

Doctoral Thesis (Abridged)  
博士論文（要約）

Institutional arrangements for enhancing sustainable community-based irrigation: the case of  
Northern Sagada, Philippines

(地域共同体を基盤とした持続可能な灌漑を実現するための制度設計：フィリピン共和国北サガ  
ダ地域における事例)

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The growing reality that the world is facing a resource management crisis has driven many scholars in search of the right institutional arrangement for resource governance. Institutions or simply the rules devised by humans to guide their social interactions can either be informal such as norms, traditions, and customs or in the form of formal law or organizations. Three possible choices of governance structures or institutional arrangements are identified in the literature including, government control, privatization, and community-based management. However, though it is generally agreed that institutions are needed to solve resource problems, there is no consensus as to what institutional arrangements would be best.

Buttressed by the many successful cases of resources managed at the local-level, many anthropologists and social scientists have come to advocate community-based management. In doing so, the literature has often highlighted the failures of state-control and private property while at the same time emphasizing the successes of self-governing commons despite the lack of government support. Most cases studied have been biased towards those which either failed or underperformed due to the interference of the state.

However, the emerging literature on state-reinforced self-governance argues that the state can positively reinforce self-governing commons through non-authoritative and non-coercive assistance. The notion that different institutional arrangements do not necessarily operate in isolation has become more popular. The involvement of the state in particular, is in fact highly necessary if not inevitable, given that the creation and enforcement of resource management rules falls under the purview of the government. Nevertheless, the combination or interaction of the different institutional arrangements is yet to be discussed thoroughly in the literature.

In an attempt to address this gap, the present case study was selected to investigate the interactions of the state with local self-governing institutions. Drawing on a place-based research of a communal irrigation in an upland community in Northern Philippines, the objective of this research is two-fold. First is to examine the process and outcome of institutional change of self-governing common pool resources (CPR) into a state-reinforced governance system. Second is to investigate the role of changing institutional arrangement in the decline of farmer's collective action.

One of the most iconic models of successful local-level management is the community-based irrigation system. These irrigation systems are usually of small-scale and managed by the community through self-organized institutional arrangements. Given that majority of the world's poor rely on small-scale farming which is also highly reliant on small-scale irrigation systems; the study of community-based irrigation is invaluable for ensuring sustainable livelihood for local communities. Many of these community-based irrigation systems were originally constructed without government support, however, the growing trend of decentralized resource management schemes, as of recent, lead to increased interaction between the state and self-governing irrigation commons.

This study tackles the case of Mabileng-Oliwek Communal Irrigation System (CIS), a community-based gravity-flow irrigation system that supports rice terrace farming in Northern Sagada, Philippines. Like in most mountain communities, common property is a necessary arrangement as no individual farmer can afford the cost to build and maintain a private irrigation system. As a CPR, Mabileng-Oliwek CIS is defined by its subtractability and high cost of

exclusion. From its construction in 1952, Mabileng-Oliwek CIS was operated and maintained through self-organized institutional arrangements. Appropriation and provision rules were agreed upon by the users themselves and enforced by the council of male elders who acts as leaders of the traditional socio-political unit in the community called *dap-ay*. In the early 1990s, Mabileng CIS was selected to be one of the project beneficiaries of the Second Communal Irrigation Development Program (CIDP II) by the World Bank. As part of the irrigation development project, the physical structure of the canal was improved and concretized. Furthermore, the informal group of farmers was organized into a duly registered Irrigators Association (IA).

In theory, the improvement of the physical condition of the irrigation system and the strengthening of local farmers association increases the benefits of participation which should ensure that collective action for infrastructure maintenance is sustained through time. Building on earlier works in state-reinforced self-governance the non-coercive and non-authoritarian state intervention for the physical rehabilitation and formalization of the traditional institutions for governing the use of Mabileng-Oliwek CIS should serve to further strengthen self-governance of users. However, on the contrary the study found that, collective participation for the maintenance of the irrigation system has been declining. To understand this paradox the main objective of this research is to examine the process and outcome of institutional change of self-governing institution into a state-reinforced self-governance. To achieve this objective, the following research questions are addressed in the study (1) what is the difference between irrigation management under self-governance and state-reinforced self-governance; and (2) how does a changing institutional arrangement affect collective action for resource management?

In pursuing these research questions, the study adopts a case study approach to analyze the changing institutional arrangements and its implications in sustaining collective action. The focus on qualitative method was driven by the research goal of emphasizing the subjective viewpoints of different stakeholders. This provides an opportunity to gain a deeper understanding of the different ways people experience, interpret and act upon their realities. The most important source of primary data for the study is the in-depth interviews (n=18) with key informants representing those who are most knowledgeable of the historical development of local institutional arrangements for irrigation management. This is further complemented with semi-structured interviews (n=82) and survey questionnaire (n=120) to validate and confirm the findings of the key informant interviews with a larger number of sample and more diverse age representation.

Results show that by employing a consultative and non-coercive process, the state was able to engage the participation of local resource users in formalizing traditional institutional arrangements. However, the case presented also highlights that user expectation regarding the costs and benefits of new institutional arrangements largely affects the likelihood that it will persist.

In applying the institutional approach for analysis, two main challenges were identified from the case study to sustaining state-reinforced IA system. First is the change in membership and participation cost from non-monetary form of time and labor into a monetary value through the introduction of membership and contribution fee. Since rice farming in Sagada is mainly done for subsistence, monetary contribution for the farmers is quite burdensome.

The second challenge is the change in the allocation and distribution of transaction cost or simply who bears what cost. The self-governing system had the *dap-ay* system where the *dap-ay* elders internalize the cost of enforcing and monitoring the rules in lieu of improving their social status in the community. In contrast, the IA system was highly reliant on government funding, thus when funding ended with project completion, IA also cease to operate.

The strength of traditional self-governing institutions such as the *dap-ay* over formal state organized IA institutions lies in its ability to internalize transaction costs because of the significant personal relationships between the users. Since the *dap-ay* is strongly hinged on the social structure of the community, social norms and obligations can effectively incentivize users to behave cooperatively. In contrast, the state-reinforced IA system was designed to be rule-based. However transition between relationship-based to rule-based phase entails transaction cost which maybe too high for users compromising the success of institutional change.

One possible way to ensure the sustainability of IA therefore is to institutionalize it within the barangay system. Barangay is the smallest administrative unit in the Philippines and serves as the local counterpart of the national government in the implementation of irrigation projects. However, outside of the project period, the management and operation of communal irrigation system is not part of the official duties and functions of the barangay officials, hence they have neither obligation nor incentive to enforce and monitor irrigation rules in the long run.

The IA system can also benefit from formalizing the role of the *dap-ay* elders within the barangay system to incentivize them in managing communal irrigation system. Although the authority of the *dap-ay* in the community is said to be on the decline due to societal and cultural changes, the study found that local farmers still hold the *dap-ay* elders in high regard. By formally integrating the IA organization with the barangay system and formalizing the role of the *dap-ay* elders in the management of communal irrigation system there is better chances for state-reinforced self-governance to be successful in Northern Sagada.

In conclusion, the findings of the study highlight the need for more empirical studies on comparing transaction costs between different institutional arrangements in order to inform policy makers on how to improve the institutional design for state-reinforced management of community-based irrigation.