_and_water_conservation_act.pdf.
- Groenfeldt, D and P Sun (1997): "The Concept of Participatory Irrigation Management," *Medit*, Vol 8, No 2, pp 45–48.
- Gulati, A, R Meinzen-Dick and K V Raju (2005): *Institutional Reforms in Indian Irrigation*, New Delhi: Sage Publications.
- Isaac, T M, and R W Franke (2000): *Local Democracy and Development: People's Campaign for Decentralized Planning in Kerala*, Delhi: Left-World Books.
- Jeromi, P D (2003): "What Ails Kerala's Economy: A Sectoral Exploration?," *Economic & Political Weekly*, Vol 38, No 16, pp 1584–1600.
- Joseph, B and K J Joseph (2005): "Commercial Agriculture in Kerala after the WTO," *South Asia Economic Journal*, Vol 6, No 1, pp 37–57.
- Kolavalli, S and J D Brewer (1999): "Facilitating User Participation in Irrigation Management," *Irrigation and Drainage Systems*, Vol 13, No 3, pp 249–73.
- Kulkarni, P and M Bokil (2003): "The Sinking Lifts: Government Irrigation Schemes in North Karnataka," *Economic & Political Weekly*, Vol 38, No 38, pp 3968–72.
- Lam, W F (1996): "Improving the Performance of Small-Scale Irrigation Systems: The Effects of Technological Investments and Governance Structure on Irrigation Performance in Nepal," *World Development*, Vol 24, No 8, pp 1301–15.
- (2001): "Coping with Change: A Study of Local Irrigation Institutions in Taiwan," *World Development*, Vol 29, No 9, pp 1569–92.
- Meinzen-Dick, R (1997): "Farmer Participation in Irrigation: 20 Years of Experience and Lessons for the Future," *Irrigation and Drainage Systems*, Vol 11, No 2, pp 103–18.
- Menon, V, A Paul and K N Nair (2005): "Dynamics of Irrigation Institutions: Case Study of a Village Panchayat in Kerala," *Economic & Political Weekly*, Vol 40, No 9, pp 893–904.
- Mukherji, A, B Fuleki and T Shah et al (2009): *Irrigation Reforms in Asia: A Review of 108 Cases of Irrigation Management Transfer*, Colombo: International Water Management Institute.
- Nair, K N and V Menon (2006): "Lease Farming in Kerala: Findings from Micro Level Studies," *Economic & Political Weekly*, Vol 41, No 26, pp 2732–38.
- Ostrom, E (1992): *Crafting Institutions for Self-governing Irrigation Systems*, San Francisco: ICS Press.
- Pradhan, P (1989): *Patterns of Irrigation Organization: A Comparative Study of 21 Farmer-managed Irrigation Systems*, Colombo: International Irrigation Management Institute.
- Rejula, K and R Singh (2015): "An Analysis of Changing Land Use Pattern and Cropping Pattern in a Scenario of Increasing Food Insecurity in Kerala State," *Economic Affairs*, Vol 60, No 1, pp 123–29.
- Sengupta, R (2001): *Ecology and Economics: An Approach to Sustainable Development*, New Delhi: Oxford University Press.
- Sharma, A K, K D Sharma and B Prakash (2015): "Death of Kuhl Irrigation System of Kangra Valley of Himachal Pradesh: Institutional Arrangements and Technological Options for Revival," *Indian Journal of Agricultural Economics*, Vol 70, No 3, pp 350–64.
- Sridhar, P (2015): "Minor Irrigation Projects Go Defunct," *Hindu*, 2 September <https://www.thehindu.com/news/national/telangana/minor-irrigation-projects-go-defunct/article7606453.ece>.
- Suhardiman, D and M Giordano (2014): "Is There An Alternative For Irrigation Reform?," *World Development*, Vol 57, pp 91–100.
- Svensden, M and R Meinzen-Dick (1997): "Irrigation Management Institutions in Transition: A Look, A Look Forward," *Irrigation & Drainage System*, Vol 11, No 2, pp 139–56.
- Venugopal, V and S Yilmaz (2009): "Decentralisation in Kerala: Panchayat Government Discretion and Accountability," *Public Administration and Development*, Vol 29, No 4, pp 263–339.
- Vermillion, D L (1991): "The Turnover and Self-management of Irrigation Institutions in Developing Countries," Discussion Paper, Colombo: International Water Management Institute, http://ageconsearch.umn.edu/bitstream/200190/2/H_12748.pdf.
- (1997): "Impacts of Irrigation Management Transfer: A Review of the Evidence," Research Report 11, International Irrigation Management Institute, Colombo.

Economic & Political WEEKLY

Review of Urban Affairs

January 13, 2018

- Urban Jungles: Wilderness, Parks and Their Publics in Delhi —Amita Baviskar
- Living in a Category: A History of India's 'Census Town' Problem from Colonial Punjab —William J Glover
- Migration, Caste and Marginalised Sections: Inequality in the Coverage of Basic Services in Urban India —Debolina Kundu, Arpita Banerjee
- NNURM as a Window on Urban Governance: Its Institutional Footprint, Antecedents, and Legacy —David Sadoway, Govind Gopakumar, Vinay Baidur, Madhav G Badami

For copies write to:
Circulation Manager,

Economic & Political Weekly,

320–322, A to Z Industrial Estate, Ganpatrao Kadam Marg, Lower Parel, Mumbai 400 013.

email: circulation@epw.in