

A Micro Financing Framework for Rural Water and Sanitation provisioning in Sub-Saharan Africa



© 2014 United Nations University

Front Cover Photo Credit: Kibae Park, UN Photo

Layout Design by: Carly Popenko, UNU-INWEH

UNU-INWEH is supported by the Government of Canada



PREFACE

Water supply and sanitation (WSS) services are one of the crucial elements of basic human necessities, but unfortunately, in large parts of the world, access to these services is far from obvious. The original Millennium Development Goals (MDGs), which set targets for 2015, incorporate WSS services, but it seems as if these targets will be difficult to achieve, especially in rural environments in Sub-Saharan Africa. The United Nations University (UNU) is determined to address these, and other problems related to human development, by policy-relevant research that may lead to concrete progress. In the case of WSS services, a number of the UNU-institutes across the globe are committed to the topic. In the current research document, UNU-INWEH and UNU-MERIT join forces to investigate potential issues with regard to water and sanitation. UNU-INWEH is the UNU's institute 'specialized in water', addressing the broadest range of development challenges related to water access. UNU-MERIT focuses on the role of innovation and governance in development.

The combination of these approaches bears great promise for potential future solutions for the great 'water challenges' facing the world. In particular, as this document argues, technological fixes alone are not enough. They need to be complemented by other forms of innovation, for example in terms of local community organization, and financial innovation. In particular, in addition

to providing cheap water supply and sanitation, creating opportunities for credit will make these services affordable for the poorest people living in developing countries. Microcredit and other community savings models are already currently being implemented in the WSS context, leading to concrete and measurable results. UNU, and in particular UNU-INWEH and UNU-MERIT, want to commit themselves to undertaking relevant research in this area, and contribute to implementing this research in specific policy context. Therefore, the current document must be seen as the start of a trajectory of cooperation, which can also be widened to other UNU-institutes, towards implementation of the UNU's goals of contributing to human development and a better world.



UNITED NATIONS
UNIVERSITY

UNU-INWEH

Institute for Water,
Environment and Health

ZAFAR ADEEL,
DIRECTOR



UNITED NATIONS
UNIVERSITY

UNU-MERIT

BART VERSPAGEN,
DIRECTOR



Table of Contents

PREFACE	1
ABBREVIATIONS	4
SUMMARY	5
1 INTRODUCTION	9
1.1 WHY FOCUS ON RURAL WATER AND SANITATION PROVISION IN SUB-SAHARAN AFRICA?	9
2 FINANCING RURAL WATER AND SANITATION PROVISION: MODELS AND CHALLENGES	15
2.1 MICROFINANCE: HISTORICAL OVERVIEW	17
2.1.1 MICROFINANCE TYPOLOGIES	18
2.1.2 MICROFINANCE INSTITUTIONS	23
2.2 APPLICATION OF MICROFINANCE TO RURAL WATER AND SANITATION SERVICES	28
3 A MICRO FINANCING FRAMEWORK FOR RURAL WATER SUPPLY AND SANITATION PROVISIONING	33
3.1 PROPOSED MICRO FINANCING FRAMEWORK	35
3.1.1 ROSCA GROUPS	35

3.1.2	COMMUNITY WSS COMMITTEE (CWC)	36
3.1.3	VILLAGE BANKS	38
3.1.4	GOVERNMENT (SOLELY OR WITH SUPPORT FROM NGOS, THE PRIVATE SECTOR, ETC)	38
4	CONCLUSION	45
	REFERENCES	47
	LIST OF TABLES	
	TABLE 1: GROWTH OF MICROFINANCE INSTITUTIONS IN SUB-SAHARAN AFRICA, 1998 - 2011	22
	TABLE 2: COMPARATIVE ANALYSIS OF MICROFINANCE INSTITUTIONS IN SUB-SAHARAN AFRICA	26
	TABLE 3: EARLIER STUDIES ON RURAL WATER AND SANITATION MICRO FINANCING	30
	LIST OF FIGURES	
	FIGURE 1: A MICRO FINANCING FRAMEWORK FOR RURAL WATER SUPPLY AND SANITATION PROVISION	40

ABBREVIATIONS

AUC	African Union Commission	OECD	Organization for Economic Co-operation and Development
CBOs	Community Based Organizations	PPIAF	Public Private Infrastructure Advisory Facility
CWC	Community WSS committee	REST	(The) Relief Society of Tigray
DALYs	Disability Adjusted Life Years (healthy years lost through poor life quality or death)	RoSCAs	Rotating Savings and Credit Associations
GPOBA	Global Partnership for Output-based Aid	SACCOs	Savings and Credit Cooperative Organizations
JMP	Joint Monitoring Programme for Water and Sanitation	SHGs	Self-help groups
KES	Kenya Shillings	SMEs	Small and Medium Entrepreneurs
LMIC	Low and Middle Income Countries	SSA	Sub-Saharan Africa
MDGs	Millennium Development Goals	WSP	Water and Sanitation Program of the World Bank
MFIs	Microfinance institutions	WSS	Water Supply and Sanitation
N/A	Missing information	WSTF	Water Services Trust Fund
NBR	National Bank of Rwanda	\$	American dollar (USD)
NGOs	Non-Governmental Organizations		

SUMMARY

Across rural regions in particular, inadequate access to water supply and sanitation (WSS) services negatively affects women more than men. Women and girls are twice as likely as men (and boys) to bear the burden of water collection that requires walking long distances in search of improved sources. Collecting and carrying large amounts of water is physically demanding and limits time available to pursue educational, professional and leisure activities. Indeed, women lose about forty billion hours each year in daily water collection in SSA - time that could be redirected towards other socio-economic and productive activities. Moreover, women and girls risk physical and sexual assault when collecting water or trying to find a dignified location to relieve themselves.

Given the need for sustainable access to WSS in rural Sub Saharan Africa for improved quality of life, universal access becomes a moral and practical imperative. Water is necessary for health, food production, economic activities and environmental integrity. In order to attain national water supply and sanitation (WSS) Millennium Development Goal targets by 2015, developing country governments need to advance their rural WSS services coverage. In Sub Saharan Africa in particular, scaling up functional, quality, reliable and affordable WSS facilities among rural populations is a significant impediment. Moreover, in most cases rural households find it difficult to raise up-front capital that is often required for the construction of facilities.



UN Photo/Louise Gubb

SUMMARY

Self-sustaining micro financed facilities can be realized for equitable and safe rural WSS provision. A systematic model through which sustainable rural WSS-related micro financing can be attained is currently lacking. Self-supply, while contested with respect to issues of responsibility, is a feasible option given that there is money to be made in service delivery and the fact that many rural families pay considerably more for their drinking water through informal water providers, without any guarantee of quality. This does not have to undermine government responsibility for provision; rather accelerate the scale up and out of rural access and put community-based mechanisms in place for sustainable interventions that can be incorporated into national WSS strategies as they become established. Moreover, it overcomes the primary challenge in self-supply – that of up front funds for infrastructure. Given that key principles of successful microfinance (including shared solidarity and mutual accountability, access to capital, capacity development and ownership) are similar to and supportive of the principles of sustainable WSS interventions (community engagement and ownership, capacity development, financial accountability), it makes sense to explore this as a mechanism for self-supply in rural settings in order to increase access in a timely manner.



UN Photo/Myriam Asmani

SUMMARY



A co-operative microfinance framework would potentially share the financial and social costs and benefits between communities and governments.

Many of the benefits that accrue through WSS access are realized by the community (through increased health, school attendance and time savings) and the government (through reduction in requirements for other services, such as healthcare, and improved productivity that supports national growth). The framework demands active and coordinated government support through specific related ministries (water and sanitation, health, finance, rural development, public works, etc.). It relies on continued village demand for improved WSS facilities and willingness to effectively engage in the revolving RoSCA schemes. Additionally, it is founded on clear division of responsibilities among four main stakeholders for the transparent and accountable operationalization of interventions. The revenue generated, in addition to paying for the operation and maintenance of the system(s) can be used to acquire or expand additional basic household services. As a result, co-operative members are able to engage in other water and non-water related entrepreneurial activities, to add on to the WSS-fund and strengthen the local economy more generally. However, the framework is flexible and not limited to WSS provisioning.



Introduction

Access to potable drinking water and secure sanitation facilities is recognised as a human right.

However, the importance of water, particularly in rural communities, lies not only in its requirement for sustaining life. Water is necessary for food production, some economic activities and environmental integrity, which all contribute to human wellbeing. Globally, clean water is under threat from damaging human activities including the release of untreated wastewaters into aquifers and surface waters.

1.1 WHY FOCUS ON RURAL WATER AND SANITATION PROVISION IN SUB-SAHARAN AFRICA?

Sub-Saharan Africa (SSA) still lags behind its 2015 regional development goal targets on access to improved drinking water (78% versus the current 66%; AUC et al., 2012) (Box 1) and sanitation facilities (70% of the population still lack access to improved sanitation facilities; JMP, 2012) (Box 2). Service coverage is worst across rural regions owing to high capital costs and minimal returns on investments among other difficulties (Hutton, 2012; Banerjee et al., 2009). At the same time, overseas development assistance by both traditional (e.g.

OECD countries etc.) and emerging (e.g. BRIC countries etc.) development partners as well as private investors is minimal or absent across most rural water sectors in SSA (WHO, 2012). This is largely due to the remoteness, inaccessibility and the financially unattractive nature of rural water markets (Hunter et al., 2010).

Compared to urban water provisioning, rural water supply in most developing countries and SSA in particular, is unique in several aspects. First, marginalized, poor and sparsely populated rural households are the main customers. Compared to urban customers, rural-based customers often have lower willingness (and abilities) to pay for quality basic services including improved water supply and sanitation (WSS). However, lower population densities may result in lower levels of contamination in the first place. Second, localized small scale systems are often used to abstract, store, treat and convey safe water (as well as dispose of wastewater and human excreta) within and across communities.

BOX 1: DOMESTIC WATER SOURCE TYPES

IMPROVED*	UNIMPROVED
PUBLIC TAPS OR STANDPIPES	UNPROTECTED DUG WELLS
TUBE WELLS OR BOREHOLES	UNPROTECTED SPRINGS
PROTECTED DUG WELLS	TANKER TRUCKS
PROTECTED SPRINGS	CARTS WITH SMALL TANKS OR DRUMS
PROTECTED RAINWATER	SURFACE WATER (RIVER, DAM, LAKE, POND, STREAM, IRRIGATION CHANNEL, ETC)
BOTTLED WATER**	
PIPED WATER INTO DWELLINGS, PLOTS OR YARDS	

* Sources whose quality is assured locally or by a central agency.

**Only if from an improved water source.

Source: UNICEF and WHO (2012).

Third, few stakeholders are interested in engaging with rural WSS supply partly due to the non-profitability of the sector – owing to scope and customer density diseconomies. Fourth, rural water supply relies largely on communal raw water sources including shallow wells, shallow boreholes, rivers and natural springs. Water availability and quality in these public supply sources varies across seasons and from one locality to another. Fifth, rural communities are more likely to practice open defecation and rely on unimproved sanitation facilities. Indeed across the 35 African countries that were studied for the 2012 global water update report, piped water is non-existent

among rural communities while open defecation is practiced by over 60% of rural households (JMP, 2012).

While most communities are motivated and have the knowledge on how to locally abstract and distribute non-piped, but improved, water services as well as construct suitable sanitation facilities, they fail to operationalize these ideas. This is mainly due to the lack of start-up capital (Banerjee et al., 2009; Hunter et al., 2010), that is, costs related to the design and construction of WSS facilities. Many governments cannot afford the large upfront financial investments required

BOX 2: DOMESTIC SANITATION FACILITIES

IMPROVED*	UNIMPROVED
PIT LATRINES WITH SLABS	PIT LATRINES WITHOUT SLABS
COMPOSTING TOILETS	OPEN PITS
VENTILATED IMPROVED PIT (VIP) LATRINES	HANGING OR BUCKET LATRINES
FLUSH OR POUR-FLUSH TO: - PIPED SEWER SYSTEMS - SEPTIC TANKS - PIT LATRINE	SHARED OR PUBLIC TOILETS/LATRINES
	OPEN DEFECACTION (IN FIELDS, FORESTS, BUSHES, WATER)
	FLUSH OR POUR-FLUSH NOT TO PIPED SEWER SYSTEMS, SEPTIC TANKS OR PIT LATRINES

* Neither shared nor public but located within households.

** Human excreta are not separated from human contact.

Source: UNICEF and WHO (2012).

for infrastructure development, so in many cases responsibility is devolved to the local level. At this scale, governments and NGOs, as well as community members themselves, become responsible for water and sanitation service delivery. To improve the likelihood of sustainability, some programmes require co-financing, where households contribute part of the money, labour or materials to build facilities. In other cases, facilities are owned by the relatively wealthier community members and sometimes shared (freely or at a cost) with neighbours. Under either scenario, it is important to ensure that provisions are made for the ultra-poor. The legal status of

specific communities could further hinder access to improved WSS services – especially if provided by the government.

At the household level, water consumption in sufficient quantity and quality (i.e. minimum of 25 litres per capita per day; Kessides, 2004) is a basic human right (United Nations, 2010) indispensable for a healthy and productive life - reduced disease incidences, reduced health-related costs and improved socio-economic development (Hutton, 2012). Of the 26 countries around the world with under-five mortality rates above 100 deaths per 1,000 live births, 24 are in SSA (AUC et al., 2012).



Children living in rural areas, marginalized communities and from poor households are the most at risk of both neonatal (death within the first 28 days of birth) and under-five mortality (AUC et al., 2012). Diarrhoeal diseases are among the main killers accounting for 15% of under-five deaths worldwide, second only to pneumonia (18 %) (AUC et al., 2012).

The incidence of water-based (e.g., schistosomiasis), waterborne (e.g., cholera), water-related (e.g., malaria) and water-washed (e.g., scabies) diseases can be abated through the sustainable and affordable universal access to improved WSS and better hygiene (Hunter et al., 2010; Prüss-Üstün et al., 2008). Indeed, investments in these three intervention areas across SSA have been shown to reduce mortality rates – equivalent to about 71 million DALYs averted (Haller et al., 2007). In addition to mortality as a result of the diseases themselves, half of the malnutrition-related deaths among children are attributable to repeated diarrhoea or intestinal nematode infections due to unsafe water, inadequate sanitation or insufficient hygiene (Prüss-Üstün et al., 2008). Other impacts of chronic diarrhoea over the long term can include delayed mental and physical growth as a result of compromised nutritional levels (Hunter et al., 2010).

Across rural regions in particular, inadequate access to WSS negatively affects women more than men. Women and girls are twice as likely as men (and boys) to bear the burden of water collection that requires walking long distances in search for improved sources. Collecting and carrying large amounts of water is physically demanding and limits one's time to pursue educational, professional and leisure activities (WSP, 2010). As noted by Cosgrove and Rijsberman (1998), women lose about forty billion hours each year in daily water

collection in SSA - time that could be redirected towards other socio-economic and productive activities.

The absence of improved pit latrines at the household level limits women's privacy, compromises their comfort and endangers their hygiene and dignity (WHO, 2012). In cases where sanitary facilities are shared among households, their cleanliness or accessibility by children, the elderly or physically challenged or at night is not always guaranteed (JMP, 2012). The absence or inadequate provision of separate male and female sanitary facilities at schools contribute to irregular school attendance and/or high dropout rates of females, particularly post-puberty (Brocklehurst and Bartram, 2010). The alternative - open defecation - threatens the personal safety of women and children, as they may become targets of sexual harassment, attacks by wild animals or suffer other injuries. Moreover, open defecation is a significant health hazard as faeces are washed into surface or compromised ground water bodies during rainfall and flood events (Reis and Mollinga, 2012).

Overall, sustained access to improved WSS facilities for rural households generally results not only in better hygiene and living standards, but contributes to higher literacy rates (especially among girls), increased labor productivity (especially among women) and strengthened environmental sustainability. Across SSA for example, each US dollar spent in advancing improved WSS facilities has been demonstrated to result in economic returns of between 2.5 and 2.8 (Hutton, 2012).

Given the need for sustainable access to WSS in rural SSA for improved quality of life, universal access becomes a moral and practical imperative.

One potential financing solution that is currently underutilized in the WSS sector is micro financing. While literature includes some studies on effective WSS-related (micro) financing (Section 2.2), a systematic model through which sustainable rural WSS-related micro financing can be attained is lacking. This paper outlines a framework by which self-sustaining micro financing facilities can be realized for equitable and safe rural WSS provision. The paper relies on a systematic desk research with a particular focus on the rural WSS sector in SSA.



Financing Rural Water and Sanitation Provision: Models and Challenges

Many approaches exist for financing rural WSS provisioning. Across most SSA countries and in the absence of national government support, non-governmental entities tend to facilitate rural WSS advancement. These include private small scale vendors, faith-based groups and civil society organizations as well as internationally financed development agencies. These stakeholders not only provide WSS services, but transfer technological knowhow to rural communities. Nevertheless, their operations tend to be sporadic, project-based and conditional on the availability of support funds – whose target recipients, extent and duration depend on foreign policy agendas of donor governments. Within this framework, once the funds are expended, activities subsequently end, in many cases with little thought to the sustainability of WSS services post-project. In addition, most of these stakeholder operations are unregulated, uncoordinated and tend to overlap, threatening the sustainability of rural development operations.

To mitigate these risks, active (in)direct support of the government to rural community programs (rather than projects, see Section 3) is essential.

Indeed, given that WSS is one of several sectors for which governments incur high opportunity costs for exclusive provision (i.e. merit-services; Savenije, 2002; Mbuvi, 2012:2-3), it is the role of governments to (wholly or partly) construct and maintain rural WSS systems. However, government interventions in the form of subsidies (among other social transfers) are often delayed, inadequate or absent among local communities (Cardone and Fonseca, 2006). Moreover, and given their informality and small operating scales, these rural WSS delivery operations hardly suit, attract or benefit from large scale funding by mainstream formal financing institutions such as commercial banks (Fonseca et al., 2007). As noted in Morduch (1999), it is much cheaper for commercial banks to administer large credits/loans to few customers than small loans to more borrowers.

For equitable and sustainable access to safe WSS services, local micro financing provides an alternative avenue through which rural households can organize themselves and mobilize funds to acquire, maintain and/or improve their WSS facilities. Micro financing entails the provision of relatively low interest rate loans or grants to (poor)



community members for the establishment and/or expansion of small-scale income generating activities (Bateman, 2010). Typically, clients seek micro loans for non-WSS related micro businesses with the expectation of immediate economic returns, but there is no reason that they cannot support WSS-related micro enterprises. As noted in Cardone and Fonseca (2006:25):

“Microfinance provides access to lump sums and/or saving small amounts of money by beneficiaries who are excluded from formal sector financial institutions because of their low asset level, subsistence-level activities and the high costs involved in lending. Key characteristics of microfinance institutions are that they are local level operations that rely upon social and ‘solidarity’ economy principles in order to enhance the mobilization of financial resources”

Nonetheless, micro financing is not a panacea for sustainable financing of rural WSS services, especially in rural populations. Specifically, issues can arise around exclusivity and inequity, even if inadvertently (e.g. Bateman, 2010; Mader, 2011; Sinclair and Korten, 2012). A case study in Vietnam found that a rural household water and sanitation micro financing programme only benefitted medium and higher income households (Reis and Mollinga, 2012). While in principle the loans were available to everyone, they were conditional on acquisition of septic tanks, which have a high water demand and are therefore unaffordable for most. Households can also divert micro loans meant for water and/or sanitation-related micro-enterprises to other activities and continue to rely on alternative (and potentially unimproved) water sources.

2.1 MICROFINANCE: HISTORICAL OVERVIEW

December 1997 marked the enactment of resolution 52/194 by the UN General Assembly (UN, 1997). The resolution underscored the efficacy of micro credit programmes as tools in liberating people from poverty, empowering vulnerable groups and increasing citizenry participation in socio-economic and political processes. The Assembly subsequently called upon the relevant organizations including UN bodies, to explore the use of micro credit in anti-poverty initiatives. During the same year, RESULTS Educational Fund - a U.S. based non-profit agency - organized the first Micro Credit Summit (www.microcreditsummit.org). The meeting highlighted the use of microfinance by the international development community as a mechanism for attaining the Millennium Development Goals (MDGs). To support worldwide implementation of microfinance, 2005 was named the UN International Year of Micro Credit.

Micro credits have long been used to (re)build local, regional and national economies. Following the Second World War for example, different governments relied on micro financing (e.g. through credit unions, financial cooperatives, national credit banks and small-scale non-state mutual associations) to foster small-scale enterprises for fair and equitable, bottom-up socio-economic development (Bateman, 2010). Countries such as Japan, Spain and (northern) Italy utilised conditional micro loans to nurture enterprises with long-term socio-economic growth potential (agriculture, service industry, manufacturing, etc.). These micro credits targeted specific deliverables such as the introduction of new technologies or ideas especially among marginalized and vulnerable communities (Bateman, 2010). Beneficiaries were encouraged to save accrued returns and reinvest in the expansion

“Acquisition of WSS-related micro loans or credits must be demand-driven, as well as organized and controlled by local community groups with a mandate for WSS initiatives.”

or maintenance of their productive enterprises. Savings by community members were also recycled in the form of capital for further micro loans by the local credit banks, unions or associations (Bateman, 2010).

The micro financing concept was coined in 1976 when Nobel laureate Dr. Muhammad Yunus launched a research project in Jobra village, Bangladesh with the aim of eliminating exploitation of the poor by profit-maximizing money-lenders (Bateman, 2010, see also Fonseca et al., 2007). The project provided micro loans to landless poor households in rural areas. This created opportunities for self-employment and accrued mutual benefits for the project as well as the poor population (Fugelsang and Chandler, 1997). The project ultimately resulted in the formation of the Grameen Bank in 1983. Subsequently, the term micro financing has widely been used to refer to the provision of small loans and credits (savings and insurance services) to the poor for use in establishing small scale enterprises (Fonseca et al., 2007; Bateman, 2010).

2.1.1 MICROFINANCE TYPOLOGIES

Overtime, two distinct micro financing models have evolved. The first stems from the original research project in Jobra village and the Grameen Bank. The model, as noted in Counts (2008), builds on the fact that every individual, rich or poor, has an entrepreneurial potential that is realizable even with the smallest amount of financial support. Nurturing this potential is expected to result in economic returns and savings that community members can use to repay or acquire extra loans and/or obtain and maintain additional basic services. As such, the model is founded on social aims that are embedded in poverty alleviation, empowerment of marginalized groups and sustainable reduction of the socio-economic gap between the poor and the rich (Bateman, 2010).

In order to subsidize loans and remain financially viable, not-for-profit microfinance institutions (MFIs) rely on grants from national governments, local or foreign NGOs and savings by their clients. The Grameen bank, for example, received extended financial support from the Bangladesh government as well as external donors (Counts, 2008). This makes it easier for beneficiaries to acquire micro credits with low/below market interest rates. To reach out to more resource-poor clients and attract new cross border financiers, most not-for-profit MFIs set up several operation-centers in diverse regions within a territory. In case of specific repayment difficulties, clients often fall-back to their local solidarity networks, networks built on mutual trust and respect within and across families, neighbors and community members. Thus, the sustainability of not-for-profit MFIs depends on sufficient and reliable capital injection, adequate savings and high repayment rates.

The second micro financing typology that has variedly been denoted as the 'new wave micro financing', 'micro credit privatization' or 'micro credit commercialization' (Bateman, 2010; Mader, 2011) assumes that governments are inefficient and unreliable in assuring basic services, especially to marginalized populations. As such, socially-conscious private sector entities should take over the government role of providing basic public services, with the exception of law enforcement, national defense and foreign policy. Moreover, it is assumed by the typology's proponents that the poor are already accustomed to paying high interest rates and hence they can bear the full costs of credit delivered to their doorsteps (e.g. Brau and Woller, 2004).

The commercialization of MFIs has largely been driven by neoliberal ideologies of the 1990s, championed by the World Bank (Bateman, 2010). These reforms seek to (i) downsize bureaucratic Weberian governance structures, (ii) deregulate public service sectors in attempts to reduce costs and increase the entry, merger, acquisition and innovativeness of private enterprises, (iii) expose public service sectors to quasi-competition and (iv) attain full-cost recovery (Mbuvi, 2012). With the growth of profit maximizing MFIs, most not-for-profit MFIs, such as the Bank Rakyat in Indonesia, have been commercialized (Bateman, 2010). For other MFIs such as the Compartamos in Mexico, commercialization attempts have not been successful (Bateman, 2010). In 2001, and under pressure from other competing profit-seeking MFIs as well as key international financiers, the not-for-profit Grameen Bank was commercialized through what Bateman (2010:18) refers to as the 'Grameen II' project. By the end of 2005, the number of clients in the reformed-bank grew to more than 5 million from approximately 2.5 million prior to commercialization. Saving deposits



trebled, outstanding loans portfolio doubled and 500 new branches were opened across Bangladesh (Bateman, 2010:19). A very real consequence of commercialization has been difficulties in repaying loans; profits are used, in part, to incentivize increases in client base, resulting in marginal loan approvals that ultimately require clients to liquefy their assets or engage in illegal activities to source funds to repay their loans (Bateman, 2010).

Across SSA since early 2000, MFIs have grown in terms of numbers, loan portfolios and active borrowers (Table 1). The capital base for most MFIs is predominantly financed through deposits (and interest on loans) although in some cases, cross-border financiers including multinational NGOs, multinational companies, philanthropists, faith-based charities and other international financing institutions inject capital (MIX and CGAP, 2010). More than half of these loans are consumption loans; they finance consumptive goods and services such as health, education and housing (mortgage). Interest rates vary from country to country and depend on the “target clientele, operation area, range of loan products, institutional type and/or the amount of individual loan disbursed” (MIX and CGAP, 2010: 21). Since most MFIs are profit maximizing, only the rich who tend to reside in urban areas can afford and benefit from the services. As noted by Bateman (2010:166);

“the new wave microfinance model has all the required attributes of an anti-development intervention; an intervention that initially feels good but ultimately undermines economic and social development, and so also largely frustrates the objective of sustainable poverty reduction”.





UN Photo/Sophia Paris

TABLE 1: GROWTH OF MICROFINANCE INSTITUTIONS IN SSA, 1998 - 2011

COUNTRY	PROJECT TITLE	1998	2002	2006	2011
BENIN	MFIs	1	16	11	13
	ACTIVE BORROWERS	6,669	171,913	107,225	234,560
	GROSS LOAN PORTFOLIO (USD)	3.3 M	74.7 M	75 M	128 M
KENYA	MFIs	2	6	16	19
	ACTIVE BORROWERS	4,121	145,234	661,019	1.1 M
	GROSS LOAN PORTFOLIO (USD)	4.8 M	48 M	236 M	1.7 B
MADAGASCAR	MFIs	2	10	8	7
	ACTIVE BORROWERS	1,908	30,794	44,392	111,971
	GROSS LOAN PORTFOLIO (USD)	942,879	9.2 M	13.8 M	73.1 M
NIGERIA	MFIs	1	5	9	39
	ACTIVE BORROWERS	2,982	40,165	311,238	977,297
	GROSS LOAN PORTFOLIO (USD)	156,548	1.96 M	25 M	186 M
SOUTH AFRICA	MFIs	1	12	3	2
	ACTIVE BORROWERS	8,632	1.8 M	411,521	9,132
	GROSS LOAN PORTFOLIO (USD)	934,137	179.3 M	133 M	25.8 M

(M) represents millions; while (B) denotes billions.

Data source: Microfinance Information Exchange, 2012

(<http://www.mixmarket.org/mfi/region/Africa/>, accessed November, 2012).

2.1.2 MICROFINANCE INSTITUTIONS

Whether not-for profit or for-profit, MFIs can be established as formal, semiformal or informal institutions (Schreiner, 2001; Matin et al., 2002).

Formal microfinance institutions

Formal MFIs are registered financial entities that operate under national (non)banking legislation or specific microfinance laws. This varies across SSA, with specialized microfinance laws in Ethiopia, Kenya and Madagascar (MIX and CGAP, 2010), while in other countries like Sierra Leone, microfinance laws are under development. In other countries such as Angola, Ghana, Malawi and South Africa, MFI laws are entrenched in national (non)banking legislation governing all financial institutions (MIX and CGAP, 2010; Chatterley et al., 2013). Formal MFIs include development banks, commercial banks, postal banks and other non-bank financial intermediaries (e.g. the European Bank for Reconstruction and Development). Recipients constitute the richest or most actively entrepreneurial clients across both rural and urban regions.

Semiformal microfinance institutions

Semiformal MFIs are often registered as NGOs, credit unions or village banks with special charters such as the (original) Grameen Bank (Matin et al., 2002). Generally, semiformal MFIs are licensed and supervised by government agencies rather than the banking authorities (Ledgerwood, 1999). Credit unions are special member-driven self-help financial institutions organized by, and comprised of, members from a particular group or organization who agree to jointly save money and provide loans to each other at reasonable interest rates. Credit unions are often not-for-profit. In developing countries, credit unions constitute more than 9 million members - 60% of whom are in Africa and the Caribbean (Srnc and Hejkrlik, 2005). In many

SSA countries, the term 'Savings and Credit Co-operative Organization' or SACCO commonly denotes credit unions. Usually, SACCO members share common traits such as religion or profession.

Village bank processes are similar to credit unions in that they are member-owned (Ouattara et al., 1999). However, capital is often provided by an NGO or other cross-border financiers. This capital is then used to provide micro loans to members without collateral (Srnc and Hejkrlik, 2005). Members can be individuals, groups or group members. For group lending, a trial period is normally established during which one or two group members are first given a micro loan. Other group members are not eligible for further micro loans until the first group-borrowers have repaid their loans (Nelson et al., 1996). Through such peer pressure and support among group members resulting from an emphasis on solidarity networks, village banks can ensure high repayment rates. Beneficiaries are encouraged to save with the village bank, thus contributing to the bank's capital. In other cases, micro loans are linked to savings in such a way that, the more one saves, the more they can borrow (Nelson et al., 1996).

Beneficiaries can elect their own bank leaders while group members are free to define their own bylaws, select new members, manage their funds, audit their accounts and solve internal disputes (Nelson et al., 1996). Capacities and skills are easily diffused and advanced among groups. This facilitates ownership and control of local social development initiatives including safe WSS provision.

Informal microfinance institutions

Informal MFIs comprise self-regulated and un-registered credit and savings providers such as individual money lenders and other self-help groups, including the Rotating Savings and Credit

“A significant advantage of village banking is the promotion of autonomy and independence among its members, along with its flexibility to adapt to local cultural norms.”



Associations (RoSCAs). Informal MFI activities can be legal or illegal; permanent or temporal.¹ Moneylenders are the most common type of informal providers in developing countries and extend credit at high interest rates (up to 120%, see Arney et al., 2008: 3). They often act as a substitute to the information-intensive, collateral-based formal MFIs, especially for populations with insufficient or no collateral (Guirking, 2008).

Self-help groups (SHGs) are generally composed of 10-20 women or men. They operate under a savings-first model where members' savings are used to fund different initiatives (Manak and Pradesh, 2005). These initiatives are decided upon by the individual members when it is their turn to receive the funds – e.g., to start up small enterprises or buy household goods and services. RoSCAs are among the earliest self-help mechanisms used by households to provide saving and credit facilities.

Consequently, RoSCAs are diversely referred to as *esu* (Bahamas), *susu* (Tobago), *sou* (Trinidad), *arisan* (Indonesia), *paluwagan* (Philippines), *gameya* (Egypt), *ekub* (Ethiopia), *cuchubal* (Guatemala), *tontines* (West Africa), *pasanaku* (Bolivia) and *andas* (Central America) (Seibel, 2005).

RoSCAs entail the collection of prior-agreed sums of money from a number of people at regular intervals. A treasurer - who can be replaced annually, or according to established terms, is appointed democratically within the group. Funds collected at any one meeting are transferred to each member in turn in the form of a grant. Each participant collects the same amount of funds following each group-contribution cycle. Members can belong to multiple RoSCAs simultaneously for diverse purposes and specific periods of time.

Table 2 provides a comparative analysis of informal, semi-formal and formal MFIs in SSA. Since activities of most informal MFIs are publicly unknown, a specific case for the category is not

¹ For a detailed discussion of diverse MFI categories, see Matin, et al 2002 and the references therein.



provided, although approximations for different aspects are made. As mentioned earlier, and illustrated in Table 2, activities of most formal MFIs are regulated by the government (through the central bank). Formal MFIs target economically active poor and middle income clients in both rural and urban regions. They are largely for profit agencies and charge higher interest rates. Often, borrowers are required to show successful previous business experience, have economically stable guarantors, provide sufficient liquefiable security (e.g., title deeds) and/or provide official personal documentation (e.g. birth certificate). This can be problematic, especially in rural areas. For example, in 2005, only 34% of rural Kenyans had birth certificates.² For this reason, NGOs such as PLAN have underpinned development with facilitating access to identification papers.

Formal MFIs also offer differentiated loan products, provide additional services such as consultancy, and target income generating micro enterprises such as those in the manufacturing, transport, retailing and service sectors. Compared to semiformal and informal MFIs, they offer higher maximum micro loan sizes per borrower and rely largely on foreign capital in the form of low interest loans from e.g. the International Finance Corporation, among other emerging market financiers.

All MFIs channel and build their services around solidarity networks such as women/men groups, youth groups or community groups. For sustainability, most MFIs (especially in the formal category) target female clients for their high repayment rates and offer prior training to borrowers on different business opportunities and debt management as part of the micro loan.

² <http://plan-international.org/birthregistration/resources/country-case-studies/kenya>

TABLE 2: COMPARATIVE ANALYSIS OF MICROFINANCE INSTITUTIONS IN SUB-SAHARAN AFRICA

TYPE OF MICRO FINANCE INSTITUTION						
ASPECT	INFORMAL		SEMI-FORMAL		FORMAL	
MFI NAME & COUNTRY	COMMUNITY-BASED	MONEY LENDERS	DECSI, ETHIOPIA (TIGRAY)**	MEC APROVAG, SENEGAL [†]	EQUITY BANK, KENYA [⊙]	UOB, RWANDA [±]
YEAR ESTABLISHED	N/A	N/A	1997	1988	Mid 1990s ¹	2007
REGULATED	No	No	Yes	No	Yes	Yes
CLIENTS (COUNT)	1 (minimum)	1 (minimum)	> 200,000	N/A	5.1m (with deposit accounts)	> 120,000 (88% women)
ACTIVE BORROWERS (AB)*	1 (minimum)	1 (minimum)	356,372	1050 (30% women)	664,269	41,135
PERSONNEL (COUNT)	1 (minimum)	1 (minimum)	N/A	15	5,781	240
AB PER STAFF (RATIO)	N/A	N/A	N/A	70	115	171
BRANCHES OR OFFICES	1 (minimum)	1 (minimum)	9 (96 sub-branches)	Located in 7 towns	692	9 (presence in ≥ 30 districts)
RECIPIENTS	Poor with or without business potential	Poor with business potential	Poor civil servants, farmers & SMEs without other formal MFI's support	Mainly peasant banana farmers	Economically active youth, women, farmers, etc	Economically active poor and middle-income persons or groups not served by other commercial banks
RURAL OR URBAN	Mainly rural	Urban & rural	Urban (20%), rural (80%)	Rural	Urban & rural	Urban & rural
PURPOSE	Household consumption goods & services, SMEs, etc	Household consumption goods & services, SMEs, etc	Agriculture, handicrafts, local trade and service rendering SMEs	Agriculture, trade & education	Transport, trade, construction, manufacturing & other service sector SMEs	Farming, manufacturing, retailing
RENDERED SERVICES	Grants, micro loans, savings	Micro loans, savings	Micro loans, savings, fund transfer	Micro loans, savings	Micro loans, savings, fund transfer, training and consultancy	Micro loans, savings, training, consulting, insurance, remittances

* With outstanding loans.

** Debit Credit and Savings Institution S.C (<http://www.bds-ethiopia.net/finance/dedebit.html>, assessed Nov 2012).

¥ Mutual Savings and Loan Association of Banana Producers in the River Valley Gambia (<http://www.aprovag.org/mutuelle.html>, assessed Nov 2012).

⊙ As at September 2012.

± Urwego Opportunity Bank ⇒ a merger between Urwego Community Banking founded in 1997 and Opportunity International Bank of Rwanda, see <http://www.uob.rw/>, assessed Nov 2012. Data are from June, 2012.

N/A: Missing information; SMEs: Small and medium entrepreneurs; REST: The Relief Society of Tigray; NBR: National Bank of Rwanda. Source: Own compilation. Information was also sourced from Microfinance Information Exchange, 2012.

TABLE 2 CNT'D: COMPARATIVE ANALYSIS OF MICROFINANCE INSTITUTIONS IN SUB-SAHARAN AFRICA

ASPECT	TYPE OF MICRO FINANCE INSTITUTION					
	INFORMAL		SEMI-FORMAL		FORMAL	
MFI NAME & COUNTRY	COMMUNITY-BASED	MONEY LENDERS	DECSI, ETHIOPIA (TIGRAY)**	MEC APROVAG, SENEGAL ¹	EQUITY BANK, KENYA ²	UOB, RWANDA ³
USE OF SOLIDARITY NETS	Yes	Yes	Yes	Yes	Yes	Yes
GROSS LOAN PORTFOLIO (USD)	N/A	N/A	107m (63m deposits)	N/A	1.45b (1.65b deposits)	15.6m (9.8m deposits)
MAXIMUM LOAN SIZE (USD)	N/A	N/A	1,649 (30,000 Birr) for SME loans. Rest loan products have smaller maximum sizes	N/A	582,072 (50m Ksh) for SME loans. Loan sizes vary from one loan product to the other & depend on the purpose of the loan.	N/A
AVERAGE LOAN PER CLIENT	N/A	N/A	300	N/A	2,181	378
FUND SOURCES	Own savings, etc	Owner savings, interest on loans, etc	Savings, interest on loans, grants, REST (NGO)	Mainly member savings, interest on loans	Savings, interest on loans, grants, international financing	Savings, loans, grants, international financing (from development banks, etc)
INTEREST RATE (IR)	Low	High	15% (monthly installments) or 18% (in case of end-term installments)	N/A	18% ≥ IR ≤ 30% ²	N/A ³
REPAYMENT RATE	N/A	N/A	N/A	N/A	N/A	N/A
SUSTAINABILITY (HOW ASSURED)	N/A	N/A	To be eligible, clients need to show sustained source of income or (potential) business cash flow	Have diversified farming activities and extended eligibility to other individuals with income generating SMEs	To be eligible, clients need to show previous business experience, economically stable guarantors or liquidable security (e.g. title deed)	For new loans, group members or individuals have to show previous high repayment history and viable business potentials
FOR-PROFIT	NO	YES	YES	NO	YES	YES

¹ The bank was originally established as Equity Building Society in 1984 (see, <http://ke.equitybankgroup.com/index.php/about/our-history> - Assessed November 2012).

² However, micro loans to youth borrowers for example, attract lower interest rates between 8 – 10%.

³ As at Oct 2012, the National Bank of Rwanda charged 8.46% and 17.14% interest rates on deposits and lending (loans), respectively; see <http://www.bnr.rw/>, Assessed Dec 2012.

2.2 APPLICATION OF MICROFINANCE TO RURAL WATER AND SANITATION SERVICES

While SSA is one of the regions where WSS access has not achieved regional and national targets under MDG7c, the disparity between the “haves” and “have-nots” is most pronounced between urban and rural populations. Indeed, even with the global MDG target of reducing by half the number of people without access to improved drinking water and adequate sanitation by 2015 having been met by 2010, rural communities lag urban counterparts. In SSA, where approximately 37% of the population lives in urban settings, only 51% of the rural population have access to improved drinking water (compared with 84% of the urban population) and 24% have access to adequate sanitation (compared with 42% of the urban population) (JMP, 2013).

The reasons for this discrepancy are many-fold and include issues of access, infrastructure, population density and capacity. Despite being a government responsibility in many SSA countries, more and more the burden of supply is falling to NGOs and communities themselves. This self-supply, while contested with respect to issues of responsibility, is a feasible option given that there is money to be made in service delivery and the fact that many rural families pay considerably more for their drinking water through informal water providers, without any guarantee of quality. Given that key principles of successful microfinance (including shared solidarity and mutual accountability, access to capital, capacity development and ownership) are similar to and support the principles of sustainable WSS interventions (community engagement and ownership, capacity development, financial accountability), it makes sense to explore this as a mechanism for self-supply in rural settings in order to increase access in a timely manner.

“Microfinancing should not undermine government responsibility for provision; rather accelerate the scale up and out of rural access and put community-based mechanisms in place for sustainable interventions that can be incorporated into national WSS strategies as they become established. Moreover, it overcomes the primary challenge in self-supply – that of up front funds for infrastructure.”

As many of the benefits that accrue through WSS access are realized by the community (through increased health, school attendance and time savings) and the government (through reduction in requirements for other services, such as healthcare, and improved productivity that supports national growth), a co-operative microfinance framework would potentially share the financial and social costs and benefits between the two groups. Indeed, there are many local examples of communities running WSS systems and using payments for i) operation and maintenance; ii) expansion; and, iii) other community social services, such as education subsidies.

While micro financing appears to be a potential solution for self-supply in rural communities (Trémolet and Muruka, 2013; Trémolet and Kumar, 2013; EUWI-FWG and SHARE, 2012), it is clear that few studies exist on microfinance-leveraging for rural WSS provision. Table 3 provides a literature overview of several cases that piloted or specifically focused on rural WSS micro financing. Micro-finance support for rural WSS started in the late 1990s. In most cases, MFIs target rural households, self-help groups and water boards (in the case of Ghana) with serious WSS access difficulties and the potential to accumulate self-group savings. In Vietnam and Tamil Nadu in India, micro loans are administered through rural women self-help groups or unions.

In cases where specific governments support or subsidize loan facilities, beneficiaries are charged low or below market interest rates (e.g., in Vietnam and Bolivia). Moreover, such support is correlated with increased sustainable WSS facilities-coverage among households/community members (Reis and Mollinga, 2012).



TABLE 3: EARLIER STUDIES ON RURAL WATER AND SANITATION MICRO FINANCING¹

AUTHOR	PERIOD & PLACE	FACILITY	FUNDING SOURCE	PURPOSE & BENEFICIARIES	INTEREST RATES	ADMINISTRATION	EFFECTIVENESS
CHATTERLEY ET AL., 2013	2013, Ntarabana sector, Rwanda	MICRO LOANS	SACCO (Inganza)	Ecosan & biogas latrines	2% monthly, declining	Solidarity groups	48 sanitation loans issued with 100% repayment rate
	2013, Arequipa, Peru	MICRO LOANS	SACCO (GESTION)	Peri-urban sanitation systems (septic tanks and biodigestors)	30% annual, declining	Individual households	5 sanitation loans issued with 100% repayment rate
REIS AND MOLLINGA, 2012	Since 2004, Vietnam	MICRO LOANS	Government, savings	WSS to households without W&S facilities or with facilities that do not meet national standards	Below inflation rate (0.9% in 2008)	Through women unions	Of all constructed facilities, 32 % were water supply and the rest sanitation (septic tanks).
ARNEY ET AL., 2008	Since 2004, Tamil Nadu, India	MICRO LOANS	WSS NGO (Gramalaya), with support from private actors e.g., WaterPartners International, a US based NGO and BASIX bank	Self-help group members to construct latrines, bathing facilities, stand posts, etc	18% (in 2008)	Women self-help groups	Open defecation dropped from 90% (pre-program) to 9% (post-program) Diarrhoea incidences declined
KOUASSI-KOMLAN, 2007	Since 2001, Lomé, Togo	MICRO LOANS	Private MFIs e.g., NGOs	Households with serious WSS access problems. Mainly to construct shallow boreholes and rain water harvesting tanks.	21% plus 2% administration costs (in 2007)	Individuals who have to be guaranteed by 2 persons with MFI accounts for ≥ 3 months*	By 2007 ≥ 1,200 households had own water points
ACHEAMPONG, 2007	Since 1995, Northern Ghana	MICRO LOANS	Water Supply and Sanitation Development Boards (WSSDBs, registered as NGOs)	WSS to households through Water Boards (who should be members of the WSSDBs)	Based on current financial market rates	Via Water Boards (should be guaranteed by a specific district assembly)	Not clear how much WSS coverage has been attained as a result of the micro loans
MEHTA AND VIRJEE, 2007	Kenya (pilot project)	SUBSIDY	International financing (WSP, Kenya, PPIAF, GPOBA) through K-Rep Bank (local MFI)	To small rural water projects whose owners are registered under the Societies Act by the Auditor General	N/A	Output-based-capital subsidies (paid only after the delivery of pre-determined outputs monitored by an independent project audit consultant)	N/A

* The micro loan is directly given to a private actor who constructs the WSS facility in collaboration with specific households/ borrowers. In rare cases, the micro loan can be transferred directly to individual borrowers.

¹ For additional surveys on WSS-related micro financing to the urban poor among other community types in Bangladesh, India and Vietnam, see Mehta (2008).

“

A microfinancing framework founded on rotating RoSCAs at the community level can be used to leverage an additional “WSS RoSCA” contribution that will support sustainable rural WSS financing and provisioning. These WSS RoSCA contributions can be used to source a subsidized microloan and members can benefit from reduced fees for WSS services.

”



A Micro Financing Framework for Rural Water and Sanitation Provisioning

Given the role microfinance and community savings play in local development, the following framework for community-based WSS financing and operation is proposed. In particular, the framework calls for the strengthened use of RoSCAs, village banks and the active involvement of the government alongside assistance from NGOs and the private sector. Most rural villages in SSA and in most developing countries have established self-aid RoSCA groups among households. These entail, but are not limited to, village member-based groups (one member per nuclear household) founded on mutual development goals. Members meet and contribute agreed x amount of money for specific purposes at a time.

Traditionally, this money is saved in a common account and used to cater for expenses related to weddings, funerals, household consumables and entrepreneurial activities. Members can borrow from these pooled-funds at low or no interest rates (as agreed by members). These groups are often large (≥ 20 community members) and non-rotational. In other cases, especially among women-based groups, members meet in

a revolving basis and transfer each monthly contribution to one of the members. Membership is normally limited to less than 20 members as it is easier to manage small groups. In the case of a 12-member group for example, each member receives a one-time amount each year equal to 12 times the regular monthly payment to use for her personal household development. Other co-operatives form around a particular employment activity, e.g. car-washing, where members pay a fee to join and the co-operative puts money aside for rent (paid back at the end of each month) and sickness benefits (accessed when required).

RoSCA groups work on mutual trust and accountability among their members. Often, defaulting or non-co-operative members are informally penalized either in cash or in kind. Community solidarity is paramount for a number of reasons. First, groups are more likely to qualify for micro loans or credits than individual members. Second, it is less costly to provide small loans to a few groups that essentially manage themselves, than to many different individuals – owing to high economies of scale in terms of, for example, low administrative costs in visiting clients. Third, community projects



(in this case WSS systems) compared with individually-sourced initiatives, minimize inequity in rural services access. Inequity can occur in cases where only richer households are selected to benefit from, or apply for, micro loans or credits to build exclusive individual facilities.

To harness and extend this efficacy to other local development goals (e.g., acquisition and sustained access to WSS facilities), the inclusion of an 'extra RoSCA element' is proposed (discussed in detail in Section 3.1) that is actively supported by the government with assistance from other interested stakeholders such as NGOs. Most micro credits are primarily offered to impoverished groups by NGOs. As advanced in Counts (2008), NGOs have proven to have the best methods for timely micro credit service expansion and outreach as well as improved management skills. However NGOs, like other external actors, face diverse challenges that threaten the sustainability of rural WSS interventions (see Section 2).

3.1 PROPOSED MICRO FINANCING FRAMEWORK

The proposed framework consists of four main stakeholders. That is, RoSCA groups, a community WSS committee (hereafter CWC), a village bank and the government (see Figure 1).

3.1.1 ROSCA GROUPS

The rotating-self aid framework, especially in groups with less than 20 members reflects a structure where monthly contributions are immediately consumed with no opportunities for group-savings. This classic RoSCA arrangement can be modified by asking for an additional y amount of money (extra RoSCA element) to be paid alongside the standard RoSCA payment

by each member. This extra money remains in a common-pool reserve fund managed locally by the community finance committee that is part of the CWC. Essentially, all RoSCA members agree (through their participation) for these funds to be administered on their behalf by the CWC to acquire and sustain locally improved WSS facilities. Through their participation in this extra RoSCA element, all members of all participating RoSCA groups within the community become members of the Community WSS Co-operative (run by the CWC). This membership entitles them to reduced rates for water and sanitation services as well as access to additional personal loans (and any benefit returns as appropriate e.g. educational subsidies).

One of the key additional benefits to RoSCA groups within this framework (beyond access to improved drinking water and adequate sanitation facilities) is the ability to leverage the community WSS funds to attain extra capital from the village bank to engage in (non)WSS-related entrepreneurial activities. The latter can be based on the newly accessed safe WSS facilities including water retailing to members (at a lower cost) and non-members. Business activities can also be driven by the existence of the WSS facilities - such as trade in spare parts, treatment technologies (filters, etc) and well digging. To benefit from group economies, RoSCA groups from the same village team up (≤ 15 RoSCAs) in order to expand WSS facilities and services.

For successful operationalization of the framework, it is the responsibility of RoSCA groups (located in specific villages) to:

- Commit to an extra monthly y amount of money through the RoSCA structure that is directly deposited on their behalf by the

specific elected RoSCA treasurer into the joint WSS reserve fund. Essentially, the treasurer collects and records members' standard and extra-RoSCA contributions in collaboration with the specific elected RoSCA secretary.

- Appoint a secretary who will be responsible for liaising with the CWC.
- Volunteer to serve in the CWC if elected (as the committee chair, treasurer, secretary or a community representative).
- Elect RoSCA representatives to the CWC (no more than 1 representative per RoSCA), where elected representatives are expected to represent the interests of the community as a whole and not simply their individual RoSCAs.
- Elect CWC secretariat members (chair, treasurer and secretary) from within the elected RoSCA representatives.

As such, RoSCA members benefit from:

- Access to improved WSS services at reduced costs.
- Preferred benefit from social programmes derived from the WSS profits.
- Preferred access to individual loan capital.
- Regular consultation and active participation in rural WSS infrastructure development within the community.

3.1.2 COMMUNITY WSS COMMITTEE (CWC)

The CWC is responsible (in consultation with its members) for the management, operation, maintenance and expansion (where appropriate) of WSS services within the community. The committee moreover manages finances to ensure full cost recovery of the WSS systems (including loan repayments, salaries, supplies and a maintenance/expansion fund). In consultation with the water co-operative, the CWC will establish the amount

of the "extra RoSCA element" (hereafter referred to as the WSS RoSCA Payment) to be paid by individual members. Provisions should be made for other RoSCAs to join the water committee as it expands over time, as well as for RoSCAs that default on their WSS RoSCA Payments.

The committee should be made up of elected community representatives and ex-officio field extension officers from e.g. the Ministries responsible for health (rural development), rural water resource and services management and, local government and finance (among others, as demanded for specific cases). Administratively, the WSS committee should comprise of two sub-committees (technical and finance) and a secretariat (chair, secretary and treasurer). The secretariat would be responsible for purchases (operation, maintenance, expansion), hiring individuals and contractors, managing direct employees and providing joint signatories on the WSS bank account.

The CWC chairperson should:

- Represent the community in all matters related to WSS supply, drawing upon the expertise of the secretariat and sub-committees as appropriate.
- Oversee (indirectly) the smooth running of the WSS facilities and management of finances.
- Assure effective representation of RoSCA groups' needs through regular consultation with RoSCA representatives.
- Liaise, in collaboration with the treasurer, with the village bank for micro loan acquisition.
- Liaise, in collaboration with the technical sub-committee, with the government for technical support to ensure proper operation and maintenance of the facility(ies) and for expansion decisions.

- Report back to the RoSCA groups (directly or indirectly via the RoSCA representatives) on specific progress (as provided by the terms of reference between the CWC and the water members (as defined by the RoSCA group members) e.g. through annual general meetings or during regular RoSCA meetings.

The CWC secretary should:

- Document CWC meeting deliberations.
- Maintain the water-co-operative membership list, by RoSCA.
- Collect RoSCA contributions.

The CWC treasurer should:

- Keep contribution, income and expenditure records on behalf of the co-operative;
- Maintain financial oversight of the water co-operative.
- Liaise with the village bank, in collaboration with the chairperson, and source loans for WSS service expansion, as appropriate and mandated by members.
- Liaise with the village bank and source micro loans, in collaboration with the chairperson, on behalf of individual RoSCA groups.
- Administer and ensure the transparent use of acquired funds for the implementation of agreed WSS activities at the village level.
- Chair the finance sub-committee.

The technical sub-committee should comprise of elected CWC representatives (not secretariat members), and the appropriate field extension officers. It should be chaired by the local rural WSS representative (i.e., from the rural water department).

“A community WSS committee is essential for sustainable and appropriate interventions.”

The technical sub-committee, drawing upon information from the finance sub-committee, should:

- Discuss and ensure the feasibility and sustainability of proposed WSS plans as well as the overall local environmental sustainability.
- Avoid over-exploitation and contamination of water resources.
- Ensure continued demand, identify areas of possible scale-up, and/or economies of scale.
- Approve technical feasibility of WSS plans (also, for micro loan/credit support).
- Identify and contract private actors (if needed) in collaboration with the CWC.
- Organize cost-effective construction materials through the secretariat.
- Assure correct choice of locally feasible and up-to-date technologies, facilities' location, etc.
- Oversee the construction, repair and maintenance of WSS facilities through an employed water infrastructure manager.
- Solicit co-operative member ideas and needs (through ROSCA treasurers) i.e. proposals for new facilities, expansion/repair of existing facilities, topics for local capacity building etc.

The finance sub-committee should comprise of one CWC representative (not secretariat member), the CWC treasurer and the local field extension officer from the ministry of finance. It should be chaired by the CWC treasurer.

The finance sub-committee, drawing upon the advice of the technical sub-committee, should:

- Assess the financial feasibility and sustainability of proposed WSS facilities and related business plans.
- Ensure fiscal viability of systems, both existing and under expansion.
- Recommend plans for micro financing.
- Prepare a memorandum of understanding with each RoSCA representative or RoSCA leaders, where different terms related to the acquisition, use and repayment of micro loans and/or use of the WSS reserve funds, etc. are stipulated.
- Collect and disburse funds (WSS reserve funds and/or micro loans) for the construction, operation and maintenance of approved WSS facilities.
- Monitor and assure the transparent and appropriate use of micro loans and/or WSS reserve funds.
- Monitor micro loan repayments.

3.1.3 VILLAGE BANKS

Village banks should:

- Design different micro loan/credit products in collaboration with the government and the CWC (size, repayment terms, etc).
- Disburse and monitor/audit micro loans in collaboration with the finance sub-committee.
- Provide saving opportunities for RoSCA groups, among other services (insurance, etc).

3.1.4 GOVERNMENT (SOLELY OR IN PARTNERSHIP WITH THE PRIVATE SECTOR)

Government refers to all ministries that play a role in rural services financing, quality assurance and sustainable access. Following the decentralization/devolution reforms across most SSA countries, most ministerial operations have been (or are in the process of being) decentralized or devolved to both urban and rural regions. Activities by the different actors should, however, be managed and monitored by the ministry(s) responsible for WSS development (or the WSS services regulatory agency).

The government should:

- Finance village banks through specialized rural development funds including trust funds. This could be by means of budget support from the Ministry of Finance or other cross-border funds. These funds can be used to subsidize micro loans.
- Underwrite microfinance loans used solely for WSS provisioning, including deferred repayments to bridge the construction period of WSS facilities, during which period there is no income generation.
- Oversee village bank activities (as provided by the existing microfinance or banking legislation).
 - » Regulate loan sizes, interest rates, beneficiaries and repayment terms.¹
 - » Audit and monitor village banks accounts.

¹ For example, in the Can Tho City of Vietnam, rural households can only take a maximum loan of about USD 212 (165 Euro) to construct either water supply or sanitation facilities; or USD 423 (329 Euro) if they want to construct both water supply and sanitation facilities (Reis and Mollinga, 2012). Loan repayment cannot exceed 5 years.



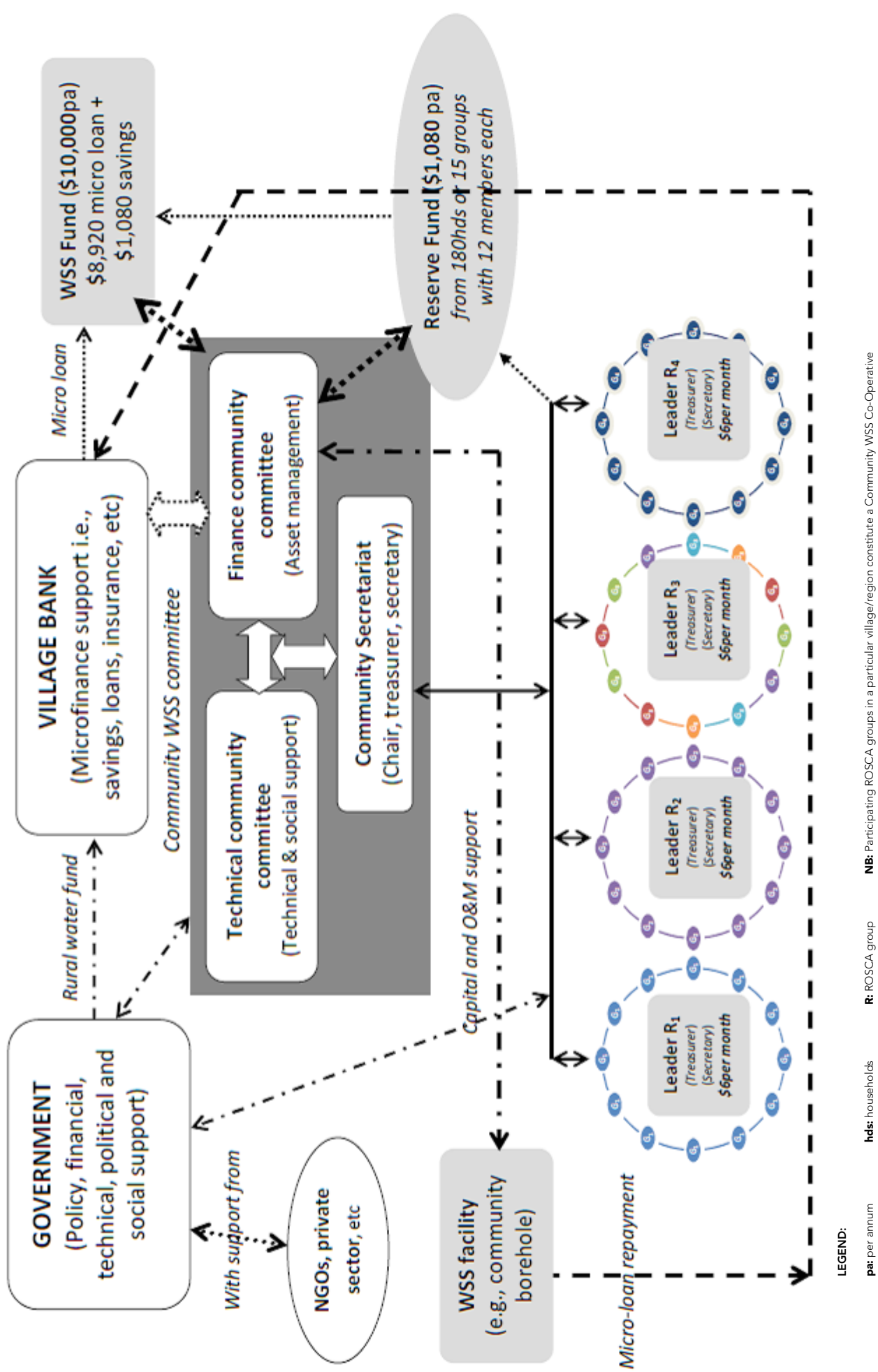
UN Photo/Albert González Farran

- Support CWCs²:
 - » Identify feasible, low cost, acceptable and sustainable technological models³ (preferably with a business potential) for improved WSS provision and hygiene improvement for the specific rural regions (in collaboration with ministries of water resource and services development, health, etc.).
 - » Define and enforce water quality and quantity standards (in collaboration with the Ministry of Health, etc.).
 - » Support communities in managing facilities e.g., emptying septic tanks (in collaboration with the Ministry of Public Works, among other ministries).
 - » Encourage growth of sustainable (non) WSS-related micro enterprises (in collaboration with ministries of agriculture, tourism and rural development, etc.).
 - » Support technical and administrative skills' enhancement (procurement procedures, etc.).

2 The government through the different ministries can also offer direct technical support to the RoSCA groups, see Figure 1.

3 In the Can Tho City of Vietnam and in order to minimize ground water contamination for example, water related micro loans cannot be used to dig deep wells (Reis and Mollinga, 2012).

FIGURE 1: A MICRO FINANCING FRAMEWORK FOR RURAL WATER SUPPLY AND SANITATION PROVISION



Taking a hypothetical case where the RoSCA fee per member, per month (x) = \$1, the WSS RoSCA element (y) = \$0.5 and RoSCA membership is n = 12, then after each rotational monthly meeting, the specific monthly beneficiary member will receive \$12 (standard self-aid from the group). \$6 (WSS RoSCA) will remain with the RoSCA treasurer. By engaging 15 similar RoSCA groups (180 households) within the same village into a water co-operative, this amounts to \$1080 WSS RoSCA annual savings (reserve fund, see Figure 1). This can be saved in the village bank and used towards WSS facilities within the village.

Should the water co-operative decide to take out a WSS-related micro loan from the village bank, the specific purpose, extent and repayment feasibility should first be assessed and approved by the CWC finance sub-committee (in collaboration with the technical sub-committee). After approval, the CWC chair and treasurer liaises with the village bank management and sources the micro loan. This money is held in a community WSS fund that is only accessible to the CWC treasurer in conjunction with a co-signature. The CWC chair regulates and releases these funds gradually (before and after the accomplishment of specific tasks) as provided by the memorandum of understanding between the RoSCAs (through their representatives) and the finance sub-committee.

If it is assumed that village RoSCAs (e.g. 15 groups, as illustrated in Figure 1) agree to build a borehole that costs \$10,000, they can use the \$1,080 annual reserve fund in year 1 and acquire a top-up micro loan of \$ 8,920. This becomes the community WSS Fund (see Figure 1) that is overseen by the finance sub-committee. Assuming an annual interest rate of 10%, the water co-operative will be required to repay the village bank approximately \$784 a

month (0.0083 % monthly interest rate) (Eqn 1)¹:

$$\text{Monthly payment} = \text{rate} + \frac{\text{rate}}{[(1 + \text{rate})^{\text{months}}] - 1} \times \text{principal}^2 \quad [1]$$

Further assuming that the borehole becomes functional after 2 months and that each of the 180 households (water co-operative members) purchase 100 liters³ of water per day at a cost of \$0.001 per liter, the revenue generated will amount to \$18 a day (\$540 a month). Assuming continued daily water consumption levels by the households, revenue generated over the remaining ten months of the year will be approximately \$5,400. If, in addition, the water co-operative sells water to non-members at a higher rate, e.g. \$0.007 per liter and conservatively assuming that 20 non-members each purchase 100 liters a day, this would add \$14 per day and \$420 per month in extra revenue. To put this in perspective, the average cost of a 20 liter jerrycan of water in Kenya is 20 KES (\$0.24). Thus, the assumptions made are no more expensive than current costs in the Kenyan context, even for non-members (\$0.21 per jerrycan), with a guaranteed sustainable source.

Combining water revenue, the water co-operative would amass approximately \$960 a month (or about \$9600 in the remaining 10 months). The revenue from 10 months of operation covers the cost of the original loan. However, in order to

1 It is possible to end up with different monthly repayment rates depending on specific loan sizes, loan purposes and the monthly repayment calculation formula, among other aspects. For some MFIs for example, monthly repayment amounts are calculated on the reducing outstanding balance rather than the originally borrowed principal micro loan. As such, monthly repayments decrease overtime.

2 Formulae adopted from 1728 software systems, 2012 (<http://www.1728.org/calclloan.htm>, Assessed November 2012).

3 Sufficient for daily drinking, laundry, cooking, etc for households of 4 - 5 people.

ensure sustainability, the loan repayment should be made over a two year period. This ensures that not only is the loan repayment secure, but also that funds are available to hire an operations manager to maintain and clean facilities, hire revenue collectors (unless this is an expected voluntary contribution of members of the co-operative) and purchase materials and expertise for repairs. Extra savings (plus subsequent reserve funds generated through the RoSCAs) can be used to expand or acquire additional WSS facilities, applied to other social development initiatives or saved in the village bank and used to fund more micro loans to individual co-operative members at lower interest rates e.g. interest-free loans for members to build latrines in their households.

This framework confirms that rural communities can acquire and sustain improved WSS facilities

through the implementation of a novel hybrid financing model that utilizes both RoSCA savings and micro loans to construct, operate, maintain and expand services. However, the model cannot be sustained over time without the active participation of the water co-operative members and their CWC. Moreover, the framework depends on the long-term support of external stakeholders including a strong political will to prioritize and support rural WSS and hygiene improvement in the form of, for example, specialized rural WSS funds and capacity building. In countries where WSS funds exist, such as the Water Services Trust Fund in Kenya (GoK, 2002, see also Box 3), the proposed framework can be used to channel focused support (financial, technical, etc.) to rural households with low or no improved WSS services access.



BOX 3: KENYA WATER SERVICES TRUST FUND (WSTF)

The WSTF is among the instruments provided by the 2002 Water Act to help mobilize financial resources for the establishment of WSS services in areas with low coverage rates (GoK, 2002). The fund was established in 2004 and is mainly funded by the government with external support (through grants, donations or loans).

The use of the funds is mainly project-based. Different community based organizations (CBOs) write project proposals and submits them to the Water Service Board. The latter reviews the proposals and makes recommendations to the WSTF board. The board then re-reviews submitted proposals and signs a memorandum of understanding with all CBOs with approved proposals.

Not all project proposals are funded. The sustainability of the constructed facilities is not always guaranteed. The proposed micro financing framework can thus be used to guarantee inclusive and sustained WSS services that are sourced and maintained by village RoSCA groups.



Conclusion

In order to attain national water supply and sanitation (WSS) Millennium Development Goal targets by 2015, developing country governments need to advance their rural WSS services coverage. In Sub Saharan Africa in particular, scaling up functional, quality, reliable and affordable WSS facilities among rural populations is a significant impediment. Moreover, in most cases rural households find it difficult to raise up-front capital that is often required for the construction of facilities.

To address this problem and assure sustainable rural WSS financing and provisioning, this paper provides a micro financing framework that is founded on the rotating RoSCA arrangements at the village level. The framework proposes the inclusion of a regular “extra WSS RoSCA” contribution that is jointly saved in the form of a WSS reserve fund in a village bank and forms the basis of membership in community WSS co-operative. This fund can be accessed, in the medium to long term, to establish new or maintain and improve WSS facilities at the village level. When capital funds are needed in the short-term, village RoSCA groups can use their savings to source a subsidized

and government underwritten micro loan from the village bank through their CWC. To repay this loan the water co-operative generates revenue through payment for WSS services by both members and non-members (based on different rates). The revenue generated, in addition to paying for the operation and maintenance of the system(s) can be used to acquire or expand additional basic household services. As a result, co-operative members are able to engage in other water and non-water related entrepreneurial activities, to add on to the WSS-fund and strengthen the local economy more generally.

The framework demands active and coordinated government support through specific related ministries (water and sanitation, health, finance, rural development, public works, etc.). It relies on continued village demand for improved WSS facilities and willingness to effectively engage in the revolving RoSCAs schemes. Additionally, it is founded on clear division of responsibilities among four main stakeholders for the transparent and accountable operationalization of interventions. However, the framework is flexible and not limited to WSS provisioning. Given the co-opera-



tive nature of the financing mechanism, it can be used to support any intervention with social and financial benefits, such as the provision of other basic services (e.g. energy). The only social improvement that does not accrue enough benefits to the initial outlay costs is health care facilities, which must remain a government-provided service (FORTHCOMING: Poo pays! Rural Sub-Saharan African communities can and should invest into water and sanitation, <http://inweh.unu.edu/reports>).

REFERENCES

- Acheampong, K. (2007). Association of Water and Sanitation Development Boards (AWSDBs), Ghana. In, *Innovations in financing urban water & sanitation* for the Rockefeller Foundation Urban Summit.
- AUC, UNECA, AfDB and UNDP. (2012). Assessing progress in Africa toward the Millennium Development Goals: Emerging perspectives from Africa on the post-2015 development agenda. African Union Commission, United Nations Economic Commission for Africa, African Development Bank, United Nations Development Programme.
- Aureli, A. (1999). Microcredit and water, *Afers Internacionales*, 45-46:169-178.
- Banerjee, S., Wodon, Q., Diallo, A., Pushak, T., Uddin, H., Tsimpo, C., and Foster, V. (2009). *Access, affordability and alternatives: Modern infrastructure services in Africa*. Washington, DC: The International Bank for Reconstruction and Development/The World Bank.
- Bateman, M. (2010). *Why doesn't microfinance work? The destructive rise of local neoliberalism*, London: Zed Books.
- Brau, J.C. and Woller G.M. (2004) Microfinance: A comprehensive review of the existing literature. *Journal of Entrepreneurial Finance*, 9(1):1-27
- Brocklehurst, C., and Bartram, J. (2010). Swimming upstream: Why sanitation, hygiene and water are so important to mothers and their daughters. *Bulletin of the World Health Organization*, 88(7):482-482.
- Cardone, R., and Fonseca, C. (2006). Experiences with innovative financing: Small town water supply and sanitation service delivery. Background paper prepared for the UN-HABITAT publication "Meeting Development Goals in small urban centres: Water and sanitation in the world's cities".
- Chatterley, C., Gonzalez, O., Sparkman, D., Sugden, S., Lemme, K., and Dorsey, S. 2013. *Microfinance as a potential catalyst for improved sanitation: A synthesis of Water For People's sanitation lending experiences in seven countries*. Water For People, Denver, CO USA.
- Cosgrove, W., and Rijsberman, F. (1998). Creating a vision for water, life and the environment, *Water Policy*, 1(1):115-122.
- Counts, A. (2008). *Small loans, big dreams: How Nobel prize winner Muhammad Yunus and microfinance are changing the world*. New Jersey: John Wiley & Sons, Inc.
- Daley-Harris, S. (2007). State of the Microcredit Summit Campaign Report 2006. Washington, DC: Microcredit Summit Campaign.
- EUWI-FWG (EU Water Initiative-Finance working group) and SHARE (Sanitation and hygiene applied research for equity). (2012). Small-scale finance for water and sanitation. Stockholm, Sweden.
- Fonseca, C., Adank, M., Casella, D., Jeths, M., van der Linde, P., and Dijkshoorn, B. (2007). *Microfinance for water, sanitation and hygiene: An introduction*. Netherlands Water Partnership (NWP) and International Water and Sanitation Centre (IRC).
- Fugelsang A., and Chandler, D. (1997). *The paradigm of communication in development: From knowledge transfer to community participation*. Lessons from the Grameen Bank, Bangladesh. FAO corporate Document Repository.
- GoK (Government of Kenya). (2002). *The water Act, No. 8*. The Republic of Kenya.
- Guirkinger, C. (2008). Understanding the co-existence of formal and informal markets in Piura, Peru. *World Development*, 36(8):1436-1452.
- Haller, L., Hutton, G., and Bartram, J. (2007). Estimating the costs and health benefits of water and sanitation improvements at global level. *Journal of Water and Health*, 5(4):467-80.
- Hunter, P., MacDonald, A., and Carter, R. (2010). Water Supply and Health. *PLoS Med* 7(11):e1000361.
- Hutton, G. 2012. *Global costs and benefits of drinking-water supply and sanitation interventions to reach the MDG target and universal coverage* (WHO/HSE/WSH/12.01). Geneva: World Health Organization.
- Kessides, I. (2004). *Reforming infrastructure: Privatization, regulation and competition*. Washington DC: The World Bank and Oxford University Press.
- Kouassi-Komlan, E. (2007). Micro finance institutions facilitate water access to poor households: Lomé, Togo. In, *Innovations in financing urban water & sanitation* for the Rockefeller Foundation Urban Summit.
- Ledgerwood, J. (1999). *Microfinance handbook: An institutional and financial perspective (Sustainable banking with the poor)*. Washington D.C: World Bank Publications.

REFERENCES

- Mader, P. (2011). Attempting the production of public goods through microfinance: The case of water and sanitation, *Journal of Infrastructure Development*, 3 (2):153-170
- Manak, S., and Pradesh, A. (2005). *Self-help groups: A keystone of microfinance in India* (Women empowerment & social security). Andhra Pradesh Mahila Abhivruddhi Society (APMAS).
- Matin, I., Hulme, D., and Rutherford, S. (2002). Finance for the poor: From microcredit to microfinancial services. *Journal of International Development*, 14(2):273–294.
- Mbuvi, D. (2012). *Utility reforms and performance of the urban water sector* (Doctoral thesis). Maastricht University, the Netherlands.
- Mehta, M. (2008). *Assessing microfinance for water and sanitation: Exploring opportunities for sustainable scaling*. Final report for the Bill & Melinda Gates Foundation.
- Mehta, M., and Virjee, K. (2007). *Microfinance for rural piped water services in Kenya: Using an output-based aid approach for leveraging and increasing sustainability* (Policy Note No. 1). Kenya: Water and Sanitation Program.
- MIX (Microfinance Information Exchange) and CGAP (Consultative Group to Assist the Poor). (2010). *Sub-Saharan Africa 2009: Microfinance analysis and benchmarking report*. MIX and CGAP.
- Morduch, J. (1999). The microfinance promise. *Journal of Economic Literature*, 37(4):1569-1614.
- Nelson, C., McNelly, B., Stack, K., and Yanovitch, L. (1996). *Village banking: The state of the practice*. The Small Enterprise Education and Promotion Network and the United Nations Development Fund for Women.
- Quattara K., Gonzalez-Vega C. and Graham D.H. (1999) *Village Banks, Caisses Villageoises, and Credit Unions: Lessons From Client-Owned Microfinance Organizations In West Africa*. Economics and Sociology Occasional Paper No. 2523 USAID Microfinance Best Practices Case Study
- Prüss-Üstün, A., Bos, R., Gore, F., and Bartram, J. (2008). *Safer water, better health: costs, benefits and sustainability of interventions to protect and promote health*. Geneva: World Health Organization.
- Reis, N., and Mollinga, P. (2012). Water supply or 'beautiful latrines'? Microcredit for rural water supply and sanitation in the Mekong Delta, Vietnam. *Austrian Journal of South-East Asian Studies*, 5(1):10-29.
- Savenije, H. (2002). Why water is not an ordinary economic good, or why the girl is special. *Physics and Chemistry of the Earth*, 27(11):741-744.
- Schreiner, M. (2001). Informal finance and the design of microfinance. *Development in Practice*, 11(5):637–64.
- Seibel, H. (2005). Mainstreaming informal financial institutions. *Journal of Development Entrepreneurship*, 6(1): 83-95.
- Sinclair, H., and Korten, D. (2012). *Confessions of a microfinance heretic: How microlending lost its way and betrayed the poor*, Berrett-Koehler Publishers.
- Srncak K., and Hejkrlik, J. (2005). Microfinance Institutions in Latin America, Africa and South Asia. *Agricultura Tropica et Subtropica*, 38(1):28-34.
- Trémolet, S., and Kumar, T. (2013). Evaluating the potential of microfinance for sanitation in India (Research report). Sanitation and hygiene applied research for equity.
- Trémolet, S., and Muruka, G. (2013). Evaluating the potential of microfinance for sanitation in Tanzania (Research report). Sanitation and hygiene applied research for equity.
- UNICEF (United Nations Children's Fund) and WHO (World Health Organization). (2012). *Progress on drinking water and sanitation: 2012 update*. WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation.
- UN (United Nations). (1997). *Role of microcredit in the eradication of poverty*. United Nations general assembly.
- United Nations. (2010). *The human right to water and sanitation (A/RES/64/292)*, United Nations.
- WHO (World Health Organization). (2012). *UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water: The challenge of extending and sustaining services*. Geneva: World Health Organization.
- WSP. (2010). *Gender in Water and Sanitation*. Water and Sanitation Programme Working Paper Available from: <http://www.wsp.org/sites/wsp.org/files/publications/WSP-gender-water-sanitation.pdf> (accessed December 2013)



UNITED NATIONS
UNIVERSITY

UNU-INWEH



UNITED NATIONS
UNIVERSITY

UNU-MERIT

United Nations University
Institute for Water, Environment and Health
175 Longwood Road South, Suite 204
Hamilton, ON Canada L8P 0A1
1.905.667.5511 • <http://inweh.unu.edu>
[Facebook.com/UNUINWEH](https://www.facebook.com/UNUINWEH) • [Twitter.com/UNUINWEH](https://twitter.com/UNUINWEH)

ISBN: 978-92-808-6041-2