



Analysis of Four Community-Based Entrepreneurship in Rural Water Supply in Bogor

Santi Susanti

Universitas Negeri Jakarta, Indonesia

ssusanti@unj.ac.id

Abstract

Local water supply based on community development were built by using funding from Local government. Accountability of this funding for local community entrepreneurship is debatable. This paper will explain how local water community entrepreneurship in Bogor can be determined in four community-based: aspect of infrastructure, training of human resources, revenue collection, and post construction support. The rural water supply in Bogor were studied by combining quantitative and qualitative methods. The study provides evidence on the need to design policies and programs that provide sustainable services in Community-Based Entrepreneurship.

Keywords: Community-Based Entrepreneurship, Local Fund Government, Accountability

1. Introduction

Government in developing countries have difficulties to provide services in rural communities (Foster, 2013), and lack of opportunity for private sector to provide services that have financial return in these areas (Bakker, 2007). In Indonesia, with the enactment of Law No. 6 of 2014 on Villages, villages are given a great opportunity to manage their own governance and development implementation to improve the welfare and quality of life of rural communities. In addition, the village government is expected to be more independent in managing the government and various natural resources owned, including the financial management and wealth of the village property. Therefore the village government should be able to apply the principle of accountability in its governance, where all the village governance activities should be accountable to the village community in accordance with the provisions.

The implementation of Law No. 6 of 2014 is PP Number 43 Year 2014 regarding Village, PP Number 60 Year 2014 on Village Funds Sourced from APBN, as well as some technical rules from the Ministry of Home Affairs, such as Permendagri Number 113 Year 2014 on Village Financial Management.

However, the roles and responsibilities received by the village have not matched with the adequate human resources, both in terms of quantity and quality. Another common obstacle is that villages do not have procedures and supporting facilities and infrastructure in managing their finances and the community has not been critical of the revenue and expenditure budget management of the village. The amount of funds that must be managed by the village government has a high management risk, especially for the officials. The phenomenon of local officials in the case of the law should not be repeated in the scale of village government. The village government officials and the village community represented by the

BPD must have an understanding of the legislation and other provisions, and the ability to carry out recording, reporting and accountability.

Communitymanagement has been the model which governments and donors promote for the provision of water services in the rural world since the 1990s (de San Miguel, Flores, Vilchis, Tovar, & Pedraza, 2015; Moriarty, Smits, Butterworth, & Franceys, 2013; Smits et al., 2013), but it's still can be applied in Indonesia.

The community management concept is based on the principles of common pool resources and collective action theory, which argue that individuals voluntarily organize themselves to obtain benefits from the use of natural resources, and for that they create and enforce rules to manage them (Ostrom, 2000). Neoliberal influences agendas that consider water as a commodity for which access must be paid (Bakker, 2007). Some authors who criticize community management in rural areas water service believe that these two influences are incompatible and this may be one of the reasons why the model is not completely successful (van den Broek & Brown, 2015). Under community management in water service provision, communities are expected by government institutions or donors to constitute organizations for operating and maintaining the services, collect water tariffs, and conduct repairs, among others (Mandara, Butijn, & Niehof, 2013). Despite the fact that these schemes have contributed to significant progress in water access worldwide (e.g. to increase coverage and service levels in rural areas) (Moriarty et al., 2013), community organizations struggle with many aspects of the service, including: aging of infrastructure, water quality monitoring, financial management (Kayser et al., 2014), lack of users' participation and funds for operation and maintenance (van den Broek & Brown, 2015). These aspects are particularly complex in rural areas due to the nature of water services (e.g. high capital and replacement costs), and the characteristics of rural settings (e.g. scattering, low density, poverty, low availability of trained personnel) (Wedgworth et al., 2014).

The limitations of community management for water service provision in rural areas have led to the recognition that these organizations demand on going post-construction support (Foster, 2013; Kayser et al., 2014; Mandara et al., 2013; Moriarty et al., 2013; Whittington et al., 2009). However, there are countries which still lack of policies or formal institutional structures to back these organizations (Harvey & Reed, 2007; Kayser et al., 2014; Whittington et al., 2009).

Without proposing an alternative, suggest that the request for post- construction support made by practitioners and the academy is an indication that the community management model is not working (van den Broek & Brown, 2015). There is a large volume of research on different dimensions of access to water in rural settings. There are studies dealing with the lack of coverage (Bain, Wright, et al., 2014); the deficient water quality or safety (Bain, Cronk, Hossain, et al., 2014; Bain, Cronk, Wright, et al., 2014; Heitzinger et al., 2015; Macharia, Yillia, Muia, Byamukama, & Kreuzinger, 2015); advantages and limitations of community management (Bernal, Rivas, & Pena, 2014; de San Miguel et al., 2015; Harvey & Reed, 2007; Mandara et al., 2013), and models for post-construction or external support (Davis et al., 2008; Kayser et al., 2014; Smits et al., 2013; Whittington et al., 2009). However, to our knowledge, limited studies address this issue by integrating these different dimensions. Therefore, this research involves the study of managerial, technical, and post-construction support aspects together, in Desa Parakan rural water supply systems. The four systems were community managed with differences on their levels of resources, capabilities, and compliance with legal, financial, technical and managerial standards of service provision but with the similarity of lacking on external

support. The research aims to provide evidence on the diversity, complexity and challenges these systems face. This evidence can contribute to design policies and strategies required to ensure safety and sustainable water services that consider diversity of rural settings, as required by the United Nations post-2015 development agenda.

2. Methodology

This case study used a multiple-case design (Yin, 2014). Qualitative and quantitative methods were used (mixed methods). Qualitative methods involved semi structured interviews with water managers and inspection to communal water system, and quantitative methods included sampling and analysis of water quality. The adoption of the mixed methods approach contributes to reduce errors, bias and a guard against some threats to validity and reliability (Robson, 2011). The study area of this paper is Parakan Village in Ciomas, Bogor.

2.1 Study Area

The systems provide water to around 30% of the population from 2 rural settlements in the municipality of Ciomas, West Java, Indonesia. Figure 1 shows the study area and the location of the settlements served.



Figure 1: Desa Parakan, Ciomas Bogor

Source: Google Maps

The territory is mountainous located on the Salak range, with altitudes between 500 and 1000 m (Wikipedia, 2013) basic socioeconomic characterization was carried out within this research. Systems' subscribers were families with an average of five members. The main demographic characteristics were low fecundity, a higher male population is about 53%, and the preponderance of people about 26-40 years. Regarding education, people in Desa Parakan 49% completed primary school, only 1% completed bachelor degree. 30% of homes were built with inadequate materials, mainly lack of floor, and 70% of households had access to improved sanitation. People's livelihoods were dependent on small scale rice farming and shoes small industries, which provided income levels generally below the national legal monthly minimum wage on Rp 2.000.000.

The study area was selected because this area developed a project with interventions on natural resources conservation, farmers' and shoemaker small industry wellbeing in this region. The study of water supply community entrepreneurship development was considered an integral part of the wellbeing of these communities.

2.2 Data Collection and Analysis

Leaders of the communal was identified using a snowball sampling approach (Robson, 2011), starting with managers contacted through the social worker from water supply community. Semi-structured interviews were carried out with managers from the four systems. The interviews addressed issues of history, evolution, organization, compliance of legal requirements, staff, communication, participation, institutional support, operations, commercial and financial aspects, challenges, and community participation.

3. Results and Discussion

3.1. Managerial Aspects

The studied collective systems covered approximately 30% of the inhabitants in the region. The uncovered population had individual systems. This lack of universal coverage is typical of rural regions around the world, where providing adequate water supply to small, remote and scattered rural communities is a challenge that is not easily met (Swatuk & Kgomotso, 2007). Despite the global progress with the MDGs from 2000 to 2015, the proportion of the population with access to improved sources in the rural areas remain substantially lower, compared to the urban population (Bain, Wright et al., 2014). The system where the small number of users have difficulties between them to agree on managerial issues (e.g. tariffs) prevented them to constitute a formal organization.

In general, the systems fulfilled some legal requirements such as having Statutes and Internal Rules for the member of community. However, water supply Community in Parakan organizations was not registered with the regulatory agency of the State for public services. The managers argued fear to be privatized as the reason to avoid fulfilling this requisite (formalization). The requirement to force community-based organizations to fulfil the same standards of large operators represents a condition of inequality and is one of the factors that prevent them to formalize (Dupuits & Bernal, 2015).

Financial aspects from the community has the concern to financial aspects, tariffs were set in annual system users' assemblies. The tariffs set were low and flat. In this system, when severe damages occurred, resources were obtained from recovery of the default rate. The organization made investments, including replacing pipes, building storage tanks, and improving the office. Managers believed the resources from tariffs were sufficient for operations, but scant if major repairs or expansions were needed. To address the lack of resources, the board carried out operations activities involving users. For example, gatherings to plant trees at the headwaters, using trees from local species provided by subscribers from their own farms were developed.

Additionally, contributions in money and labour were requested to customers when damages occurred. Managers believed the money raised was enough because no personnel was hired. Resources from tariffs were only for small investments and repairs. Lack of resources for operations has been identified as one of the main problems that can lead to failure of community-managed systems (van den Broek & Brown, 2015).

Financial aspects in these community organizations show that the abilities and resources among the committees did not obtain enough resources to ensure compliance with legal, financial, technical and managerial standards of service provision. Thus, management of water systems is particularly challenging in rural settings since typically resources are insufficient (Strauch & Almedom, 2011).

Most systems have an inadequate tariff structure, insufficient to cover operations costs. The contribution of users to at least the full cost of operations through fees is widely recognized as a key factor for sustainable water services (Mandara et al., 2013). In contrast, sustainability is at risk if some users get higher benefits, paying few costs, which could get some users unwilling to follow the system rules (Ostrom, 2000). However, in some of the studied systems poverty, seasonality and unreliability of income, make it difficult for people to contribute financially. Even in developed countries, limited revenues due to low population densities, poverty, geographically large service areas, and rate structures which fail to include the full economic costs of the systems make small rural supply to provide sub-optimal services (Wedgworth et al., 2014).

Information related to staff availability and their training, did not have a caretaker. One user usually performed system labours without support from others. Occasional and emergency repairs were also made under this modality. A caretaker was hired under a salary that failed to meet legal standards. However, the caretaker was illiterate. The secretary and caretaker had lower levels of education compared to other systems' collaborators. Additionally, funds were not available to train personnel. This lack of capacity development may be a possible factor influencing the weaknesses mentioned.

3.2 Technical Aspects

Inspections to the systems helped to identify technical issues related to the infrastructure, these issues, and water managers were aware and developed solutions, such as headwaters protection and artisanal repairs. However, these repairs were made using only common sense and despite the fact, they allowed continuous operation, this was highly vulnerable to new failures. Other situations were not seen by community organizations as areas for improvement. For example, the need of fittings and valves for optimum hydraulic operation, and the inadequate functioning of grit chambers. Due to the lack of resources for investment, builders left the communities faced increasing demands for water with the same infrastructure capacity, and deterioration of units and pipes.

3.3 Perceived Difficulties for Service Provision

Difficulties for service provision expressed by the managers included in lack of agreement among users to create an organization or join an existent; lack of participation of users in operations; and lack of all kind of resources to facilitate service provision was difficulties identified were: dispute with the municipal government to control the system; conflicts with people, which owned lands at the

headwaters; objection of some users to water chlorination; and community complaints for service outages in rainy season due to loss of water quality. Some of these aspects could be categorized among the factors raised in the common pool resources theory, as factors that influence the success of collective action (Ostrom, 2000).

3.4 Post-construction Support

There were investments by the municipal government in the systems with the funds local governments in developing entrepreneurship capabilities for this water supply community, from the national government to invest in water and sanitation. Leaders expressed that they eventually received support from the local government as materials for emergency repairs, as “payment for political favours”. They also received government support to solve conflicts between users, when adjusting tariffs, or during dry season. In general, managers wanted training in operations, and accounting. However, the local government provided training on job skills for caretakers, but the training was offered to staff from the City Hall with no relation with the rural systems. One of the concerns was the systems’ management was given to a joint public-private entity the municipal government tried to constitute.

Therefore, training on administrative and financial aspects, plumbing, operations, or undertake investments for the replacement of infrastructure, or the acquisition of land at the headwaters were perhaps more relevant strategies to help these organizations.

3.5. Synthesis of the Challenges Faced by Rural Community Organizations

In summary, the challenges encountered in these systems are similar to those identified in community-managed organizations around the world: aging infrastructure, difficulty in carrying out replacements, low cost recovery, inadequate human resources, poor staff training and financial management (Harvey & Reed, 2007; Kayser et al., 2014; Moriarty et al., 2013; Smits et al., 2013; Wedgworth et al., 2014), lack of information for decision making (Roa-García & Brown, 2009; Smits et al., 2013). In addition, this community had contact or positive relations with the local government. Some of these characteristics were identified by Harvey and Reed (2007), as common causes for the breakdown of community-managed systems.

The absence of political support and inadequate or improper use of funds are considered part of the fundamental problems that must be addressed to improve the operation of water supply systems worldwide (Lee & Schwab, 2005).

This case fits claims of Smits et al. (2013) who argued that post-construction support should be an integral part of community management, because the limited number of users prevent achieving economies of scale to generate the revenues to access technical and financial expertise, and these costs are high to be paid via water charges. According to Moriarty et al. (2013), this support is necessary in cases like that reported here, where first-time access has been achieved and the need is sustainable services over time, through schemes in which all aspects of service could be funded. However, the best configuration to provide this support

remains unknown (Kayser et al., 2014). Thus, this is an area where research needs to be developed.

The low capacity of these small municipalities as one of the main causes for the precarious conditions of rural water services. Besides the low capacity and resources, some authors note that corruption at the municipal level can hinder effective post-construction support schemes (van den Broek & Brown, 2015).

It has been considered that external support can come from multi-level organizations, which may be networks of community providers that besides supporting capacity development around financial, technical and managerial aspects, can gain access to domains of public policy formulation. This type of organizations to other community-based organizations could not address necessary aspects of post-construction support in rural communities such as transfer resources for rehabilitation and extension of infrastructure.

4. Conclusion

This research analysed managerial, technical, and post-construction support aspects in four water supply systems operating in Desa Parakan Ciomas Bogor. The findings illustrate that small rural water supply had concern for capacity of communities to manage these systems needs to be enhanced. Additionally, it appears that the smaller the system, the greater the difficulties to provide the service, therefore, greater external support would be required.

The study contributes an understanding of small rural water supply, providing evidence for policy formulation that allow strengthens community management organizations, which are crucial to ensure sustainability of water services in rural areas. In particular, the changes on water access and quality indicators proposed on the United Nations post-2015 agenda will represent for governments from development countries to substantially increase their efforts and presence in rural areas. The efforts should be directed towards improving water infrastructure, source protection, monitoring and surveillance coverage, and providing effective post-construction support.

Most of the issues that emerged in relation to the situation of water supply systems in this case study have been part of the international community calls to improve water provision in rural areas. Although there is a large volume of research on individual aspects of rural water supply, few studies integrate the various dimensions addressed here and combine qualitative and quantitative methods.

Based on the results from this case, some recommendations to government institutions include the need to design on-going post-construction support schemes that include key factors like: training on administration, operations, legal aspects, but also mechanisms to transfer resources for rehabilitation and extension of infrastructure, particularly in places where the low number of subscribers, scattering and poverty, prevents achieving economies of scale and collecting enough revenues to bear these major costs. In addition, the mechanisms need to be accessible and transparent, and based on needs assessments, and technical criteria instead of patronage or corruption for a real impact on equity and wellbeing.

References

- Bain, R., Cronk, R., Hossain, R., Bonjour, S., Onda, K., & Wright, J. (2014). Global assessment of exposure to faecal contamination through drinking water based on a systematic review. *Tropical Medicine and International Health*, 19(8), 917-927. doi:10.1111/tmi.12334
- Bain, R., Cronk, R., Wright, J., Yang, H., Slaymaker, T., & Bartram, J. (2014). Fecal contamination of drinking-water in low- and middle-income countries: A systematic review and meta-analysis. *PLoS Medicine*, 11(5). doi:10.1371/journal.pmed.1001644
- Bain, R., Wright, J., Christenson, E., & Bartram, J. (2014). Rural: Urban inequalities in post 2015 targets and indicators for drinking-water. *Science of the Total Environment*, 490, 509-513. doi:10.1016/j.scitotenv.2014.05.007
- De San Miguel, J. A., Flores, M. M., Vilchis, F. L., Tovar, L. A., & Pedraza, A. B. (2015). Community water management in Latin America and the Caribbean: Challenges for Mexico. *Journal of Sustainable Development*, 8(3), 102-112. doi:10.5539/jsd.v8n3p102
- Dupuits, É., & Bernal, A. (2015). Scaling-up water community organizations: The role of inter-communities networks in multi-level water governance. *Flux*, 99(1), 19-31. Retrieved from <https://www.scopus.com/inward/record.uri?eid=2-s2.0.084937883456&partnerID=40&md5=60e98522bc5d65b833e78712fc7c3f04>
- Foster, T. (2013, 10 10). Predictors of sustainability for community-managed handpumps in subsaharan Africa: Evidence from Liberia, Sierra Leone, and Uganda. *Environment & Science Technology*, 47(21). doi:10.1021/es402086n
- Harvey, P. A., & Reed, R. A. (2007). Community-managed water supply in Africa: Sustainable or dispensable? *Community Development Journal*, 42(3), 365-378. doi:10.1093/cdj/bsl001
- Hunter, P., Pond, K., Jagals, P., & Cameron, J. (2009). An assessment of the costs and benefits of interventions aimed at improving rural community water supply in developed countries. *Science of the Total Environment*, 407(12), 3681-3685. doi:10.1016/j.scitotenv.2009.03.013
- Kayser, G. L., Moomaw, W., Portillo, J. M., & Griffiths, J. K. (2014). Circuit rider post-construction support: Improvements in domestic water quality and system sustainability in El Salvador. *Journal of Water Sanitation and Hygiene for Development*, 4(3), 460-470. doi:10.2166/washdev.2014.136
- Lee, E. J., & Schwab, K. J. (2005). Deficiencies in drinking water distribution systems in developing countries. *Journal of Water and Health*, 3(2), 109-127. Retrieved online from <http://www.scopus.com/inward/record.url?eid=2-s2.0-27144552783&partnerID=40&md5=5352598be95d7edea683933fc98a6ea5>

- Mandara, C. G., Butijn, C., & Niehof, A. (2013). Community management and sustainability of rural water facilities in Tanzania. *Water Policy*, 15(2), 79-100. doi:10.2166/wp.2013.014
- Moriarty, P., Smits, S., Butterworth, J., & Franceys, R. (2013). Trends in rural water supply: Towards a service delivery approach. *Water Alternatives*, 6(3), 329-349.
- Murtinho, F., Eakin, H., López-Carr, D., & Hayes, T. M. (2013). Does external funding help adaptation? Evidence from community-based water management in the Colombian Andes. *Environmental Management*, 52(5), 1103-1114. doi:10.1007/s00267-013-z
- Ostrom, E. (2000). Collective action and the evolution of social norms. *Journal of Economic Perspectives*, 14(3), 137-158. Retrieved from <https://www.scopus.com/%20inward/record.url?eid=2-s2.0-%200000769811&partnerID=40&md5=171598bfc1b36701c1f6%2071a52b097e9f>
- Parker, A. H., Youlten, R., Dillon, M., Nussbaumer, T., Carter, R. C., Tyrrel, S. F., & Webster, J. (2010). An assessment of microbiological water quality of six water source categories in north-east Uganda. *Journal of Water and Health*, 8(3), 550-560. doi:10.2166/wh.2010.128
- Roa-García, C., & Brown, S. (2009). Assessing water use and quality through youth participatory research in a rural Andean watershed. *Journal of Environmental Management*, 90(10), 3040-3047. Retrieved from <http://www.scopus.com/inward/record.url?eid=2-s2.0-67651183617&partnerID=40&md5=90319facf50a91cca67c80f580c87ea7>
- Robson, C. (2011). *Real world research: a resource for users of social research methods in applied settings*. UK: Sussex.
- Smits, S., Rojas, J., & Tamayo, P. (2013). The impact of support to community-based rural water service providers: Evidence from Colombia. *Water Alternatives*, 6(3), 384-404.
- Van den Broek, M., & Brown, J. (2015). Blueprint for breakdown? Community Based Management of rural groundwater in Uganda. *Geoforum*, 67, 51-63. doi:10.1016/j.geoforum.2015.10.009
- Williams, K. (2014). Public acceptance of plantation forestry: Implications for policy and practice in Australian rural landscape. *Land Use Policy*, 38, 346-354. doi:10.1016/j.landusepol.2013.11.023
- Yin, R. (2014). *Case study research: Design and methods (5th ed.)*. California: Sage Publications.