Village Economic Development Model

S'bonelo Zulu and Bongi Maposa

Council for Scientific and Industrial Research

Council for Scientific and Industrial Research (CSIR), P O Box 395, Pretoria, 0001, Gauteng Province, South Africa. Email: szulu@csir.co.za

ABSTRACT

Millennium development goal 7 seeks to provide full access to basic services and the service allocation caters for all households irrespective of affordability. However, it is assumed that service delivery processes come up short, especially rural areas. This, in most cases is usually caused by limited budget allocations for post-implementation maintenance of water supply infrastructure. It is usually very expensive to formally reticulate water in disperse settlements and in such situations, communities develop innovative ways to get water at convenient points. The community-developed systems are often initially developed to serve as interim solutions have proved to be highly sustainable with an efficient management system. Such circumstances instil high sense of responsibility within the community as they ensure that the system is running at all times. However, the disadvantage is that the original infrastructure rarely gets upgraded once it is installed. Time that is purely allocated to the collection of water from distant sources and maintenance of water supply infrastructure has a potential to economically and extramurally benefit the community when the existing water supply infrastructure gets reticulated to more convenient points such as yard taps. This indirectly means less spending by the government on the maintenance of water supply infrastructure and more time for other revenue generating activities.

This paper looks at two rural South African case studies that have used two different approaches towards the sustainability of water supTshergply infrastructure of which one succeeded and the other one did not. The successful case has a potential to further enhance the village economy and further introduction of Village Development Economic Model (VEDM) will guide the revenue generating processes within the community through water supply security.

Keywords: village economy, self-supply, Collaboration, communities and government

1 INTRODUCTION

One in six people worldwide do not have access to safe drinking water (UN 2013). The Water services Act 108 of 1997 of South Africa states that “everyone has a right of access to basic water supply and basic sanitation” and approximately forty percent (19 640 951) of the South African population live in rural areas face serious challenges regarding access to water services (World Bank 2013). In addition, South Africa is classified as a water scarce country that has a high potential for experiencing even more droughts. Water has been highlighted in the national economic development blueprint as a key service required for sustainable development and economic growth in South Africa (NDP 2012). In addition, one of the indicators under millennium development goal 7C focused on halving the number of people without sustainable access to water and sanitation by 2015 (MDG 2012). This prompted planning for water supply by South African government that has managed to increase the access to water by 21% between 2001 and 2011 (Moore, Kenyon 2013). However, it is also projected that the success in water supply goals will be short-lived as water demand is predicted to outstrip water supply by 2030 (Treasury 2013).

The SA water policies and regulatory frameworks address the key issues that are critical in delivering water services to all the citizens of the country. Some of these frameworks and programmes include Municipal Water Infrastructure Grant (MWIG) that ensures the provision of water infrastructure in municipalities, Medium Term Expenditure Framework (MTEF) that focuses on the medium term progress on government expenditure and Accelerated Growth Initiative of South Africa (ASGISA) which focuses on fast tracking the service delivery. The issues of sustainability linked to protection, management and development of water resources are clearly defined in chapter 3 of the National Water Act of South Africa. The institutional framework clearly defines the roles and responsibilities of each institution in the water value chain. These policies have contributed towards increased access to water services. However, the focus has been more on infrastructure which has been misinterpreted as access to water and the misconception is that places that have infrastructure are regarded as having access to water (Majuru, Jagals et al. 2012).

It is estimated that 34% of installed boreholes in Africa are dysfunctional and most never make it past the first year without breakages (Mac Mahon, Gill 2018). Infrastructure failure is rarely reported because it is feared that the municipality’s reputation may be jeopardised and further funding may be lost because donors become sceptical about investing in areas where there are high levels of failure (Barde 2017). Such challenges have led to the conceptualisation of village economic development model (VEDM) that seeks to narrow the gap between service delivery and sustainability. The unreliability of delivered services results in community unrests because of frustrations which cause the community to destroy what is already available and therefore setting the project implementers back in terms of the service delivery. On the other hand, services are claimed to be delivered because of infrastructure that has been put in place but this is not usually the truth because reticulation systems have been put in place before but taps remain dry in some places. Methods to bridge the service delivery gap focused on the potential formalisation of existing mountain water systems in Mukutung, Limpopo and learn lessons from the unsuccessful management of water supply infrastructure in Thambonkulu, Mpumalanga. The aim was to reduce the inconvenience that is result of technology breakdown.

The introduction of VEDM allows the community top take charge of their technologies, be it indigenous hand-dug wells, mountain water reticulation, boreholes or household based technologies in a manner that will generate revenue for them. The VEDM has a potential for generating revenue from community based management (CBM) that is practiced around the world.

2 LITERATURE REVIEW

Not much has been documented on community participation regarding rural water supply initiatives by aid agencies but data availability slowly is increasing as it is has been observed that there are higher levels of infrastructure sustainability when the community participates in decision making positions. For the project to be successful from the planning stage all the way to implementation stages, the community must be genuinely motivated and interested in the project in order to ensure the sustainability. Most methods of instilling psychological ownership revolve around involving the community in all the project processes (Mac Mahon, Gill 2018, Kativhu, Mazvimavi et al. 2018, Ducrot 2017) .

Different approaches towards community water supply infrastructure management have different influences on the level of community participation. A series of approaches have been applied when dealing with communities. The top down approach is regarded as least productive because the donors decide on which technology and the type of assistance they are willing to offer the community. This approach focuses on the deciding what the ideal technology for the community should be, implement it without any consultation with the users. This approach has a very high failure rate because it lacks community engagement during the implementation processes and consequently, lack of psychological ownership is inevitable (Mac Mahon, Gill

2018, Kativhu, Mazvimavi et al. 2018). This has proved to be the source of failure in most South African villages (Moriarty, Smits et al. 2013). After the realisation that this approach results in failure, project funders were forced are forced to engage with communities where a midlevel lateral approach was taken into consideration (Barde 2017). The lateral approach is characterised by lateral communication which advocates cooperation between the donor and the community. The approach is known to have both possibilities, of which could be success or failure depending on the project administration. The Accelerated Sustainable Water Service Delivery (ASWSD) project that was conducted in Limpopo and Mpumalanga provinces can be regarded as midlevel approach because of the communication between the donors and the communities. The project focused on providing household based water treatment technology to villages and augmenting existing water supply infrastructure of which was done by engaging all relevant stakeholders from the beginning up until the end of the projects. The level of participation in this approach depends on the initial agreement between the project implementer and the users of technology. A proper agreement includes project monitoring and evaluation as part of the post-project implementation process. Further involvement of day to day system users as decision makers ensures the sustainability of water supply systems (Kativhu, Mazvimavi et al. 2018, Gill, Flachenburg 2015).

2.1. Operations, maintenance and reliability of water supply infrastructure

A third of water supply infrastructure is non-functional in sub Saharan Africa (Gill, Flachenburg 2015, Behnke, Klug et al. 2017) . In South Africa, massive investments by government and donor agencies have been made towards water infrastructure and much more money (R 75 billion) has to be utilised before 2025 (Treasury, 2012).

Most water supply infrastructure is not sustainable because of improper financial allocations for post-implementation O&M and such challenges are perpetuated by the project implementers' implementation strategy for water services that overlooks the importance of budgeting for O&M resources and this usually results in disputes among the community regarding the responsibility of O&M (Kativhu, Mazvimavi et al. 2018). In addition, current approaches towards infrastructure maintenance increase the amount of non-functional infrastructure because most municipalities wait until the infrastructure reaches its breaking point before it could be fixed. This is because in most municipalities, water services are bundled together with other services and often overlooked but only attended to when people have no access to water (DST 2014, Hutchings, Parker et al. 2016). On the other hand, communities take the initiative to service their own water supply systems by using money they have contributed as well as other resources such as manual labour for those who cannot afford monetary contributions (Kativhu, Mazvimavi et al. 2018, Behnke, Klug et al. 2017). This approach can also be regarded as the perpetuator of "it is ours" attitude by the communities.

3 CASE STUDIES

The article takes two separate community cases into consideration and assesses different approaches they apply towards the management of water supply infrastructure. Both cases are community based management (CBM) practices whereby one is mountain water harvesting and the other is the use of boreholes. The mountain water harvesting is a rudimentary system that was developed by the community in Mukutung, Limpopo while the boreholes were drilled by the municipality for the Thambonkulu community in Mpumalanga. The analysis of CBM approaches that resulted in the fully functional mountain water harvesting system against the non-functional boreholes will determine the potential for the VEDM.

3.1. Non-functional boreholes

The community of Thambonkulu has always had access to water of which is shared with livestock and is not safe for human consumption. The municipality installed borehole pumps to help improve access to water. However, the management of such infrastructure has left the community without access to available water. This is because of lack of knowledge as well as responsibility towards the infrastructure. This can be seen in figure 1 below where a borehole that has not been working for months because of one replaceable component that could have been replaced by the community if they had the right knowledge.


Figure 1: A non-functional borehole in Thambonkulu village, Mpumalanga

Lack of “ownership” is a challenge in this community since boreholes were regarded as the product of the municipality. Such cases result in maintenance that is based on emergency rather than scheduled. This case portrays a classic example of infrastructure negligence because a non-functional borehole had minor problems that could easily be addressed but were declared broken by the community, leaving them with no access to available water. This is because they had alternative water sources (unsafe water wells) with reliable quantity even though the quality did not meet the South African drinking water quality standards. Lack of communication is another challenge that was observed from this case because implementers of such systems did not involve the community during the planning and implementation phases. According to the community, post implementation strategies were not discussed with them because the boreholes were thought to last for a very long time without experiencing challenges. Lack of unity within the Thambonkulu village in Mpumalanga was also observed because only a few men within the community had the power to make decisions therefore leaving the community members uninterested on what is happening. Further investigation discovered that one or more replaceable components that could be fixed were missing from these boreholes. Lack of information regarding borehole maintenance and willingness by the community to address such issues resulted in longer down periods. The community then resorted to unsafe wells of which they regarded as most convenient. Such challenges could have been avoided if the CBM approach was properly applied.

3.2. Mountain water harvesting

The Lephephane and Mukuting villages of Limpopo have taken the initiative to create their own water supply system. Such systems are mostly rudimentary but highly sustainable. In one of the village, a system was developed to harvest water from the mountain and store it in containers (Figure 2). A reticulation system was installed to further reticulate water to standpoints on the streets. Such systems have been operational for many years but the community has no intentions to upgrade it. This may be because the infrastructure is governed by a select few which are the owners that benefit from charging a connection fee (i.e. R300) to new members. Consequently, this jeopardise potential improvements to the system by ordinary community members as they regard the system as being owned by the select few.

Figure 2: Community based initiative (Mountain water harvesting)

Men dominate water management committees in these villages and this adds to the challenge since the primary users (women) do not have much to say regarding the O&M of water supply systems. Despite these challenges in management styles, most of these systems stay functional because mountain water sources are regarded as most convenient and reliable for these communities.

Different challenges that were outlined in both case studies can be addressed and be taken a step further by means of developing the economy within the community. The approach takes into consideration the second case study that is shown in Figure 2 where there is a high level of sustainability and responsibility, but no potential for the infrastructure upgrades because only a few people have power over the entire water supply system. Formalising such system and decentralising the decision making process has a potential to enhance psychological ownership of such infrastructure while allowing the community to focus more on activities that will help sustain such systems and even more. VEDM is a concept that aims at addressing water supply infrastructure challenges while indirectly enhancing the village economy.

4 THE VEDM CONCEPT

The VEDM seeks modify and enhance the practices that are currently in place in villages. Communities have demonstrated a willingness to pool resources together to address a common objective such as water services. Such practices have been partially practiced in other countries such as Tanzania, Ghana Kenya and Zambia where the sustainability of water systems increased as more users depended on them as well as having formal management practices being put in place (Gill, Flachenburg 2015, Behnke, Klug et al. 2017). Such approaches are ideal for the community but the level of focus is usually limited to spares for water supply infrastructure.

VEDM focuses on the potential use of “stockvel mentality” to enhance similar operations as the Mukutung people have done. Furthermore, introducing the VEDM that focuses on allowing the community to take the lead role in decision making processes and ensure that they, over and above the collective saving approach, partake in income generating activities. The anticipated potential outcomes from the VEDM have also been endorsed by the studies that were conducted in Tanzania and other countries where giving the community a decision making role proved to be more fruitful than giving them a technology without their approval. It is also a cycle that generates income for the community as well as reduces the burden on the government with regards to budget for the maintenance of available water supply infrastructure. The VEDM concept is outlined in Figure 3 below.

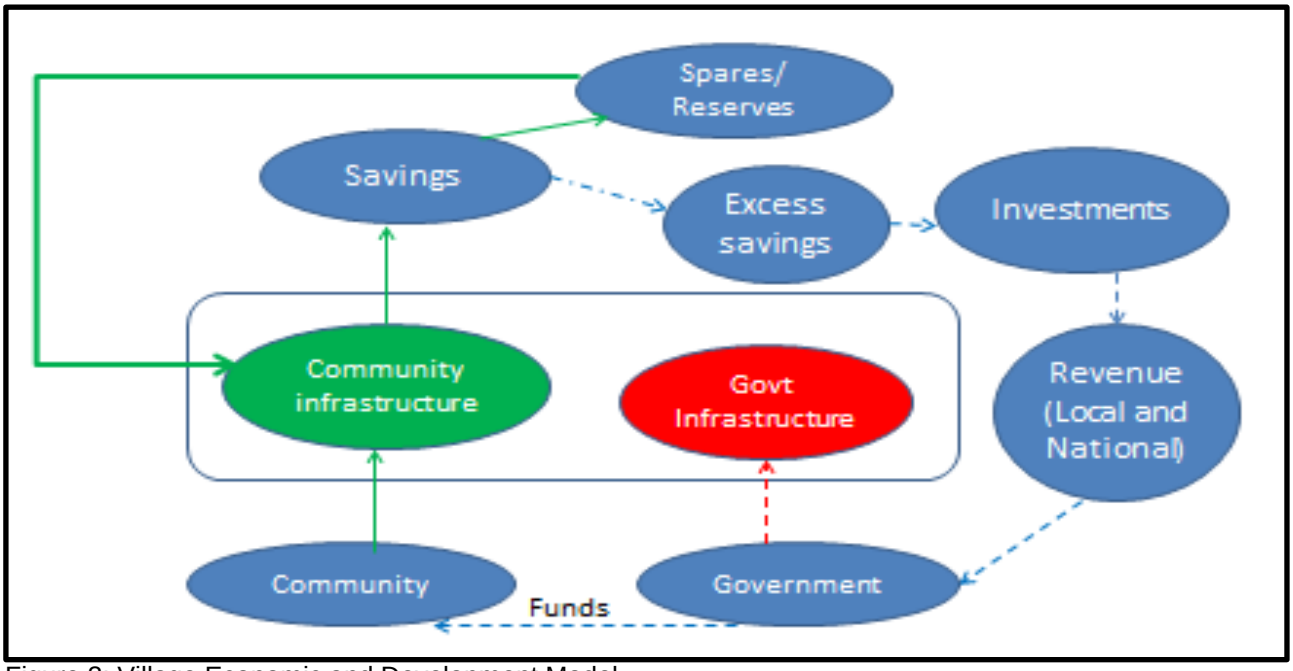

Figure 3: Village Economic and Development Model

The concept seeks to address the “it’s theirs attitude” by the community and promote social cohesion (it’s ours attitude) in communities. Furthermore, VEDM allows external institutions to assistance to village through local authorities such as the Tribal authority by means of funding and advice on decision-making regarding the O&M of water supply infrastructure. The community is then allowed to utilise these funds, and the advice provided by the investors to enhance existing systems (Infrastructure) and formalise their traditional water resources management structures so that the infrastructure can reach its full operational potential in order to meet country’s free basic service standards while supplying water for longer periods.
Alternatively, the community can collectively save money for spares after financing the infrastructure. Once the community has saved money for spares, the excess savings can be used to ensure that water supply infrastructure is upgraded (e.g. water that is gravitated to a stand point can now be reticulated into the yards).This therefore results in high levels of convenience which indirectly allows the community to invest their time to money generating activities rather than water collection (Barde 2017). The revenue generated from such activities can allow the community to appoint a dedicated person that will ensure that the water is of good quality and the infrastructure is operational at all times. The excess funds can then be invested in other non-water related activities that have a potential to bring in more income. However, the process can only be fully functional if there is goodwill between the community and external institutions as this will drastically reduce levels of inconvenience when it comes to the operations, scheduled maintenance and upgrades of water supply infrastructure. This includes informing the community about the performance status of the water supply infrastructure on a regular basis and the community informing the donors about their concerns regarding water supply infrastructure. The whole process can potentially allow the government/ investors to get their returns if the capital was loaned to the community. Furthermore, financial stability within the community will allow exploration of other business ventures that will help expand the economy within the village.

The VEDM can also increase the level of cohesion within the community because everyone will be striving towards achieving the same goal of having to have sustainable water supply infrastructure and eradication of poverty. VEDM has direct and indirect benefits for rural communities and the country at large. The model has a potential to address a region wide problem of non-functional water supply infrastructure and give power back to the users regarding water resources management. In addition, such model can drastically reduce the level of dependency on foreign financial aid and this means that the investors can now focus on other developments rather than water supply infrastructure that rarely meet its design lifespan when improperly maintained.

5 CONCLUSION

The VEDM can prove to be a short to long term solution in rural water supply sector of South Africa and the even the world at large. However, the applicability of the model is not standard to all villages because the dynamics are different. The case studies revealed different challenges, namely: lack of communication that causes infrastructure negligence and lack of continuous collective saving contribute to stagnant infrastructure growth within the community. Such scenarios contribute to lack of sustainability of services. However, VEDM focuses on the approach of collective saving by the community and it also takes it a step further by introducing potential ventures that can alleviate poverty. This will allow the villages to formalise their structures, involve more people in decision-making processes and generate more income. The VEDM has the ability to reduce the level of conflict between stakeholders because it enhances private public partnership that indirectly encourages psychological ownership of water supply infrastructure. Furthermore, an increase in the level of independence on external funding by villages can reduce the government's level of spending towards water supply infrastructure. Application of VEDM in rural villages is highly recommended.

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