

SUSTAINABILITY OF COMMUNITY-BASED DOMESTIC WATER SYSTEMS IN JANIUAY, ILOILO

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ABSTRACT

Access to water for domestic use is limited in most rural areas in the Philippines. To address this, the government funds the construction of Level II water systems in rural areas through the Kapit Bisig Laban sa Kahirapan-Comprehensive Integrated Delivery of Social Services (KALAHY-CIDSS) program, which is turned over to recipient communities with the expectation that they will be operated and maintained by a community-based organization (CBO). In Panay, 94 water systems have been funded by the KALAHY-CIDSS. However, some of these water systems have not sustained. This study analyzes the conditions that allow collective action among members of CBO's to sustain their water system. The paper used an integrated theory of the Common Pool Resource (CPR) theory and Goal Framing Theory. Through a multi-method comparative study of three KALAHY-CIDSS-funded barangay water systems in Janiuay, Iloilo, it is argued that the institutional design of the CBO and the collective orientation of the members affect the collective action of members. The findings reveal that CBO that were able to sustain their water system had all the elements of the CPR theory coupled with members having a normative goal frame. The results suggest that participative rule-making, membership benefits, and participative local government support were factors that affected promotion of collective action among members.

Keywords: Community Based Domestic Water Organization, Collective Action, Sustainability, KALAHY-CIDSS, Common Pool Resource, Goal Frame

INTRODUCTION

The World Health Organization (WHO)–United Nations Children’s Fund (UNICEF) Joint Monitoring Programme (JMP) reported that as of 2015, estimated 90% of Philippine rural communities have access to improve water supply through community water system piped into dwelling, yard or plot, public tap, and protected well or Level II water systems. While only an estimated 30% of the rural communities have access to water that is piped into their premises or Level III water systems, an estimated 94% and 59 % of urban communities have access to improved water supply and piped water systems, respectively^[1]. This is indicative of how access to water for domestic use is still not fully achieved in rural areas in the Philippines.

One of the programs instituted by the government was to fund the construction of Level II water systems under the Kapit Bisig Laban sa Kahirapan-Comprehensive Integrated Delivery of Social Services (KALAH-I-CIDSS). The water projects are then turned over to recipient communities with the expectation that they will be operated and maintained by a community-based organization (CBO). In the Panay Island, 94 water systems have been funded by KALAH-I-CIDSS, with over 17,000 household beneficiaries ^[2]. However, according to an official of the Region VI KALAH-I-CIDSS (personal communications, September 2016), over half of the water systems were reported to have bogged down and are no longer functioning. In the Municipality of Janiuay, a town in northern Iloilo, the KALAH-I-CIDSS constructed water system in Barangay Aguingay was upgraded to Level III from a Level II water system while the Barangay Gines water system, another KALAH-I-CIDSS constructed water system, bogged down and was downgraded to only accommodate a specific area of the barangay, instead of catering to the entire barangay. Both water systems were constructed through the funds of the KALAH-I-CIDSS, yet one was sustained and the other was not. Given that both water systems had a sufficient source of water; it can be argued that the divergent outcomes were influenced by how the water systems were managed by their CBO.

Arguing that the sustainable collective action of members of a CBO managing a water system determines the sustainability of the water system that the CBO manages, this paper will look into three KALAH-I-CIDSS constructed water systems that were handled by a CBO after being turned over in Janiuay, Iloilo. Specifically, this study argues that a combination of specific institutional design elements should be evident in a CBO, and members of the CBO having a salient normative goal frame is necessary to promote the sustainability of a common-pool resource like a water system.

Theoretical Foundation

The model of water governance promoted by KALAH-CIDSS in the water systems that they constructed is the current global consensus of rural water governance—a community-managed water system. It promotes a participatory approach to water governance. The beneficiary community takes responsibility of the control, operation, maintenance and management of their water system [3]. This model is a product of the shift of the understanding of water governance from the supply approach that advocates a more top-down state led approach to the demand-driven approach that promotes a more participatory model through localization[4][5][6][7]. Since these water systems are considered to be community-managed, members of the community will manage the resource through a cooperative agreement.

The sustainability of these water systems is a salient issue in the literature of water governance. Sustainability is widely agreed to be the ability of an infrastructure to provide goods to the current generation without jeopardizing the actors of the future generation, and secondly it is about intra-generational access to the benefits of the infrastructure [8][9][10][11][12]. In many instances, however, these water systems fail and are not able to sustain, leaving the community that managed them to either go back to self-provisioning, market model or state provisioned [13].

Arana and Wittek noted that there are five general approaches in explaining why community-managed projects are able to sustain: (1) ability of a cooperative arrangement to absorb disturbances; (2) the ability of a cooperative arrangement to recover if “external shock” is applied; (3) “disturbances” as opportunities to reorganize and develop further; (4) institutional analysis; (5) behavior of appropriators or members of the community[14]. While the institutional analysis is necessary, there was a need to look into the behavior and social dynamics of the community that supports the development of a robust institutional structure[15].

Some scholars have discarded the necessity of promoting an institutional perspective by arguing that community participation, not community management is necessary to promote sustainability and that external support from the market or the state is still necessary[16]. The integrated framework of Arana and Wittek[17] incorporated Ostrom’s[18] design principles of managing common-pool resources (CPR) and Lindenberg’s[19] Goal Frame (GF) Theory.

Ostrom's design principles emphasized the need for collective and participatory rules created by members thus answering participation while promoting management, with the state refraining from a top-down approach but being aware and respectful of the rules created by a community^[20]. Arana and Wittek also noted the danger of relying only on rules as the determinant by arguing that the social dynamics and the behavioral aspect of the community that manages the CPR is an important condition in promoting the sustainability of a CPR^[21].

The researchers will use the framework set out by Arana and Wittek^[22] to explain why some community-managed water systems introduced by KALAH-CIDSS in Janiuary, Iloilo were sustained (or not) by arguing that a strong institutional design that is created by the community to manage their water system coupled with the existence of a salient normative goal frame among the members of the community inform the propensity of members collectively acting together to sustain their water system.

This paper aims to contribute to the literature in four ways. First, it argues that an institutional perspective in explaining sustainability is still relevant in rural-water governance. Second, it attempts to apply a theory that was used to analyze irrigation systems in rural community-managed water systems. Third, it adds in the limited literature on access to water by Philippine rural communities. Fourth, since water governance studies in the Philippines have mostly been focused on national policies, this paper looks into the localization of national programs like the KALAH-CIDSS using a modified theory of CPR by Ostrom^{[23][24]} that was last used in the Philippines setting in 1980's looking at irrigation systems.

Integrated Theoretical Framework: Common Pool Resource Theory and Goal Frame theory

Treating the water system as a CPR, this paper argues that collective action among users of the resource is a necessity or else the water system will face the "tragedy of the commons" ^[25]. The CPR theory argued that in order to effectively manage a CPR, certain institutional design principles have to be followed^[26]:

- (1) *Clearly defined boundaries* mean that members of a group are aware and informed as to who belongs to the group. This promotes trust and reciprocity between group members.
- (2) *Equity rules* that give benefits to members of the group while at the same time requiring members to give commensurate and required inputs and responsibilities.

(3) *Collective and adaptive rules* emphasizes that importance of participatory rulemaking process where rules are able to change in response to changing conditions and where the main the decision-making entity is the group that manages the CPR.

(4) *Monitoring* is the formal or informal mechanism that makes sure that the members of the community are compliant to the rules made by the group.

(5) *Graduated sanctions* means that norm-violators are sanctioned but at the same time, the sanction is commensurate to the severity of the violation, which means that the situational and contextual conditions are highly considered.

(6) *Conflict Management Arena* is the system in which conflicts are aired and treated quickly to strengthen norm compliance.

(7) *Institutional awareness* is the recognition of the local authorities and external institutions to respect the rules and regulations of the organization. There is recognition that the highest decision making body is the community.

Arana and Wittek added that the social context of the community is also a determinant of promoting collective action among members of a community [27]. Lindenberg's Goal Framing (GF) Theory argued that aside from getting the rules right, there is a need to look at the tendency of individuals to participate and cooperate in the rule-making and comply with the rules set out by looking at the overarching mindset of individuals. Such mindsets influence an individual's preference, prioritization of what is right, attention and expectation of others [28]. There are three goal frames: hedonic goal frame, gain goal frame, and normative goal frame. The salience and dominance of the normative goal frame among individuals of a group is essential for members to be willing to cooperate, and follow the norms set out by the organization [29]. Lindenberg argued that two factors determine the salience of a normative goal frame: (1) collective identity which means that individuals are able to identify with group interests and objectives, and have some sense of belonging in the group, and (2) feasibility beliefs which is the confidence of individuals in a group that other members of the group will contribute and, because of the cooperation, individuals will gain. This variable in turn is informed by previous experiences of working together among the members of the community, monitoring and leadership style [30]. Arana and Wittek integrated these two frameworks and argued that the salience of a normative goal frame among a community is a necessary prerequisite for the CPR design principles of Ostrom to prosper and yield benefits [31].

This paper uses the integrated framework of CPR theory and GF theory. Specifically the paper describes the institutional arrangement of the CBO or the water association that is in charge of the operation and management of the water system. The next section describes the salience of the normative goal frame among community members by looking at the existence of both the collective identity and the feasibility beliefs. The next section describes the extent of collective action of community members of CBOs.

Experimental Design

The researchers selected two (2) barangays in Janiuary, Iloilo from the list of Water System Sub-projects in Iloilo provided by the KALAHI-CIDSS Region VI where the water associations formed to maintain the KALAHI-CIDSS water system projects installed in their barangays are still in place. Using the most-different system approach, one barangay was chosen with a sustained water system, while the other did not.

The municipality of Janiuary is a first-class municipality in the 3rd district of Iloilo. As of 2015, it has a population of 63,905 and a land area of 17,910 hectares ^[32]. Barangay Gines has a population of 1,004 with 206 households of which 19 households are members of the Barangay Gines Water Association. On the other hand, Barangay Aguingay has a population of 393 with 83 households, of which 50 households are members of the Barangay Aguingay Water Association.

Purposive sampling was utilized to gather the participants in the study. Twenty-four (24) respondents for the focus group discussion were chosen from the records of the water organizations. Twelve (12) of which were from Barangay Gines and another Twelve (12) from Barangay Aguingay. Two (2) FGDs was conducted per barangay. The first group was composed of six (6) members of the CBO while the second group is composed of six (6) non-members. The present president, secretary, maintenance officer, treasurer, water manager, and a former officer of the community-based organization were invited for the key informant interview.

The key informant interview guide contained questions probing the informal and formal institutions and rules that are promulgated by the water CBO in the two barangays— how are the rules made, the duties and privileges of the members, how these rules are enforced in the community, how is conflict managed among members and the extent of local government support.

The focus group discussion looked into the perspective of the community members on water organization rules and in addition also probed past experiences of working together, the existence of leisure activities among members, and the degree of their participation in these activities. Observations were conducted to look into the extent of the community's cooperation and collective orientation. Review of reports, minutes of the meetings and other documents were examined for the attendance of members, rulemaking mechanisms, payment of members, and contributions to the maintenance of the water system. An ocular visit was also made before the conduct of the study to have formal communication with the local government unit of Janiway, Iloilo.

Table 1. Description of the Barangays

| | <u>Gines-Zones 1-4</u> | <u>Gines- Zone 4</u> | <u>Aguingay</u> |
|---|------------------------|------------------------|------------------------|
| Population | 1,004 | 281 | 393 |
| No. of Households | 224 | 69 | 83 |
| <u>No. of member households during the installation</u> | 135 | 17 | 59 |
| Current no. Of member households | *Zone 4 only | 19 | 70 |
| Level of water system upon construction | Level II | Level II | Level II |
| Current level of water system | Level I | Level II and Level III | Level II and Level III |

Results and Discussion

The findings are summarized in Table 2. The experience of the defunct GWA is indicative of how sustainable cooperation among members is necessary to sustain a water system. In both collective leisure and maintenance activities, these were not evident. Collective leisure was only manifested by virtue of their events in the Barangay but there was no direct connection of their leisure activities with the water system. In terms of collective maintenance activities, members only showed interest when there was monetary compensation. Moreover, according to an interview with their previous president, members did not participate in meetings this was particularly evident in the planning of the construction of the water system were an estimated 35% of the required number of households attended. Conversely, both the BAWASA and the GWA 4 have their water systems still functioning and are still providing domestic water access to the members to their respective communities.

Table 2. Summary Table of Findings

| | Gines- Zones 1-4 | Gines- Zone 4 | Aguingay |
|-----------------------------------|--|---|--|
| Collective Leisure Activities | Barangay meetings, barangay fiesta | Own Christmas party separated with the other zones of the barangays, and geographically separate celebration of the town fiesta | fiesta, church related activities and Christmas parties |
| Collective Maintenance activities | None: maintenance of the water system was predominantly lead by the barangay council | Contribute fifty (50) pesos per month for maintenance, extra assessment, participation in repair | Paying of bills, extra assessment, cleaning of water system, providing paid labor |
| <i>Institutional Design</i> | | | |
| 1. Clearly defined boundaries | None: no exclusive membership benefits or access | Membership fee of 100.00. Access of non-members is managed by members. | Members of the BAWASA pay 2.00 per container of water while non- members pay 2.50 |
| 2. Equity rules | None Minimum basic benefit of access to water is not met due to constant breaking down. | Minimum basic benefit of access to water with an obligation to pay contribution. | Minimum basic benefit of access to water with an obligation to pay. Free water consumption during occasions. |
| 3. Collective adaptive rules | None Despite members being aware of CBO, rule violators are often not identified | Penalties for those who does not pay for 2 months. | Notice of disconnection, partial payments are accepted |
| 4. Monitoring | None Despite members being aware of CBO, rule violators are often not identified. | Fixing leaked pipes, reporting to maintenance officer | Fixing leaked pipes, reporting to maintenance officer; monitoring mainly made by the officers |

| | | | |
|-------------------------------|---|--|--|
| 5. Gradual sanctions | None No clear mechanisms to impose sanctions. Members incurred debts with the CBO, yet payments were not collected. | First, personal warning by the water manager; Sanctions for members who haven't paid their dues | Members should pay 10 days upon the issuance of bill; Extensions are allowed to members who are unable to pay. Personal warning is given to violators; Sanctions are levied (i.e. disconnection) |
| 6. Conflict management arenas | None | Officer in Charge who functions as the water manager, settles some conflicts personally but meetings were also used to settle concerns. | Meetings were used to settle conflicts and answer concerns |
| 7. Institutional awareness | None Local barangay chairman, and chairman of water system decides and manages the O & M. | Local barangay council only provides assistance if CBO decides to ask the local barangay. | Local barangay council participates in the decision making but does not decide for the CBO; Function is advisory and assistance. |
| <i>Normative Goal Frame</i> | | | |
| 1. Collective identity | Meetings, paid labor for construction and improvements | Attendance in meetings every last quarter of the month; members complied with monthly contribution; participation in rulemaking was evident | Attendance in meetings every last Saturday of the month; members complied with bills and rules; participation in rulemaking was evident. |
| 2. Feasibility beliefs | None negative experiences of working together (i.e. previous domestic water CBO's failed, low participation in the consultation of KALAHI-CIDSS) | Successful experiences of working together (i.e. CBO members collecting extra- assessment for O & M. Alternative domestic water CBO is functioning.) | Successful experiences of working together (i.e meetings, cleaning the water system when necessary and installing the water system, communal garden in the barangay). |

According to Arana and Wittek, “sustained collective action related to the maintenance of a viable physical and social infrastructure is more likely in communities whose members share a salient normative goal frame and who implemented proper institutional arrangements to solve CPR dilemmas ^[33].” It, therefore, follows that in this study, the water system whose CBO’s members show evident signs of collective action should have these two elements: (1) a salient goal frame shared by members of the CBO, and (2) a CBO where the design principles of the CPR theory is present.

The corroborated findings support the claim posited above. The existence of the design principles in the institutional arrangements and a salient normative goal frame were evident in the CBO’s whose members showed a strong sense of collective action—The BAWASA and the GWA 4. Conversely, the GWA, the CBO that did not indicate a strong level sustained collective action, did not show the existence of the design principles of the CPR theory in their institutional arrangements and a salient goal frame was not strong among the members.

GWA 4 and BAWASA used membership as a means to provide clear and well-defined boundaries. On the other hand, GWA does not have a well-defined boundary since members and non-members pay the same amount to access the water. Equity rules were also only clearly evident in the CBO’s that sustained their water systems.

Although both BAWASA and GWA 4 afforded basic the basic benefit of water access in exchange for member contribution and payment of bills, BAWASA members were allowed to have free water during occasions. GWA, on the other hand, their water system constantly malfunction, and the oftentimes, its users did not pay for the services and incurred debt. Collective and participatory rules were also evident only evident in both the water systems that sustained. Members in both GWA 4 and BAWASA influenced the rules and collectively adjusted rules when problems occurred. On the other hand, this was not evident in GWA as manifested in the fact that the previous president recalled that the barangay council unilaterally decided for the water system (i.e. buying new pipes). Monitoring was also strongly evident in the water systems that sustained.

Both GWA 4 and BAWASA used water meters to measure the contribution of members and used assigned personnel in the community to monitor and made sure that people pay when using the tap stand. In GWA, monitoring was largely weak in terms of payment. Members were aware of rule-breakers (i.e non-paying members, and unknown people who cut the pipes) yet there was no clear effort to address this. Gradual sanctions were also only manifested in both the GWA and BAWASA. In both CBO's, non-compliance with rules (i.e. not paying their bills) are first met with warnings, and if non-compliance is continued their access is cut down. GWA, however, did not manifest this and this can be attributed to their monitoring system. The same reason can be used to explain the lack of a conflict management arena in GWA. On the other, both GWA 4 and BAWASA showed evident signs of a conflict management arena. Their meetings allowed members to vent out concerns regarding their water system, or some instances violators. In GWA 4, use both informal and formal methods while BAWASA was more formal in approach. Lastly, institutional awareness was very much not evident in GWA. Their barangay council almost always unilaterally decided on what the water system will do. Their local Barangay Council through their barangay chairman provided financial support to the CBO such as new electric motors and covering the expenses of the CBO. However, after the loss of the barangay chairman that supported them, the water system also stopped functioning. While in GWA 4, the local government had comparatively, the least instance where the local government supported them. According to their CBO's officers, they only ask their respective barangay council if they lack resources. The local government here is reactionary, or waits or only responds if the CBO asks them. On the other hand, BAWASA the barangay council in BAWASA a more active and participative role.

For instance, the barangay chairman was the one who suggested to transfer their water system, kagawads (barangay officials) functioned as maintenance officers, and it was through the barangay council that they have access to the one million pesos from the Bottom-up budget from the municipality. The local government here is more participatory but it does not decide for the water system and is still subject to the consent of the CBO.

The findings also reveal that there is a correlation between the salience of a normative goal frame among members of a CBO and the presence of the robust design principles of the CPR theory in the respective CBO. A salient normative goal frame was demonstrated in both GWA and BAWASA as manifested in their positive experiences of working together, effective monitoring and leadership that originates from the community.

On the other hand, GWA did not demonstrate a salience of a normative goal frame as demonstrated by the negative experiences of working together (i.e. failed past water systems), weak monitoring and a leader whose origin is from the local government, and functions as a water manager. The findings, therefore, support the argument of the theory used by the study.

Aside from supporting the theory, the researchers also noticed that local social dynamics may have contributed with the sustainable cooperation among members. BAWASA is characterized by a community of households functioning in a compound system. This facilitates non-members to access the water through non-member households accessing the water of other households who are their relatives. This allows the CBO gain more revenue while at the same time being removed of the need to manage all the households in the community. In GWA 4, the territorial element of their zone coupled with the fact that their community is elevated and less accessible may have affected the development of a salient normative goal frame among them.

Moreover, both BAWASA and GWA 4 are considerably far from the water town proper. The members of GWA 4 all lived in an elevated area while BAWASA was in a far-flung barangay in the outskirts. This geographical dilemma may have incentivized the community to cooperate because they are left on their own.

The findings also suggest that the size of the CBO is not a strong indication of sustainability BAWASA significantly provides access to a larger number of households when compared with the GWA 4. The BAWASA has a membership of seventy-two (72) households out of the entire eighty-two (82) households in Barangay Aguingay. As compared to the GWA that supports a total of nineteen (19) households out of a total of sixty-nine (69) households in Barangay Gines, Zone 4. BAWASA's membership is bigger yet it has prospered more compared to the smaller GWA 4. This goes against the argument of Olson in his seminal work "The Logic Collective Action" where he argued that a collective action project is more optimal in smaller groups than larger groups ^[34].

The phenomena above can be explained through looking at the nuances of both collective maintenance activities and collective leisure activities of BAWASA. The members of the BAWASA had a comparatively stronger sense of these indicators. Only the BAWASA had their water association directly connected to leisure activities (i.e. weddings and funerals). BAWASA is the only CBO where a leisure activity is directly connected to leisure activities (i.e. weddings and funerals). BAWASA's members were also the only members of a CBO that offered unpaid efforts such as cleaning the surroundings of the water system.

Moreover, a pattern in the findings may contribute in the explanation phenomena stated above. The nature of local government support in the CBO's varies among the three CBO's. As stated above, GWA's Barangay Chairman actively decided for them and provided financial support. This may have affected the sustainability of the water system in two ways: (1) it may have developed complacency among members thus limiting the need to cooperate, and (2) when the barangay chairman lost his reelection, the CBO also lost a substantial pool of resources that have contributed to its operation. In GWA 4, their Barangay Council is reactionary. It only provides financial assistance when the CBO decides to. This means that the CBO has less access to resources that allows it to further develop because the instances where the CBO asked assistance was for maintenance purposes, not development. BAWASA's local government is more participative. Their local government actively knows the problems of the CBO, and it can provide assistance even if it was not asked. Yet it is still subject to the approval of the CBO. This balance of local government participation, and being subjected to the CBO's approval allows the CBO have access to funds that can be used to develop their water system while at the same time making sure that an unstable leader like a local government does not unilaterally decide for it. This supports the studies about rural water systems in Africa where most scholars argued that intervention from external entities were important in the sustainability of a water system. However, the study puts a caveat that the community should still manage the CPR.

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