

Challenges Facing Community Management of Rural Water Supply: The Case of Ohangwena Region, Namibia

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Abstract: This study investigated the critical success factors for the community management of rural water supplies in the Ohangwena Region, Namibia. Rural communities in Namibia receive water through the Community Based Management (CBM) strategy, which necessitates water governance decentralization, thereby enabling local communities to participate in the management of their water resources. In pursuance of this policy and philosophy, a large number of water point committees have been created nationally. At least half of the existing water points in rural areas in Namibia are faulty and dysfunctional, however, and the majority of people are still struggling to access clean water. The study endeavoured to examine key considerations that have a positive impact on the success of the management of the rural water supply in Namibia, using the Ohangwena Region as a case study. Qualitative and quantitative methods were used in the study. The findings from the study affirmed that governance, leadership attributes of the committee members, training and capacity building, level of community involvement, coordination and support are critical success factors for effective management of rural water supplies. Finally, a rural water management model was developed, which is anticipated to contribute towards improved management of rural water provision in the study area.

Keywords: critical success factors, community management, rural water supply, water point committees, governance, stakeholders, public participation.

Introduction

According to the World Health Organization (WHO) about 2.1 billion people globally lack 'safely managed' drinking water, including 785 million people without 'basic' drinking water services of whom four out of five live in rural areas.¹ Almost half the world's population live in rural areas, mostly in Asia and Africa.² About 900 million of the rural population lack access to the basic water supply which results not only in tremendous human health and economic costs

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but also creates gender and other societal inequalities. There is a huge gap in providing safe drinking water to everyone in rural Africa in comparison to progress made in other continents.

Rural water supply in most developing countries have been shaped by mismanagement.³ The resultant effect of this mismanagement is increased poverty, tremendous human health costs, as well as gender and other social inequalities.⁴ Water access and provision remain a challenge in sub-Saharan Africa, and Namibia is no exception to this phenomenon. For example, a study by Takouleu reveals that 20 percent of the Namibian population has difficulties accessing reliable sources of water, and this challenge is exacerbated by poor water management, especially in rural settings.⁵ Furthermore, the Harambee Prosperity Plan (HPP), the national economic development plan published in 2016, states that less than 70 percent of rural households have access to potable water (compared to the World Bank figure of 86 percent). Over 50 percent of Namibians live in rural areas, and many live far from available water sources.⁶ The management of rural water supply in the country is in dire need. The present study seeks to assess the challenges and critical success factors of community management of rural water supply in Ohangwena region.

Rural water points make potable water available to communities, schools, clinics, hospitals, and other facilities. The United Nations Sustainable Development Goals (SDG) set targets and metrics to monitor rural drinking water progress primarily under SDG 6 (drinking water).⁷ In Africa, rural water supply is generally considered and known by community management as a communal, off-site water supply system used for domestic, and frequently productive, purposes with limited or no regulatory oversight.⁸

Community management can have many interpretations.⁹ According to Moriarty et al., "Community management is based on a set of principles (both explicit and implicit) that include: 1) community participation in the development of the water system; 2) community ownership of the system, and 3) willingness and ability of the community to carry out operation and maintenance."¹⁰ Furthermore, Kamruzzaman et al. emphasize that community management allows the beneficiary community to develop, own, and operate and maintain their facilities or systems.¹¹ The central importance of community management is to empower and equip communities to take control of their development.

Water supply in rural areas is faced by several challenges, such as poor economic conditions, location of settlements in environmentally fragile areas, management models dominated by diverse cultural values, and associated cost recovery challenges.¹² Furthermore, scattered settlements bring about challenges for infrastructure provision. Oftentimes, the condition of infrastructure systems becomes poor due to technical, financial and managerial limitations. As a result, the rural population depends on local water sources (wells, hand pumps, river), which are frequently contaminated.¹³

Namibia is one of the most sparsely populated countries in the world, with a population of 2.3 million people living on 842,000 sq km of land in one of the driest areas in sub-Saharan Africa.¹⁴ Approximately 52 percent of the Namibian population lives in rural areas, whereas 94 percent in Ohangwena region lives in rural areas.¹⁵ The Ohangwena region, one of fourteen in Namibia, is located in the north of the country, covering a total of 10,582km² and bordering on the Cunene Province of Angola in the north but also sharing a small border with the Cuando Cubango Province in the far north-east. Domestically, Ohangwena shares borders with

Kavango, Oshikoto, Oshana, and Omusati regions. Eenhana is the largest town and the capital of the Ohangwena region. The region has eleven constituencies: Eenhana, Endola, Epembe, Ohangwena, Okongo, Omundaungilo, Ondobe, Ongenga, Oshikango, and Omulonga.

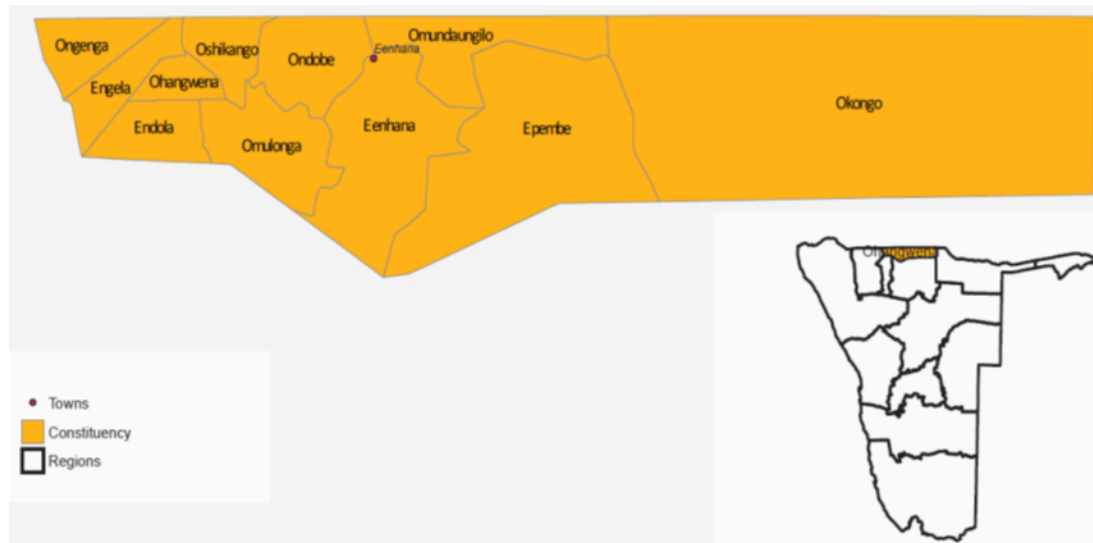


Figure 1: Administrative Map of Ohangwena Region, Source: Ohangwena 2011 Census Regional Profile

The 2011 Namibia Population and Housing Census results showed that Ohangwena had a population of 245,446 of which 133,316 were women, and 112,130 were men. There were 43,723 households with an average of 5.6 persons per household. The region has the highest population density in the country. The National Population Census in 2011 indicated that 56 percent of the households in Ohangwena had access to safe water. The results further show that about 88 percent of households in urban areas had access to safe water, compared to only 51 percent in rural areas. Seventeen percent of households in rural areas relied on rivers, dams or streams as their primary source of water for cooking and drinking. At the constituency level, it was observed that Epembe and Omundaungilo had the lowest percentages of households with access to safe water, at slightly over 20 percent.¹⁶

Namibia adopted a community management model for its rural water supply aimed at increasing water supply and water use efficiency for sustainable future development.¹⁷ This model gave hope for a permanent solution to the water challenges experienced in the country. The new reforms called for devolution of water governance, giving communities full participation and management of their water resources. Approximately eight thousand water points have been established in communal areas, of which 80 percent have water point committees.¹⁸ Water points were created around the country to empower water users and enhance the efficiency of water management. The committees were formed and mandated to take responsibility for the operation and maintenance of water points to foster a sense of ownership.¹⁹ According to the Ohangwena Directorate of Rural Water Supply, there are 1232 water points in the region, of which 852 are functional, whereas 381 are non-functional. These

water points are supplied by diesel engines (202), solar (7), electric pumps (3), hand pumps (1) and pipelines (1015).

Despite all these efforts, the current state of affairs regarding community management of rural water supply in Namibia is dire. It is estimated that at least half of the existing water points in rural areas in Namibia are faulty, costly, and hard to keep operational.²⁰ The majority of people find it difficult to access potable water. According to Karuaihe et al. the rural water supply is difficult to sustain and remains problematic in most parts of the developing world, including Namibia.²¹ Therefore, the present study investigated challenges facing community management of rural water supply in the Ohangwena region with a particular emphasis on the water point committees.

Namibia Water Policy and Rural Water Supply Strategy

Namibia is an arid country that is regularly afflicted by droughts. A prolonged drought of three consecutive seasons (2015-17) resulted in a significant drop in groundwater, dam and river levels. After independence, the Government of the Republic of Namibia passed numerous legislations and guidelines to address water scarcity, supply, and distribution issues in line with the global and national challenges. These reforms and changes to legislation and regulation aimed to replace the old apartheid-era acts and policies that governed the water sector.²² The government deemed not having access to safe water as a threat to life that destroys opportunity and undermines human dignity.²³ Hence, water reorganizations were crucial because historically, rural water supply in Namibia was characterized by racially-based inequality and strong subsidizing of certain areas.

Due to the demand surpassing supply, the government realized that water had to be managed and conserved accordingly.²⁴ Despite several efforts to reform the water sector by the repeal of previous legislation and guidelines, the Water Act 54 of 1956—which is often referred to as the Old Act—passed by the then apartheid regime of South Africa, is still in force. Water Act 54 has remained in effect because the Water Resource Management Act 24 of 2004 and the Water Resource Management Act 11 of 2013 have not effectively been operationalized.

In addition, least half of the existing water points in rural areas in Namibia are not functional, making it difficult for the majority of people to access potable water. Over the years, rural communities in the Ohangwena region experienced water scarcity, forcing them to drink unsuitable and salty water for survival. The challenges of water governance in rural areas include poor management of services as well as infrastructure failure.²⁵ Acquiring a suitable number of staff members to execute duties effectively and efficiently, as well as establishing and renovating office space for the officials is a big challenge. Very poor rural water supply infrastructure is visible in all regions. During the apartheid regime, access to water was regulated by the South West Africa administration which covered the costs of running and maintaining the infrastructure. Hence, there was little local coordination.²⁶ There is presently a need to reduce bottlenecks to service delivery.²⁷ Decentralization needs to be increased to lead to better performance.²⁸

Despite all these challenges, the Namibian government has been credited for reforming and developing progressive policies congruent with the Constitution and conforming to international best practices to expand potable water access, especially in rural areas, since

independence.²⁹ However, due to poor policy implementation, weak regulation and enforcement, the water sector has been hampered by severe under-investment, limited capacity and technical skills, as well as poor coordination among stakeholders.³⁰ Although management structure and a legal framework existed with the Water Resource Management Act 11 of 2013, legally, it is not yet operational. The non-commencement of the Act has created more challenges in the water sector, such as: continued implementation of laws which have some provisions that do not resonate with the Constitution; unclear delineation of roles due to legal uncertainty; and the overlap of roles which could lead to conflict between actors. Community management of water points is examined from a good governance perspective that recognizes the necessity of partnerships, community ownership of resources, and strategies meant to develop the community.³¹ It also encapsulates participation in management of a basic service which is critical for community development.³²

Methodology

To uncover the critical success factors for community management of rural water supply, the paper employs a mixed methods approach to bring out the lived experiences of people and officials involved in management of water points in rural areas. The following questions were asked: (a) How effective and efficient is Ohangwena in the provision of water supplies in rural areas? (b) Is the Ohangwena region approach an approach that other regions could adopt? (c) What are the risks in community management of rural water supply? (d) What is the most effective framework for critical success factors in community management of rural water supply in the Ohangwena region? (e) What lessons can other countries embarking on similar programmes learn from the Ohangwena Region experience?

The data collection approach was two-fold, consisting of both secondary (journals, media, official reports) and primary data sources (structured interviews, questionnaires). The first step was to engage relevant literature on the subject and explore official and other documents on rural water supply management in Namibia, critically interrogating the policies, strategies and programmes dealing with the rural water supply challenges. Secondary sources were augmented by an empirical study which involved in-depth interviews with nine key informants. These key informants included persons from the Directorate of Rural Supply in Ohangwena Region. The head of the Regional Office and three directorate officials responsible for rural water supply were interviewed to elicit the strategies and methods of rural water management in the region. Additionally, four chairpersons of the Local Water User Association and four chairpersons for the Water Point Committee were interviewed as well. They were critical for the study as they possessed first-hand and lived experiences in managing water points. The data from the interviews were recorded, transcribed, coded, thematized, and compared with literature and information obtained from official reports. Themes were developed based on the main research question and those emanating from the data concerning the challenges of rural water supply in the region.

Water Management Model

In order to appreciate the water management challenges facing Namibia, it is important to unpack the approaches followed in managing community resources such as water. The

community management model of water supply systems is celebrated as one of the most important for remote communities worldwide to facilitate access to drinking water. This model of rural water services has proven to be a noteworthy approach to guarantee the sustainability of water supply where private and public entities do not work.³³ In this model, community members play a pivotal role in the operation and maintenance of water services, including the water treatment process, billing, and maintenance procedures.³⁴

The community management model in post-independence Namibia came into prominence in 1998.³⁵ The literature links it to the Decentralization Enabling Act of 2000 and National Water Policy 1998. Until 1998, the rural water supply was still centralized but following the enactment of the Decentralization Enabling Act of 2000, rural water supply management was decentralized and internationally recognized approaches (community management model) were adopted. Various institutions played a major important role with the Ministry of Agriculture, Water and Forestry playing a coordinating role and setting standards.

The sustainability of the community management model depends on technical, managerial and financial aspects to ensure the long-term sustainability and functionality, as well as the participation of users.³⁶ The mixture of these aspects allows community-based service providers to meet favourable conditions to operate and manage their organizations and water services properly. Community management was found to be the best solution to the failure of centralized government service delivery that could not sustain access to clean water services, especially in rural areas.³⁷ Dyer underscored that community management is not a concept or an approach applicable to less developed countries only – in the USA, approximately 52,000 community water systems were serving an average of fifteen households each in 1990.³⁸

Community management empowers and prepares the community members to undertake a leading role in planning, construction, financing, and managing water supply systems necessary for water sustainability after the implementing agency/government has left the community. Because of community empowerment, it was found to be the best alternative strategy to deliver greater access and equity, thereby ensuring sustainable rural water service delivery in the country.

The community management model was endorsed as one of the guiding principles for rural water delivery at the 1990 New Delhi Global Consultative Conference on Safe Water to review the International Drinking Water Supply and Sanitation Decade. Since then, it has become the dominant and standard project management strategy in the United Nations Development Programme (UNDP).³⁹ This approach was complemented in the late 1990s by the demand-responsive approach (DRA) championed by the World Bank. The DRA was intended to underpin community management. The demand-driven approach was adopted where communities become key partners in the project identification, planning and design, share part of the construction cost, and take on the responsibilities of operation and maintenance.

According to the World Health Organization, community management means that the beneficiaries of water supply have the responsibility, authority and control over the development of their services.⁴⁰ However, this management model has some limitations, including: lack of institutional support, inadequate financial resources, weak tariff schemes, maintenance issues or difficulty in obtaining spare parts, and lack of support from external

entities.⁴¹ The success of this model depends on further commitment from multiple stakeholders to attain better results and benefit a larger number of people.

This study investigated the critical success factors of rural water supply by engaging various stakeholders specialized in the rural water sector. Their practical experiences provided a valuable interpretation of the day-to-day problems of managing rural water supply services. These in-depth insights allowed for a constructive identification of the key features related to the success of community management.

Findings and Discussion

Data obtained from the key informants indicate that a management structure and a legal framework existed and clearly defined roles and responsibilities of different stakeholders are in place as guidelines but legally not yet operational. As a result of legal uncertainty, there was an overlap of roles which could lead to conflict between the actors. This has resulted in weak leadership authority and unclear delineation of functions among the Water Point Committees (WPCs) and hence the continuous reliance on government for support.

Informants also pointed to a lack of community cohesion. This compromised sound governance principles. Communities are expected to work together for the effective operation of the water points. An effective WPC needs to hold several meetings, monitor, collect and save financial contributions from users, devise and enforce rules (including rules around access and use), and undertake or secure maintenance and repair work.⁴² However, the study found that these activities were not always taking place. Lack of leadership and ineffective management contributed to dysfunctionality of some water points, dissolving of the committees, and growing mistrust between committee members and the users. Regular meetings are critical for information sharing about expenditures of the money that members contributed. It is a platform to amplify the voices and influence of some water users. The study also found that the model has failed to recognize the role of traditional leaders, levels of education of the committee members, and gender in the management structures of water points.

The Water Resource Management Act, 13 of 2013, section 12, makes provision for establishment of a water regulator. This independent body responsible for water regulation and pricing was not operational during the study period. Hence the water fees varied at different water schemes and points. This implies that prices were imposed without heeding stipulations in the legal documents, which is a critical factor in a successful model. Community participation in design and implementation of all phases of rural water supply points was found to be minimal. The participation of the community members is crucial for the functionality and sustainability of the community water points. Whaley and Cleaver also recommend full participation of community members during the design and implementation phase, as it instils a culture of ownership among users.⁴³

Furthermore, this study also affirmed that there were no economic incentives—"there will be no commitment without incentives"—and this is an essential component to retain committee members. Also, there were no periodic elections of the committee members—"since I was elected more than 20 years ago, no replacement/election was held."⁴⁴ In the absence of incentives and periodic elections, the majority of committee members resigned, leaving the work of WPCs in the hands of very few or without any committee members.

The criteria for aspiring committee members were not clear. In fact, there are no criteria required to become a committee member—the only requirement is to be a user of the particular water point where elected to serve with nothing in place to determine their leadership capacity and levels of literacy. These were cited as factors that led to the breakdown of many water points in the study area. Another critical factor found lacking in the study area was training and capacity building (support in technical and administrative issues) for the committee members. Irrespective of any management model, the capacity building plays a crucial role in the improvement of water provision and services.⁴⁵

Although rural water services are decentralized, community members still have to travel long distances to pay for water services and buy spare parts. The transport cost to reach towns is more than the cost of water, which has caused many community members to abstain from paying for water.⁴⁶ Insufficient support was provided to the community after the construction of the water point. Support to the community consists of monitoring visits, training, maintenance and repairs.⁴⁷ There was no regular monitoring or visits to see how they were performing, with interviewee complaints about officials not visiting them. The quality and sustainability of rural water supply services depend on the support provided to the community in the form of regular monitoring, technical assistance and retraining of service providers.⁴⁸ Furthermore, there was a lack of monitoring and evaluation by government officials, lack of engagement between the community and the officials, as well as lack of information dissemination into the community. An official in charge of water supply in the region said "the idea to visit the community is important. When comparing the past with the present, you can see a big difference, the government resources [are] now limited, everything is limited. You want to work but you do not have the resource to enable you to do the work. this could be a contributing factor to the closure of some water points."⁴⁹

Monitoring as part of the post-construction support involves testing the quality of water, checking accounts, and inspecting the water supply status.⁵⁰ Participants in the study were concerned about quantity and quality of water. Some water points were abandoned due to saline water and forced communities to revert to prior ways by digging *omifima*—shallow excavations created by digging to access ground freshwater. If regular monitoring visits were done, technical advice or alternatives could be provided. Many boreholes were left to animals as the water was not fit for human consumption. The breakdown and non-functionality of the water points and WPC can be attributed to the little support provided. This confirmed Verhoeven and Smits' assertion that the quality and sustainability of rural water supply services improves when community-based service providers receive regular support.⁵¹ A few studies, have confirmed the benefit of post-construction support.⁵² A comparison of communities receiving and not receiving post-construction support noted the high performance of the service providers who are regularly receiving support compared to the ones not receiving support. A study in the Dominican Republic concluded that there is high community participation at the systems visited more often.⁵³ Furthermore, in Chile and Honduras changes in performance and sustainability of rural water provision were observed following establishment of post-construction mechanisms.⁵⁴ In sub-Saharan Africa, measurable improvement is also noted in South Africa.⁵⁵

Post-construction support mechanisms are clearly articulated in Namibia's National Water Supply and Sanitation Policy.⁵⁶ However, a lack of resources hindered the fulfilment of the mandates. The focus is instead more curative in nature than preventative. Verhoeven & Smits found that due to lack of a travel budget, support could often only be provided during part of the month. This was echoed by the officials who participated in the study.⁵⁷ This is against what they are supposed to do by law.⁵⁸ Post-construction support is critical because it determines whether users engage with the service or not. The post-construction phase concerns the day-to-day operation of the community management governance arrangements. It appears post-construction support is only a formal mandate in our study area.

Recommendations

The study identified the following critical success factors for the effective management of the rural water supply: leadership of the water management committees; community participation; training and capacity building; periodic elections; economic incentives for the committee members; and coordination with post-construction support by the government.

Considering the weak display of leadership authority in the region under study, a critical assessment must be performed to elect people with strong leadership qualities for the effective and continuous functioning of the water point committee and water points. The educational level, gender and age of the committee members should be considered during the election of members. Having skilled water management committees is critical for the effective and sustainable management of the water points. Taking into consideration the complex operations, processes and decisions, in addition to coordination challenges with multiple stakeholders, requires a committee with diverse skills. Continuous training to improve the skills of the committee members is critical and highly recommended. Apart from setting minimum education and skills levels for the committee members, it is also critical to consider incentivizing water committees as a strategy for attracting and retaining people with skills as volunteerism is unsustainable. Introducing social incentives for the committee members in a very creative way will encourage and retain volunteers.

Although community members were involved or participated in the initiation, installation and decision-making pertaining to their water points, increasing community participation in the design, selection of technology type, and implementation is critical for the sustainability of rural water supplies. It will lead to an increased sense of ownership of the water points among the community members.⁵⁹ Community members should be involved right from the start. The delineation of roles of different stakeholders should be clear to avoid confusion and conflict that might arise between the actors. Community support in terms of resources, regular monitoring visits, maintenance, repairs and professional support are critical for the effective management of the water points.

Harmonization of the legal frameworks is critical. Government should proceed with finalization and promulgation of all regulations of the Water Resource Management 11 of 2013 as required by Section 134 and ensuring full compliance with the provisions in the Act with the law. The Ministry of Agriculture, Water and Forestry should develop specific rules relating to the Constitution, powers of the water point committees, and appointment of the committee members. Compliance with sound governance principles should be encouraged and enforced,

including regular elections of committee members every three or five years. Contextual differences need to be considered when developing regulations (it is not one size fits all) because they can hinder the effectiveness of water management institutions. A study in the Kunene region on community-based water management during drought found that cultural models, kinship and reciprocity, replaced the formal rules laid down in the constitutions of water point associations.⁶⁰ Thus, rural water management rules should be flexible, taking into account the community contextual reality and that standard rules may not be applicable in all situations.

The Ohangwena Regional Water Board

The study supports development of a rural water management model for the study area. The model is built drawing ideas from the literature reviewed and the key findings of the primary data obtained in the area under study. The proposed model seeks to address challenges experienced in the study areas such as lack of community cohesion, role delineations of different actors, low revenue collection, lack of leadership, economic incentives, training of committee members and lack of post-construction support.

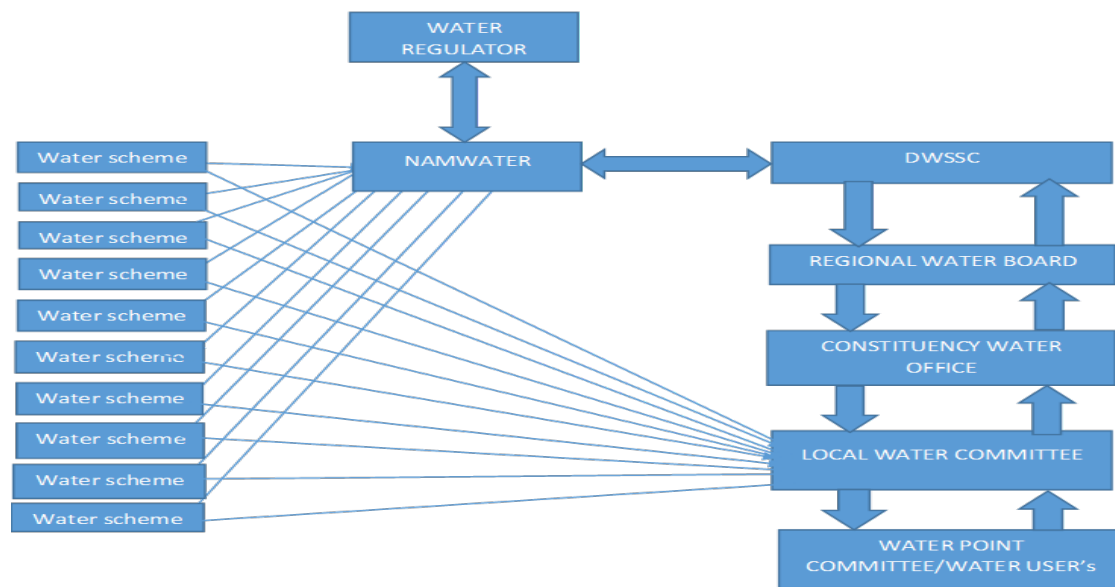


Figure 2: Proposed regional rural water management model, source: Salom 2020, p. 263.

The implementation of this model is expected to increase community participation and allow them to play a critical role in all phases of the rural water supply from the design stage, implementation, operation, maintenance, monitoring and evaluation. This is critical especially owing to the fact that since 1997 a community water management approach was adopted through the Directorate of Water Supply and Sanitation coordination (DWSSC) which falls under the Ministry of Agriculture Water and Forestry. This approach therefore necessitates the active participation of community players and the simplification of responsibilities and communication lines. The members of the proposed Regional Water Board (RWB) are drawn

from across all key sectors in the region. This body is made up of people with a variety of skills, including the traditional leaders and handle both management and governance responsibilities. Amongst other things, this model brings the following benefits to the region: a high sense of ownership, clear communication channels, improved revenue collection towards the cost of infrastructure, availability of skilled personnel, transparency and accountability. The model can be adapted to other rural settings with comparable socio-economic factors.

Conclusions

For effective implementation of the community management model adopted for rural water supply in Namibia, significant changes in water governance, policies, values and behaviours of community members are required. The role of traditional leaders and lack of incentives were identified as some of the major factors hindering the effective management of many water points. The study also identified the weak leadership structures due to undefined roles and responsibilities, the lack of community cohesion, poor democratic processes and lack of capacitation of water management committee members as key challenges affecting community water management.

In general, the study exposed some critical factors which might have contributed to the success as well as the factors that impeded progress in the studied region. It is on the basis of these identified key factors that a model has been proposed to reinforce the community participation and ownership of the water supply processes and also to ensure that there is a defined coordination between the community and the other important stakeholders. The capacitation of the water committees, strengthening of democratic processes and rewarding the volunteers serving in the community structures were noted as some of the possible ways of improving the state of affairs.

References

- Amer, Mohamed. 2004. "Community management of rural water supplies system for sustainability of the service." Paper presented at the Eight International Water Technology Conference, Alexandria, Egypt.
- Bock, Bernadette et al. 2008. "Rural water supply in Namibia: effects on natural resource management and livelihoods." Department of Business Management and Economics Institute for Cooperation in Developing Countries. Germany: Philipps-University of Marburg.
- Daemane, Moses. 2015. "Paradigmatic views and pragmatic requirements for sustainable rural water supply in the developing world: the analytic review – recommendatory study in rural water supply." *Global Journal of Human-Social Science* 15.6: 21–31.
- Dyer, Robert. 2006. "Community management of rural water supplies in South Africa: Alfred Nzo District Municipality case study." MBA thesis: University of KwaZulu-Natal.
- Falk, Thomas, et al. 2009. "Polycentrism and poverty: Experiences of rural water supply reform in Namibia." *Water Alternatives* 2.1: 115.

- Fielmua, Nicholas. 2011. "The role of the community ownership and management strategy towards sustainable access to water in Ghana: a case study of Nadowli District." *Journal of Sustainable Development* 4.3: 174–84.
- Government of Namibia. 2016. *Harambee Prosperity Plan*.
<http://www.gov.na/documents/10181/264466/HPP+page+70-71.pdf/bc958f46-8f06-4c48-9307-773f242c9338> [Accessed: 05 July 2020].
- Haysom, Alexia. 2006. "A study of the factors affecting sustainability of rural water supplies in Tanzania." PhD dissertation, Cranfield University at Silsoe.
- Hope, Rob et al. 2020. "Rethinking the economics of rural water in Africa." *Oxford Review of Economic Policy* 36.1: 171-90.
- Hutchings, Paul. 2018. "Community management or coproduction? The role of state and citizens in rural water service delivery in India." *Water Alternatives* 11.2: 357–74.
- Kamruzzaman, A. K. M. et al. 2013. "Overview on management patterns in community, private and hybrid management in rural water supply." *Journal of Sustainable Development* 6.5: 26-36.
- Karuaihe, Selma, et al. 2014. "Rural water access and management approaches in southern Africa: Lessons from Namibia and South Africa." *Journal of Environmental Science and Engineering B* 3: 332-44.
- Khumalo, Prudence. 2018. "Governance and Local Economic Development in Three Southern African Countries: Namibia, South Africa and Zimbabwe." *Alternation Journal* 25.1: 68-88.
- Kwashie, Hayford Benjamin. 2007. "The concept and practice of community management of rural water and sanitation programmes." *Ghana Journal of Development Studies* 4.1: 28-45.
- Jiménez, Alejandro and Agusti Pérez-Foguet. 2010. "Challenges for water governance in rural water supply: lessons learned from Tanzania." *International Journal of Water Resources Development* 26.2: 235-48.
- Leclert, L. et al. 2015. "Addressing governance and management challenges in small water supply systems – the integrity management approach in Kenya." Available from: <https://doi.org/10.1016/j.aqpro.2016.06.006> [Accessed on: 25 March 2018].
- Machado, Anna et al. 2019. "Critical factors for the success of rural water supply services in Brazil." *Water* 11.10: 2180.
- McIntyre, P. and S. Smits. 2015. "Direct support post-construction to rural water service providers." *Building Blocks for Sustainability Series*, 8.
- Moriarty, Patrick et al. 2013. "Trends in Rural Water Supply: Towards a Service Delivery Approach." *Water Alternatives* 6.3: 329-49.
- Mugumya, Firminus. 2013. "Enabling community-based water management systems: Governance and sustainability of rural point-water facilities in Uganda." PhD dissertation, Dublin City University.

- Namibia Statistics Agency. 2011. *Namibia 2011: Population & Housing Census Main Report*. Windhoek: Namibia Statistics Agency.
- _____. 2017. *Namibia intercensal demographic survey 2016 report*. Windhoek: Namibia Statistics Agency.
- Naiga, Resty, et al. 2015. "Challenging pathways to safe water access in rural Uganda: From supply to demand-driven water governance." *International Journal of the Commons* 9.1: 237-60.
- Ngurare, Elijah. 2019. "A call for secure water supply to every household in Namibia." <https://neweralive.na/posts/a-call-for-secure-water-supply-to-every-household-in-namibia> [Accessed: 05 July 2020].
- Remmert, Dietrich. 2016. "Water governance in Namibia: a tale of delayed implementation, policy shortfalls and miscommunication." Democracy Report, Special Briefing Report 13. Windhoek: Institute for Public Policy Research.
- Republic of Namibia. 2008a. *Water supply and sanitation policy*. Windhoek: Ministry of Agriculture, Water and Forestry.
- _____. 2013. *Macroeconomic Framework 2014/15–2016/17*. Windhoek: Ministry of Finance.
- _____. 2017. *National Development Plan 5: working towards prosperity 2017/18–2021/22*. Windhoek: National Planning Commission.
- Salom, N.B. 2020. "Critical success factors for the community management of rural water supply in the Ohangwena region: Namibia." PhD thesis, University of South Africa.
- Sasman, C. 2010. "Namibia: a case for rural water subsidies." *New Era*, 8 June, p. 4.
- Schnegg, Michael. 2016. "Lost in translation: State policies and micro-politics of water governance in Namibia." *Human Ecology*, 44.2: 245-55.
- Schnegg, Michael and Michael Bollig. 2016. "Institutions put to the test: Community-based water management in Namibia during a drought." *Journal of Arid Environments* 1.124: 62-71.
- Schweitzer, Ryan & James R. Mihelcic. 2011. "Importance of tariff payments, level of participation and post-construction support in community management of rural water supply systems in the Dominican Republic." 6th International Rural Water Supply Network Forum. Kampala, Uganda.
- Shapwanale, N. 2018. "NamWater gets N\$6m for aquifer." *The Namibian*, 27 November. [https://www.namibian.com.na/181020/archive-read/NamWater-gets-N\\$6m-for-aquifer](https://www.namibian.com.na/181020/archive-read/NamWater-gets-N$6m-for-aquifer) [Accessed: 27 November 2019].
- Simataa, Faith Augutse. 2010. "From water resources management to integrated water resources management: an analysis of the establishment of new water management organizations in Namibia." Magister Scientiae Thesis, University of the Western Cape.
- Takouleu, Marie. 2018. "Namibia: decentralization for better water and sanitation management." *Afrik21*. <https://www.afrik21.africa/en/namibia-decentralisation-for-better-water-and-sanitation-management/> [Accessed: 05 July 2020].

United Nations Development Programme. 1990. "Global consultation on safe water and sanitation for the 1990s." New York: Secretariat for the Global Consultation on Safe Water and Sanitation for the 1990s.

United Nations Educational, Scientific and Cultural Organisation. 2019. "Rural water development." <https://en.unesco.org/themes/water-security/hydrology/water-human-settlements/rural-development>

United Nations. 2018. *Sustainable Development Goal 6 Synthesis Report on Water and Sanitation*. New York: United Nations.

Verhoeven, John & S. Smits. 2011. "Sustainable rural water supplies: post-construction support for sustainable rural water supply services – expenditure on direct and indirect support." 6th International Rural Water Supply Network Forum. Kampala, Uganda.

Whaley, Luke, and Frances Cleaver. 2017. "Can 'functionality' save the community management model of rural water supply?" *Water Resources and Rural Development* 1.9: 56-66.

World Health Organisation. 2019. "Progress on household drinking water, sanitation and hygiene 2000-2017. Special focus on inequalities." New York: United Nations Children's Fund and World Health Organisation.

_____. 1996. "Community management of rural water supply and sanitation systems: points for practitioners." Brazzaville: Regional Office for Africa.

Notes

¹ WHO 2019.

² WHO 2019.

³ Leclert et al. 2015, p. 41.

⁴ WHO 2019.

⁵ Takouleu 2018.

⁶ Ngurare 2020.

⁷ United Nations 2018.

⁸ Hope et al. 2020.

⁹ Dyer 2006.

¹⁰ Moriarty et al. 2013, p. 331. Fielmua 2011, p. 176, similarly notes: "community management means that the beneficiaries of water supply and sanitation services have responsibility, authority and control over the development of their services."

¹¹ Kamruzzaman et al. 2013.

¹² UNESCO 2019.

¹³ UNESCO 2019.

¹⁴ The Republic of Namibia, 2017, p.15; Bock et al. 2008, p. 2.

¹⁵ NSA 2017, p.23.

¹⁶ Namibia Statistics Agency 2011.

- 17 Hutchings 2018.
- 18 Sasman 2010.
- 19 Bock et al. 2009; Republic of Namibia 2008.
- 20 *New Era* 2010.
- 21 Karuaihe et al. 2014.
- 22 Simataa 2010 ,p. 8.
- 23 Naiga et al. 2015p. 238.
- 24 Karuaihe et al. 2014, p. 335.
- 25 Jimenez & Perez Foguet 2010.
- 26 Schnegg 2016.
- 27 Shapwanale 2018, p. 3.
- 28 Jimenez & Perez–Foguet 2010.
- 29 Remmert 2016, p. 1.
- 30 Remmert 2016, p. 1.
- 31 Khumalo 2018.
- 32 Khumalo 2018.
- 33 Machado et al. 2019.
- 34 Machado et al. 2019.
- 35 Karuaihe et al. 2014, p. 336.
- 36 Karuaihe et al. 2014, p. 336.
- 37 Moriarty et al. 2013; Amer 2004.
- 38 Dyer 2006, p. 14.
- 39 UNDP 1990; Kwashie 2007; Amer 2004.
- 40 WHO 1996, p. 4.
- 41 Machado et al. 2019; Mugumya 2013.
- 42 Salom 2020, p. 251.
- 43 Whaley & Cleaver 2017, p. 58. Haysom 2006.
- 44 Salom 2020:, pp.191-192.
- 45 Salom 2020, p. 254.
- 46 Salom 2020, p. 254.
- 47 Salom 2020, p. 255.
- 48 Verhoeven & Smits 2011,p.1; Machado, dos Santos, Quindeler and Alves, 2019,p.2
- 49 Interview respondent 13.
- 50 Smits, et al. 2013.
- 51 Verhoeven and Smits 2011.
- 52 Verhoeven and Smits 2011; Machado et al. 2019.
- 53 Schweitzer and Mihelcic 2011.
- 54 Schweitzer and Mihelcic 2011.
- 55 McIntyre & Smits, 2015.
- 56 Republic of Namibia 2008a.
- 57 Verhoeven & Smits, 2011, p.11.
- 58 Republic of Namibia 2013, p.15.
- 59 Daemane 2015.
- 60 Boligg & Schnegg 2016.