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**From NGO to social enterprise: The only roadmap towards
sustainable water supply in Goma**

A case study of Yme Jibu's water supply
system in the Democratic Republic of the Congo

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Abstract

The present thesis analyses the case of the Congolese social enterprise Yme Jibu that manages a semi-urban water network in the surroundings of Goma. Due to their independence from donor funds and their ability to reach scale, private initiatives show much promise of contributing to sustainable development. Inspired by this opportunity, Yme Jibu has emerged as a private company out of the non-governmental organisation (NGO) Yme Grands Lacs. In this light, this thesis evaluates whether the change from NGO to social enterprise represents a necessary driver for sustainable development and how Yme Jibu can best manage this transition. The research question is answered in three parts. Firstly, the author identifies the main elements that a sustainable business approach to poverty entails in order to provide an orientation on why and how business can be a driver for development. Second, the specific case of Yme Jibu is analysed based on the findings obtained during the field stay in Goma. This leads to the conclusion that the transition from NGO to social enterprise is viable and necessary for Yme Jibu to achieve its mission of providing sustainable water supply over the long run and for further communities. The practical analysis also shows that in order to succeed in this endeavour, several challenges need to be overcome. Based on this field experience, and on knowledge from researchers and other practitioners, the third part of the paper establishes ten best practices. These can be summarised in three main areas that need particular attention in the near future: the internalisation of the new role of being a social enterprise, the further development of the water service delivery to create value for the community as well as for the company, and a well-structured planning of the upscaling. By managing the transition along these best practices, Yme Jibu will be able to refine its business model in order to ensure the long-term sustainability of the water supply system in Goma and to be ready for the upscaling to new locations.

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List of abbreviations

ACS	Agents de collecte et de suivi (<i>commercial agent, sales agent, or field agent</i>)
BOP	Base of the Pyramid
CEO	Chief Executive Officer
CSR	Corporate Social Responsibility
DRC	Democratic Republic of the Congo
e.g.	Abbr. of Latin “ <i>exempli gratia</i> ” (<i>for example</i>)
FC (or CDF)	Congolese franc
HDI	Human Development Index
IDP	Internally Displaced People
i.e.	Abbr. of Latin “ <i>id est</i> ” (<i>that is</i>)
IMF	International Monetary Fund
JMP	Joint Monitoring Programme
MDG	Millennium Development Goals
MNC(s)	Multinational corporation(s)
NGO(s)	Non-governmental organisation(s)
NPO(s)	Non-profit organisation(s)
PPP	Purchasing Power Parity
Regideso	Régie de distribution d’eau de la République Démocratique du Congo (<i>Congolese state water utility company</i>)
SDG	Sustainable Development Goals
SNEL	Société Nationale d’Électricité (<i>national electricity utility</i>)
SSA	Sub-Saharan Africa
UNICEF	United Nations Children’s Fund
WHO	World Health Organisation
YGL	Yme Grands Lacs

1 Introduction

1.1 Practical problem statement and research question

In June 2017, Yme Jibu Ltd. was inaugurated as one of the first private companies in the region to manage a water supply network with the goal of ensuring sustainable water supply. The availability of clean water in Mugunga-Lac Vert, which belongs to the semi-urban surroundings of Goma in the Democratic Republic of the Congo (DRC), has had a huge impact on the development of the whole area, which is hardly imaginable for anyone coming from a country where being connected to a water network is

“I have invested my savings to buy land in Lac Vert. In the future, I plan to build my own hotel there. The landscape is beautiful and there, I can easily connect the hotel to the water network”,

Hotel employee in Goma (June 2017).

“Recently, I have bought a plot in Mugunga-Lac Vert, close to where they are constructing a building for the provincial government. The area has really attracted many people. Even the university of Goma is planning to move here”,

Staff member of YGL (June 2017).

usually taken for granted. The availability of clean drinking water near people’s homes is much appreciated. It has not only improved health and reduced the amount of time otherwise needed to fetch water from a distant source, but it has also considerably increased the attractiveness of the place. The presence of safe water has evoked interest among local authorities and institutions to invest in the area. Many private individuals have opened restaurants as well as small businesses and cheaper land prices have attracted families from Goma town. Today, around 25’000 people benefit from this piped-water network, which pumps water from Lake Kivu into storage tanks and chlorinates it, before the water is distributed by gravitational force to 26 public taps and nearly 100 private connections (including private households, commercial customers and institutions).

The water supply system was previously managed by the local non-governmental organisation (NGO) Yme Grands Lacs (YGL), out of which Yme Jibu emerged as an independent start-up under Congolese law. The history of Mugunga-Lac Vert has shown that private initiatives might be the only solution to ensure sustainable water supply over the long run. The water infrastructure was built by humanitarian organisations after the volcanic eruption of Mount Nyiragongo in 2002 had destroyed large parts of the city and forced people to re-build their houses outside of the city of Goma. In the aftermath of the eruption, several internally displaced people (IDP) from the inland of the country arrived and settled in three different camps in Mugunga. The water network was run as a humanitarian project and water was given away for free to prevent people from fetching unsafe lake water. Over the years, however, the situation has become a bit more stable. Donors have in certain instances withdrawn from the area and left expensive infrastructure to decay and prone to theft.



Figure 1: Map of Goma. The red rectangle indicates the area of Yme Jibu's water supply system, composed of the communities Mugunga & Lac Vert. *Source:* Google Maps



Figure 2: Typical public water station (or public tap) in Mugunga. *Source:* Own photograph taken on May 31, 2017

To keep the project running, Fontes¹, that was involved in installing the infrastructure and forming management systems through local partners from the beginning, helped establish YGL in 2014 as a local NGO with around 20 staff members. YGL took over the management of the water network in Mugunga-Lac Vert, aside from managing other projects with different partners. However, it was soon clear that remaining dependent on donor funds would mean an uncertain future for the water supply system, threatening to reverse the progress that has been made in terms of the socio-economic development of the area.

Therefore, the inception of Yme Jibu in Goma marked a key moment in the organisation's history and was inspired by the promise that market-based approaches have shown to be for sustainable development. In the early 2000s, researchers and practitioners began to promote the importance of business in contributing to poverty alleviation. C. K. Prahalad and S. Hart, the pioneers of the base of the pyramid (BOP) concept, claimed that business can help millions of people out of poverty by profitably providing products and services that satisfy their needs and that the government or other organisations are not able to supply at an affordable price and on a large scale (Prahalad, 2004, pp. 3-4). This is the main message of the BOP proposition, which is still prevalent today, although the approach itself has evolved over time. In this sense, the water network in Mugunga-Lac Vert has been operating as a pure social business² since June 2016, even though it was still under the legal form of an NGO until June 2017. This means that no donor money is involved in the project and Yme Jibu is starting to repay the investments made with the revenues generated by the water sales. Therefore, by having transformed the NGO into a privately managed enterprise, it has been possible to ensure the continued presence of affordable and safe water in Mugunga-Lac Vert.

¹ Fontes was established as a geological consulting company in 1985, but shifted its focus over the years to mainly hydro-geology and drinking water related issues. Today, Fontes pursues the goal of serving a large number of people by guaranteeing the long-term sustainability of water supply systems. Fontes is responsible for the mobilisation of investments and consultancy for Yme Jibu (for more information, see <http://www.agkoestler.no/fontes/>).

² In this thesis, the terms "social enterprise" and "social business" will be used as a synonym.

Nevertheless, what would the situation look like if Yme Jibu could provide sustainable water services not only in Mugunga-Lac Vert, but also in many other communities that lack this basic necessity? Operating as a profitable business would ideally allow Yme Jibu to reinvest the surpluses generated through the water service delivery to reach more people in other locations with the goal of fulfilling its vision of delivering predictable, continuous and affordable water over the long term to a larger population, especially reaching the most vulnerable people.

Having said that, operating a business in the BOP context is not an easy endeavour. The BOP comprises the four billion people constituting the poorest segment of the global economic pyramid, which is equivalent to half, if not the majority, of the world's population (Kolk, Rivera-Santos, & Rufin, 2014, pp. 351-352; London & Hart, 2011, p. 9). Today, the widely accepted definition of the BOP is that they "primarily live or transact in informal markets in the developing world and have an annual per capita income of less than USD 3000" (London, 2016, p. 9). The DRC, having an annual national income of USD 680 per capita, is therefore a typical BOP country (UNDP, 2017, p. 200). Nonetheless, it is important to keep in mind that the income level is not an exact demarcation but rather an "illustrative convenience" since poverty is also characterised by many other aspects (London & Hart, 2011, pp. 6-7). In Goma for example, there are large socio-economic differences between the city centre and the surrounding areas, and poverty is particularly prevalent at the periphery of the town (Büscher & Vlassenroot, 2013, para. 20). The water services have solved one vital problem in Mugunga-Lac Vert, but many other basic services have yet to be developed. For instance, only the central market road is connected to the national electricity utility (SNEL) and, apart from the National Road, the streets are unpaved, stony and hilly, which complicates the transportation of people and goods. Many of the inhabitants are day labourers with uncertain incomes and some of them receive support from aid agencies. Although schools and health centres have been built over the years, many people cannot afford their services. Moreover, there is a strong presence of humanitarian and development organisations in Goma, providing free services to their beneficiaries while for many Goméens it has become a "survival strateg[y]" to connect with charities in order to get access to international funding (Büscher & Vlassenroot, 2013, para. 11).

Under these circumstances, unique business strategies need to be applied. This is especially true for Yme Jibu not only because it operates in a BOP environment, but also because it was previously operating as an NGO. That is to say, in a context in which it would not be surprising to observe a certain unfamiliarity with using business approaches to development due to the widespread presence of donor-funded projects. Taking into account these aspects will be crucial in the development of Yme Jibu as a sustainable social enterprise. Hence, the present thesis seeks to answer the following research question:

Does the change from NGO to social enterprise represent a necessary driver for sustainable development and how can Yme Jibu best manage this transition?

The purpose of the present thesis is three-fold: Firstly, this thesis seeks to identify the main elements of a sustainable business approach to poverty in order to provide an orientation on

why and how business can be a driver for development. The second goal is to assess the case of Yme Jibu in order to identify its potential of providing sustainable water supply as a social enterprise and to analyse whether this is the most sustainable way for Yme Jibu to achieve its mission. The broad lines developed in the first part of the paper and the practical experience from Goma build the basis for this evaluation. Thirdly, the present paper elaborates best practices (including ideas for business development and critical moments to consider in the near future) based on practical and theoretical knowledge to guide Yme Jibu in its transition. With the evidence gained in this thesis, the author aims at providing crucial insights for the further development of Yme Jibu as a social business. Generally, the insights of this paper can also serve other organisations in the water sector that are facing similar challenges to those of Yme Jibu. Chapter 1.2 elaborates the broader relevance of the paper, namely the many unmet water needs, particularly in the DRC, for which sustainable solutions need to be found.

1.2 Broader relevance of the topic

The DRC could be one of the wealthiest countries in the world (Snow, 2013, para. 1): Its large deposits of water in the form of rivers and lakes constitute more than 50 percent of the water resources of Sub-Saharan Africa (SSA) and contribute to the high fertility of its land (IMF, 2015, p. 10). The DRC is also well endowed with minerals, such as copper, coltan and diamonds, to name a few (Snow, 2013, para. 21). Yet the second largest country in Africa is stuck in deep poverty with its Human Development Index (HDI) ranking 176 out of 188 in 2015 (UNDP, 2017, p. 204). Around 70 percent of the Congolese live below the internationally defined extreme poverty line of USD 1.90 per day (WDI, 2017). This is the result of many years of conflict and instability that the country has lived with since its independence in 1960, while different groups or ethnicities have been struggling for power and access to the mineral deposits which provide huge wealth to a tiny elite (EDS-RDC, 2014, pp. 2-3; Snow, 2013, para. 60). Although the wars have officially ended, violence persists especially in the south and east, and was recently intensified due to political tensions in the face of the upcoming elections: In 2016 alone, over 920'000 people were forced to leave their homes, mainly resulting from inter-communal clashes and armed attacks, especially in the east and south of the country (Kazeem, 2017, para. 2). According to Kazeem (2017, para. 5), this is the highest number of displaced people due to conflict in the world during 2016, even compared to Syria or Afghanistan.

These extended periods of violence have left many people without access to water and sanitation as well as to other basic services, such as health care, electricity, and education. Globally, it is estimated that 844 million people lack clean water, which is around 11 percent of the world population (water.org, 2017). The situation in SSA, and particularly in the DRC, is far more severe: The average rate of access to improved water is 73 percent in SSA, but in the DRC, only 46 percent of the people have access to a water source that is free of contamination, despite the abundant water resources in the country (IMF, 2015, p. 10). If “safely managed drinking water” was classified as improved water that is free of contamination,

and in addition located on the premise and available when needed, the percentages would be even lower (WHO, 2017, p. 48). In fact, only 5.6 percent of the Congolese have an improved water source in their plot and only 0.9 percent have one inside their house (EDS-RDC, 2014, p. 18). During the civil war, key water infrastructure was destroyed and maintenance work was neglected so that the Congolese State Water Utility Company, Regideso, is not able to provide water to the entire country (IMF, 2015, p. 11). To date, insecurity is still prevalent, the institutions are weak, qualified personnel is rare and key support infrastructure, such as roads and electricity, is often lacking so that it becomes extremely difficult for the water sector to allocate the available resources efficiently (AMCOW, 2015, p. 2).

The lack of clean water has serious consequences on people's health: It leads to water-borne diseases such as cholera, and diarrhoea in general, which accounts for health treatment costs of USD 7.5 billion worldwide (Hystra, 2011, p. 24; Vousvouras, 2013, p. 22). Indirectly, unsafe water also leads to productivity and income losses caused by missed days at work or at school due to sickness (Hystra, 2011, p. 24). Safe water could reduce the health burden by one fourth and lower the chances of becoming ill by one third (Vousvouras, 2013, p. 23). This illustrates why the availability of safe water is urgently needed. In addition, the situation in Mugunga-Lac Vert exemplifies that the availability of clean water not only leads to better health, but indirectly also contributes significantly to the socio-economic development of the area. Vousvouras (2013, p. 21) argues that since 1990, urban water network operators have been able to extend their services to an additional 700 million residents in the developing world. Despite the fast pace of urbanisation, only 5 percent of this growth has happened in Africa (Vousvouras, 2013, p. 21). Although usually a public task, private operators provide around 10 percent of all utility services to the Global South (Hystra, 2011, p. 79). Kubzansky, Cooper and Barbary (2011) analyse 13 different business models of BOP ventures and argue that, especially in Africa, business models that bring safe water or electricity to communities that lack affordable access, show "promise of delivering social benefit at scale" (p. 7). Their findings suggest that "it is indeed possible to succeed with a privately-operated model that charges a bit more than regulation currently allows — as long as the quality of the water is appropriately high" (Kubzansky, Cooper, & Barbary, 2011, p. 118).

Recognising the potential that private actors can have in mitigating the water challenge, a new water law was introduced in the DRC in 2015, which promotes sustainable and fair management of water resources (Loi n° 15/026 du 31 décembre 2015 relative à l'eau). The law welcomes the engagement of private initiatives to cover the enormous water supply demands in the country (Art. 96). Further, it explicitly mentions that the water should not be given for free, but that public service should be open to everyone. This means that a fair price that reflects the supply costs and is affordable to everyone must be adopted (Art. 84). The International Monetary Fund (IMF, 2015) notes that investments in the water sector are urgently needed and can act as "a potential channel for enhancing the inclusiveness of growth in DRC" (p. 12). Against this background, it becomes evident that viable business models can pave the way for huge development impacts on a large scale.

1.3 Methodology and structure of the thesis

The present thesis is structured in the following way. Chapter 2 defines why and how business can be a key driver for development, based on a literature review on BOP models and on the related social enterprise concept. The goal is to answer the following questions: What are the main advantages of combining business and development in terms of achieving sustainable impact (chapter 2.1)? When doing business in a BOP environment, which are the main challenges to overcome (chapter 2.2)? According to the existing experience in doing business with the BOP, which broad objectives does a business need to pursue in order to reach sustainability (chapter 2.3)? What kind of organisation is best suited to succeed in creating a sustainable business approach to poverty (chapter 2.4)? By answering these questions, the author elaborates the broad lines to follow for any company seeking to achieve sustainable development impact. For Yme Jibu this will be of crucial relevance since it has only recently begun to operate as a start-up business, which has not yet realised its great potential.

Chapter 3 is based on the insights gained during the three-weeks stay in Goma from May to June 2017. The methodology applied during the field research was mainly exploratory in nature. The findings build the source for any information presented about the water supply system of Yme Jibu (and previously YGL) throughout the paper. On the one hand, the author had numerous discussions with the staff of YGL and with Fontes (in Switzerland), during which she received valuable information about the project. By taking daily field notes she was able to document crucial information, own impressions observed and interesting quotes heard during these ongoing interactions. This strategy helped the author retain relevant and detailed information during the rather short period of time in Goma. In addition, data was obtained by conducting interviews with NGO representatives and mobile money service providers; a survey and focus groups with Yme Jibu's customers; interviews with two bicycle water vendors; and by participating in meetings with the water committee. All this was done with the kind support of YGL's employees, without whom this research would not have been possible. The practical findings are presented in chapter 3 in a structured way in order to assess the current performance of Yme Jibu. On the basis of this, the author will identify Yme Jibu's potential of providing sustainable water supply as a social enterprise and evaluate whether the transition from NGO to social enterprise is a necessary driver for development in Goma.

The practical findings of chapter 3 also build the foundation for the elaboration of ten best practices in chapter 4. These aim at highlighting ideas for business development and critical moments to consider in the near future so that Yme Jibu can refine its business model. This in turn will help realise its potential (and thereby its mission) as a social enterprise to provide sustainable water supply over the long term, and ultimately also for a larger population. In addition to the experience gained by the author, the best practices are based on theoretical knowledge, mainly about social enterprises operating in BOP environments as well as practical experience by other private initiatives in the water sector. The framework in chapter 4.4 visualises the main results. In conclusion, chapter 5 contains the final remarks.

2 Business as a key driver for development

First of all, it is necessary to explain why and how business can be a key driver for development. Understanding this is essential because, even though the main benefits of business approaches over traditional development assistance are widely acknowledged, there is still a certain disagreement on how a sustainable business approach to poverty should look like. Therefore, the author conducts a literature review to identify the main takeaways from earlier experience with using BOP models to finally come up with the three main elements that a sustainable business approach to poverty must entail. This general orientation is the same for any organisation that uses business as a driver for development and presents the broad lines to follow. The findings of this chapter are of crucial importance for Yme Jibu for the following reason: Currently Yme Jibu is a start-up-like organisation with a great vision, but which has not yet realised its full potential. Therefore, having defined the overarching objectives will facilitate the transition from NGO mindset to business mindset and make it easier to develop viable ideas for business development for the specific case of Yme Jibu.

2.1 The advantages of combining business and development

The history of the water supply system in Mugunga-Lac Vert is far from being an isolated case in the DRC, nor in other countries of the Global South, and poses a major challenge for the people left behind. The Norwegian Refugee Council country director (NRC, 2017) recently stated that aid in the DRC only covers 32 percent of the requirements and that the country is “one of the world’s most underfunded crises in 2017” (para. 7-8), despite the large presence of humanitarian organisations in the east. While the DRC might be a rather extreme case, it is true that development organisations in general are struggling more and more to cope with the sheer amount of unmet needs in the world. The world’s population has more than doubled during the past 60 years and most of this growth has occurred, and is likely to occur in the future, among the poorest people in the world, as London (2016, p. 12) notes. This makes it almost impossible for aid agencies to fulfil their missions of reducing global poverty (London, 2016, p. 12). In addition, the large sums of money that were spent on development cooperation since World War II have had an only limited overall impact on the poor, even though well-intended small initiatives are spread “all over the map” (Polak & Warwick, 2013, p. 44; 50). This makes the need for larger-scale initiatives evident, but achieving social impact at scale remains one of the biggest challenges for development organisations: Most of the ventures seeking to reduce poverty have remained small and highly dependent financial support from donors (London, 2016, p. 10). Another major reason for why development assistance has had small effects is that they often have more incentives to please their donors rather than their beneficiaries, which reduces the potential poverty alleviating impact that development cooperation could have had otherwise (Easterly, 2006, p. 333).

While the shortcomings of traditional development assistance puts pressure on the representatives of development organisations to think about new and scalable solutions, the

business world is looking for new opportunities and customers given the nearly saturated top-of-the-pyramid markets (London, 2016, pp. 14-15). This creates the unique opportunity to combine business and development approaches (London, 2016, p. 11). In order to motivate business leaders to think about the BOP, the two seminal articles that introduce the BOP proposition, presented in the introductory part of this paper, claim that the BOP consists of a huge untapped market, a “fortune”, which would bring large profits and growth opportunities beyond the often nearly saturated traditional markets and would, at the same time, contribute to poverty alleviation of the BOP (Prahalad & Hammond, 2002, p. 6; Prahalad & Hart, 2002, para. 6; 20). Prahalad (2004) calculates that businesses benefit from “4 to 5 billion underserved people and an economy of more than \$13 trillion PPP [purchasing power parity]” (p. 21). The idea was that even though the purchasing power of each individual is very low, together they would have “billions of dollars to spend” (Prahalad & Hammond, 2002, p. 5). In Africa, for instance, 95 percent of the people (486 million) live and transact in BOP environments and have a combined income of USD 429 million (Baumüller, Husmann, & von Braun, 2014, p. 338). By framing the BOP proposition as a market opportunity, C. K. Prahalad and his colleagues have been able to attract the attention of the business world to an area where previously only aid agencies had operated (Baumüller, Husmann, & von Braun, 2014, p. 337). At the same time, the increasing popularity of the BOP proposition incentivised the development community to think about business approaches to poverty (London, 2016, p. 14).

Accordingly, the famous United Nations Development Programme (UNDP) Report “Unleashing Entrepreneurship” states that the private sector is believed to be able to fill a gap by finding low-cost solutions for the poor in areas where either the informal sector was only able to provide goods of low quality and high prices due to insufficient economies of scale or where the government does not reach (UNDP, 2004, p. 8). Prahalad and Hart (2002, para. 49) argue that by selling products and services from which the poor were excluded can provide them access to the market economy. This in turn triggers economic growth and empowers people by increasing customers’ choice and reducing prices (UNDP, 2004, p. 8). Another advantage of business is that, once they are profitable, they can attract the necessary capital to scale up and expand their impact as well as hiring local people (Polak & Warwick, 2013, p. 61). Easterly (2006, p. 333) argues that because businesses depend on their customers to generate revenues, rather than being mainly accountable to any funders, they have more incentives to find products and services that satisfy the clients and are therefore better suited to target the real needs of the poor. Further, they are less influenceable by governments, multilateral organisations or civil society organisations (Polak & Warwick, 2013, p. 61). In general, the private sector is seen as more efficient and creative than development organisations (Wheeler, et al., 2005, p. 33). London (2016, p. 5) argues that today, the important role that the private sector can play in alleviating poverty is widely acknowledged by business leaders as well as by the development community. Therefore, it is beyond the scope of this thesis to question the relevance of business approaches to development. Nevertheless, only a few ventures have achieved the necessary scale to make a large-scale impact on

poverty reduction and hence, the question of *how* business can act as a key driver for development remains (London, 2016, p. 5).

2.2 Overcoming the five main challenges of BOP environments

Chapter 1.1 explained that the BOP represents the poorest people in the world, not only with regard to income levels, but also in terms of access to basic services and other characteristics that are descriptive of poverty. It is true that there are geographical and cultural differences within the BOP (Karnani, 2007a, pp. 91-92) as well as different socio-economic segments within one region (Rangan, Chu, & Petkoski, 2011, p. 114). Although, BOP environments³ like the communities of Mugunga-Lac Vert, have in common that they are very different from Western-style markets. This means that any company that plans to operate in this context must adopt different business strategies because they cannot rely on traditional marketing and service delivery channels (Kennedy & Novogratz, 2011, p. 47; Prahalad & Hart, 2002, para. 5). Anderson and Billou (2007) created the “4A framework”, which aims at helping companies achieve the promised “win-win situation” in which they can operate profitably while at the same time alleviate poverty, as suggested by Prahalad (2004, pp. 3-4).

The first challenge to overcome is “availability” and refers to “the extent to which customers are able to readily acquire and use a product or service” (Anderson & Billou, 2007, p. 15). BOP environments usually lack well-functioning infrastructure, which makes it difficult to bring a product or service to the customers, especially to those living in remote rural areas (Anderson & Billou, 2007, p. 15). In the DRC, for instance, fewer than 2 percent of the roads are paved (Anderson, Markides, & Kupp, 2010, p. 8). Covering a distance of around 12 km by car, from Goma town to Mugunga-Lac Vert, takes around 50 minutes and once outside of the town, certain areas are only accessible by jeep or motorbike. When infrastructure is lacking, transporting goods from one place to another can become demanding and time-consuming. In addition to the absence of physical infrastructure, the lack of electricity leaves certain communities in the so-called “media dark”, meaning that they do not have access to important information or educational messages (Prahalad, 2004, p. 11). Indeed, the demographic and health survey of the DRC shows that 66.3 percent of the women and 45.5 percent of the men aged 15 to 49 do not consume any media, such as newspaper, television or radio. The media with the most frequent consumption is the radio with 21.8 percent of the women and 42.3 percent of the men listening to it at least once per week (EDS-RDC, 2014, pp. 44-45).

The second major challenge is to ensure that a product or service offering is affordable (Anderson & Billou, 2007, p. 17). As stated in the introduction, the BOP represents the people with the lowest amount of income in the world, which means that their individual purchasing power is very low. Within the BOP, there are different socio-economic segments, and some of

³ Since BOP markets differ from Western-style markets, as stated above, the author will refer to BOP markets as “BOP environments”. This captures more appropriately the context of the BOP, which is characterised by several challenges and where markets may first need to be created, as will be explained in this and in the following chapter.

them may face more uncertainty and resource scarcity than others: While the lowest segments usually receive aid from charities and lack basic necessities such as food, clean water, and adequate shelter, others are able to gain a small income as day labourers. The latter may also have some years of schooling, and some of them can even afford to own mobile phones, bicycles or televisions (Rangan, Chu, & Petkoski, 2011, p. 114). Further, the lack of formal credit institutions and banks hinders people from opening bank accounts and forces them to keep cash under the mattress, which makes the money vulnerable to robbery and high inflation rates, as Banerjee and Duflo (2007, p. 156) note. Hence, the poor, like everyone else who has cash at hand, “have problems resisting the temptation of spending money that they have at hand”. This makes saving extremely difficult, even if it is for something as useful as a water connection (Banerjee & Duflo, 2007, p. 156; 164). Therefore, companies should use very low-cost raw materials and aim at a high degree of efficiency by making each step of the delivery chain as easy and simple as possible (Polak & Warwick, 2013, p. 78). The aspect of affordability is particularly important in Africa, where social businesses target comparatively more marginalised and vulnerable groups than in other regions of the world (Littlewood & Holt, 2015, p. 35). As consumers, their purchasing power is extremely low and they often have fluctuating incomes and irregular payment schedules. Their main priority is survival and consequently, they do not have much time or resources left to invest in long-term strategies (Baumüller, Husmann, & von Braun, 2014, p. 332).

Next, the products and services must be adapted to the real needs of the customers (Anderson & Billou, 2007, p. 18). This means that the product or service must be accepted within a given culture and user friendly so that customers become willing to buy it (Anderson & Billou, 2007, pp. 18-19). Banerjee and Duflo (2007) state that the poor do not necessarily “feel poor” in terms of self-reported levels of happiness and health, but that they report being “under a great deal of stress, both financial and psychological” (Banerjee & Duflo, 2007, p. 150). Therefore, for the BOP to accept an offering, it must not only be affordable, but it must also be able to alleviate customers’ financial burden in the short run rather than providing durable but expensive solutions (Polak & Warwick, 2013, p. 93). This means that companies need to thoroughly assess the risks that the product or service potentially poses for the BOP (London, 2016, p. 61).

The fourth challenge mentioned by Anderson and Billou (2007) is awareness, which refers to the “degree to which customers are aware of a product or service” (p. 15). Apart from the media dark explained above, which complicates the promotion of a new offering, a lack of awareness can also stem from the absence of schools of good quality. It is sometimes difficult to find well-trained teachers, public schools may be dysfunctional and people are unable to pay the fees for private schools (Banerjee & Duflo, 2007, p. 150). In the DRC, almost a fourth of the men aged 15 to 49 have received secondary education while only a third of the women has. Therefore, illiteracy is more common among the latter (47.7 percent) than among the former (11.3 percent) (EDS-RDC, 2014, pp. 42-43). In any case, the poor quality of many public schools leads to low learning levels, which in turn has negative effects on the awareness of

hygiene and sanitary standards, but also on the ability to form civil society groups and put pressure on the government to change something (Banerjee & Duflo, 2007, p. 160; 163).

Even though Anderson and Billou (2007) only described four main challenges, the author believes that there is a fifth challenge that is essential to recognise when operating in a BOP environment: establishing trust with the community where a business is operating. In BOP environments, legally enforceable frameworks and property rights are scarce, which reduces the usefulness of business contracts or legal land titles (Faivre-Tavignot, 2016b, p. 35). In the DRC, for instance, it is comparatively easy to start a business, but registering property and enforcing contracts are two of the main difficulties faced by companies, along with getting electricity and access to credit (WB, 2017). Furthermore, the risk of corruption discourages many firms from entering the BOP markets, which in turn leaves space for local monopolies and monopolistic intermediaries that can show exploitative behaviours (Kennedy & Novogratz, 2011, p. 47; 57; Faivre-Tavignot, 2016a, p. 35). Therefore, it is understandable that social relations based on mutual trust, rather than legal frameworks, are the key to good long-term partnerships (London & Hart, 2004, p. 352; Faivre-Tavignot, 2016b, p. 35). In addition to the above mentioned, social relations are particularly important in the interaction of a company with its customers. Very often, people show mistrust towards firms coming from outside of the community, and might even be reluctant to pay for a service which they have been used to get for free, as Kennedy and Novogratz (2011, p. 58) argue. Not least, companies, especially if they are big, are sometimes considered to be illegitimate actors if they make profits from the poor without enhancing their well-being (Chiliová & Ringov, 2017, p. 49). This can have several reasons. On the one hand, corruption is widespread in many BOP countries, including politicians who can make and break promises to the disadvantage of the people without fearing harsh consequences (Kennedy & Novogratz, 2011, p. 47; 58). All this is further aggravated in “extreme contexts”, such as deep rural places, urban slums or conflict zones, which might even be out of government control. This exposes people to a real risk of violence, lawlessness and criminality in addition to the “normal” BOP characteristics such as lacking infrastructure and corruption (Anderson, Markides, & Kupp, 2010, p. 8). Even if development organisations and charities are operating in these areas, they generally need to adjust their priorities according to donors’ interests and may leave an area too soon (Kennedy & Novogratz, 2011, p. 58). Therefore, it is not surprising that for the BOP highly value social relations and show scepticism towards outsiders, be they politicians, firms or even development organisations.

2.3 Pursuing the right objectives to reach sustainability

Understanding the challenges of a typical BOP environment is important for every organisation that seeks to provide goods and services to the BOP. However, practical experience shows that designing strategies that exclusively focus on overcoming these challenges is not enough (Anderson, Markides, & Kupp, 2010, p. 22). The reason for this is that the BOP does not constitute in an already existing market that can be tapped into by any

company wishing to do so. Firms perceiving the BOP as an existing market have often concluded that this market is in reality very small and that there would be no “fortune” like the one promised by the BOP proponents (Karnani, 2007a, p. 91). Yet Simanis, Hart and Duke (2008) argue that seeing the BOP as an already existing market where a fortune can be “found” by adopting top-down market entry strategies, risks imposing on the BOP the organisation’s “own, culturally conditioned assumptions about what constitutes a fulfilling life and a “developed” society” (Simanis, Hart, & Duke, 2008, p. 60). Therefore, solely focusing on overcoming the BOP challenges by finding the right market entry strategies risks that companies will mainly focus on profits and less on poverty alleviation and thereby “create needs where previously no needs existed” without actively seeking for real social impact (Landrum, 2007, p. 3; 6).

With this realisation, an important change of paradigm had taken place, which is crucial to understand for any organisation that is genuinely interested in creating a successful market-based approach to poverty: Instead of finding the fortune, companies must rather “create value for both the enterprise and those it seeks to serve”, by engaging with the BOP. This is what London (2016, pp. 17-18) calls “fortune creation” or “mutual value creation” and entails encouraging innovation by collaborating “*with* the BOP”, as compared to working “*at* the BOP” (London, 2016, p. 17). This means that firms need to apply innovative approaches to create new business models (Gebauer, Haldimann, & Jennings Saul, 2017, p. 544). In doing so, businesses must carefully listen to their potential customers in order to understand their needs and aspirations (Gebauer, Haldimann, & Jennings Saul, 2017, p. 544; Polak & Warwick, 2013, p. 11). Anderson, Markides and Kupp (2010) argue that companies “should build their own in-depth understanding of the local environment, and then combine own insights with the knowledge of business partners to develop and implement operating models that fit within local realities” (p. 22). In a similar way, Polak and Warwick (2013, pp. 177-178) argue that a “mission-driven global business” can only be successful as a business in the long-term if it takes strategic decisions by balancing the interests of the shareholders with those of the stakeholders (e.g. employees, customers, the communities where the business is operating, etc.) and by focusing on decentralisation when scaling up in order to empower local communities and their initiatives.

With this change of perspective, practitioners and researchers realised that an additional element needed to change in order to create sustainable development by using BOP models. Business approaches used by early BOP initiatives deemed the impact on poverty alleviation to be an automatic side effect of a company’s success in operating in BOP markets (London, 2016, p. 17; Karnani, 2007a, p. 106). However, two of the main examples cited by Prahalad (2004) as successful BOP ventures, Aravind Eye Care and Grameen Bank, put a strong focus on social output rather than on “limited personal gains” by taking up the promised market opportunity (Prahalad, 2004, p. 268; Yunus, 2008, p. 27; 29). This led to the conclusion that poverty reduction should not be seen as a by-product of economic gains, but rather as a primary goal in itself (Landrum, 2007a, p. 106). London (2016) claims that social impact must

be a “key performance indicator” because ultimately, the financial gains of a company depend on the company’s ability to “create net positive changes in poverty alleviation” (pp. 90-91). Seelos and Mair (2005, pp. 243-244) point out that, for example, the Sustainable Development Goals (SDG) — and previously the Millennium Development Goals (MDG) — provide useful reference points as to which social benefits are priority needs to target. In line with this change of paradigm, the present thesis explicitly understands the BOP as the *base* of the pyramid, which indicates “a starting point” whereby the base is a “fundamental part of something else” (Landrum, 2007, p. 8). This point of view reflects a more positive and dynamic attitude. In comparison, the *bottom* of the pyramid is associated more with the early BOP models that had a rather “negative connotation” (Kolb, 2008, p. 185), in analogy with the bottom, which describes the “underside” or the “lowest part” of something, which is not really enhancing an optimistic understanding of the BOP (Landrum, 2007, p. 8).

Importantly, however, emphasising the need to actively create social impact does not suggest giving up the commercial motive, but it does mean to refrain putting societal issues at the periphery (Favre-Tavignot, 2016b, p. 59). Successful business models must thus combine the “best of the markets with the best of traditional aid” (Kennedy & Novogratz, 2011, p. 46). This is what distinguishes successful market-based approaches from the more top-down BOP models used earlier. This means that the social and economic goals are complementary and both necessary drivers for development. Practical experience in Kubzansky, Cooper and Barbary’s (2011, p. 4; 35) report, which analyses 439 market-based initiatives in SSA, shows that successful organisations possess three interlocking characteristics: the value proposition must provide tangible social benefit to low-income people; the organisation must be financially self-sustaining, i.e. at least break even and at best make a profit; and it must be scalable because only when it reaches a significant number of low-income people, the venture can be called a “solution to poverty” (Kubzansky, Cooper, & Barbary, 2011, p. 35). This means that besides the social orientation, a sustainable business approach to poverty must also have an economic orientation that is as strong as the social one. Polak and Warwick (2013, pp. 140-141) highlight that taking a commercial approach that seeks to make a profit is crucial because only this will allow the company to reinvest its surpluses and attract new money from investors to expand its impact to other locations. Yunus (2008), who defines the concept of the “social business”, argues that once an organisation has overcome financial dependence, it “enjoys the potential for almost unlimited growth and expansion” (p. 29). Taking a market perspective

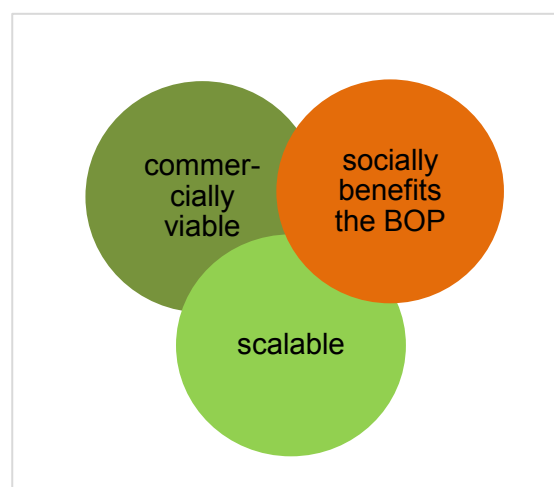


Figure 3: The characteristics of market-based solutions to poverty.

Source: Kubzansky, Cooper & Barbary, 2011, p. 35

thus allows a business to benefit from the advantages that businesses have over conventional development organisations (Goyal, Sergi, & Kapoor, 2017, pp. 97-98).

Financial independence is not only the key to achieve scale, but it also allows a company to become more focused on its core activities because if an organisation does not recover its full costs, managers are forced to devote significant effort to raise money instead of working towards their objectives (Yunus, 2008, p. 28). These businesses often adopt private capital organisational forms, use business tools, measure their financial performance, and strive to enhance the effectiveness and efficiency of their operations (Kennedy & Novogratz, 2011, p. 46). Yunus, Moingeon and Lehmann-Ortega (2010, p. 310) argue that such a company can have an organisational structure and a managerial mindset that is “basically the same as profit-maximising businesses”. Yet he states that the owners of the business do not earn dividends (but they do get their money back) because all the surpluses are reinvested in the company to improve the business and for the upscaling (Yunus, Moingeon, & Lehmann-Ortega, 2010, pp. 310-311). In this sense, even if a social business may earn a profit, it is “cause-driven rather than profit-driven” (Yunus, 2008, p. 28). In contrast, investors in London’s (2016) “BOP impact enterprise” may or may not seek to maximise profits, i.e. stakeholders may prefer a “mix of financial and social returns” — as long as it ensures long-term sustainability (p. 14; 16). In conclusion, a company that seeks to successfully operate in a BOP environment must pursue the objectives of economic viability, scalability and being socially beneficial to the poor. However, there remains some ambiguity about the degree to which profits should be envisaged (i.e. non-profit, profit-optimising or profit-maximising) to reach the above-stated objectives of a solution to poverty, as defined by Kubzansky, Cooper and Barbary’s (2011, p. 35). The next chapter thus elaborates on this issue in more detail.

2.4 The unique potential of for-profit social enterprises

In principle, any organisation that pursues the above-defined objectives can contribute to sustainable development. For instance, London (2016, p. 10) explicitly mentions that the concept of the BOP impact enterprise can be used by practitioners in the business world, entrepreneurs and the development community. Similarly, the mission-driven global business proposed by Polak and Warwick (2013, p. 9) can be initiated either by independent entrepreneurs that start small and create a scalable business solution or by already established firms that seek to tap into new markets. While at first multinational corporations (MNC), i.e. purely profit-maximising firms, were believed to be key actors in serving the BOP profitably (Wheeler, et al., 2005, p. 34), practical experience has shown that small and/or local firms, such as social enterprises, have more often initiated successful BOP ventures (Kolk, Rivera-Santos, & Rufin, 2014, p. 349; Karnani, 2007a, p. 96; Karnani, 2007b, p. 105). These social enterprises are “not locked into narrow traditional business thinking”, which is why they are well-suited to innovatively address the needs of the poor and can thus better create value for the company and the community at the same time compared to MNCs (Porter & Kramer, 2011,

p. 70). In this sense, small and local social enterprise, should be in an ideal position to grow over time and create sustainable development impact.

However, the term social enterprise is used by many practitioners in the field and is a rather unprecise term (Mair & Martí, 2006, pp. 36-37). For instance, it is argued that social enterprises can be for-profit or non-profit organisations, as long as their goal is to achieve financial independence, and that the legal structure is not a defining element of a social enterprise (Alter, 2007, p. 53; 55). Mair and Martí (2006) argue that the distinction should take place on the basis of the “relative priority given to social wealth creation versus economic wealth creation” (p. 39). At the same time, Yunus (2008, p. 27) emphasises on the “multi-dimensional” nature of human beings and their ability to combine social and economic motives. In this sense, Alter (2007) claims that social businesses envisage a long-term mission and are “established strategically to create social and/or economic value for the organisation” (p. 17). Against this background, Polak and Warwick (2013) make a crucial observation: They argue that social enterprises are indeed specifically created to serve a social need, but once this social mission has been embedded in the “DNA” of an enterprise, a positive impact on poverty alleviation will be certain to happen and thus “the real challenge is earning attractive profits while doing it” (p. 13). They criticise that many social enterprises operate as non-profit organisations (NPO) and put a weak focus on using market-based strategies (p. 49). Compared to a NPO with the goal of just recovering the costs, a social enterprise with a for-profit legal structure is forced to adopt more productive and financially driven models (Alter, 2007, p. 55). The advantage of aiming at profitability is what will finally allow the venture to scale up and thereby making the difference between small-scale development impact and poverty alleviation on a large scale (Polak & Warwick, 2013, p. 11). Since scaling up is the biggest challenge for a social enterprise, it must be planned from the very beginning of a social venture (Chilova and Ringov, 2014, p. 50; 76; Polak & Warwick, 2013, p. 139). Nonetheless, the upscaling needs to be done gradually by targeting only a few locations at the start where the business model can be “fine-tuned” before expanding the market significantly (Goyal, Sergi, & Kapoor, 2017, p. 105). Scale can take a long time and it is important to develop and perfect the business model. It should be proven in the market before it is scaled up (Kubzansky, Cooper, & Barbary, 2011, p. 15). Having said this, microenterprises operating in BOP markets or NPOs with income-generating activities will not classify as social enterprises if they do not aim for scale beyond the local market (Alter, 2007, p. 17; London, 2016, p. 16).

In this light, each social enterprise needs to find its “sustainability equilibrium” (Alter, 2007, p. 14), i.e. an optimal profit level that allows for the accomplishment of the mission, but at the same time focuses on achieving this mission in the most efficient way possible, as suggested by Polak and Warwick (2013, p. 13). Like this, Baumüller, Husmann and von Braun (2014, p. 346) claim that social enterprises are best suited to build inclusive business models: Firstly, profit-maximising enterprises may prefer to target those segments within the BOP that earn a relatively higher income while social enterprises are more likely to focus also on including the extremely poor. Indeed, many of the profit-maximising businesses mentioned in Prahalad’s

(2004) book were targeting customers earning above 5 USD a day, thus not including those who most need it (Karnani, 2007a, p. 93). Secondly, social enterprises have a relatively flexible organisational structure as compared to established companies. This allows them to adapt to the needs of customers and attract investors who are willing to invest with less than usual assurance of financial profit (Baumüller, Husmann, & von Braun, 2014, pp. 346-347). Like this, investments are more likely to be allocated in a way to ensure the long-term survival of the service provision infrastructure rather than short-term profit. Therefore, social enterprises have the possibility to benefit from “patient capital” providers (Kennedy & Novogratz, 2011, p. 46; 50). The latter usually allow for a longer period of time to pay back the investments, value social and economic achievements, and generally tolerate more risk than traditional capital providers (Kennedy & Novogratz, 2011, pp. 48-49). Given this opportunity, social enterprises, even if they are locally based, should necessarily develop “global DNA” since this allows them to access global fundraising networks (Hammond, 2011, p. 202). At the same time, social enterprises can look for investors in private capital markets if their margins are sufficiently high (Dees & Anderson, 2003, p. 5). This will be especially important when the enterprise starts to expand on a large scale (Polak & Warwick, 2013, p. 11). Thirdly, the sectors that matter the most for the poor may not yield high financial returns, especially if they live in areas that are difficult to reach through traditional supply channels (Baumüller, Husmann, & von Braun, 2014, pp. 346-347). Due to the explicit focus on the value proposition, social enterprises will be likely to continue in their efforts for a longer period of time since it will be less deterred by financial performance that is below the maximum (Chiliova & Ringov, 2017, p. 52). The author concludes that social enterprises must adopt a for-profit organisational form and aim at an optimal profit level that allows for the accomplishment of the social mission —internalised in the company — and for a strong focus on using business principles to achieve this mission.

In summary, chapter 2 has revealed that business is clearly a driver for sustainable development. Nevertheless, not every company will be successful in operating in a BOP environment. This is to say, the analysis of chapter 2 demonstrates that a sustainable business approach to poverty must entail the following three elements. As stated in the introduction of this chapter, these elements build the overarching orientation for any business that seeks to generate social impact over the long term and on a large scale.

Element 1: Overcoming the main market challenges of BOP environments, namely making the services available and affordable for the poor while creating acceptability, awareness and trust on the side of the BOP.

Element 2: Collaborating with the BOP, e.g. potential customers or intermediaries, to enable the creation of an innovative business model that takes into account the needs and aspirations of the BOP and actively creates social impact.

Element 3: Adopting a for-profit organisational structure and a strong business mindset to reach profitability because only this allows the company to attract sufficient investments and/or reinvest the profits to expand the social impact to a larger population.

3 Identifying Yme Jibu's potential of providing sustainable water supply

3.1 Overview and introduction to the practical analysis

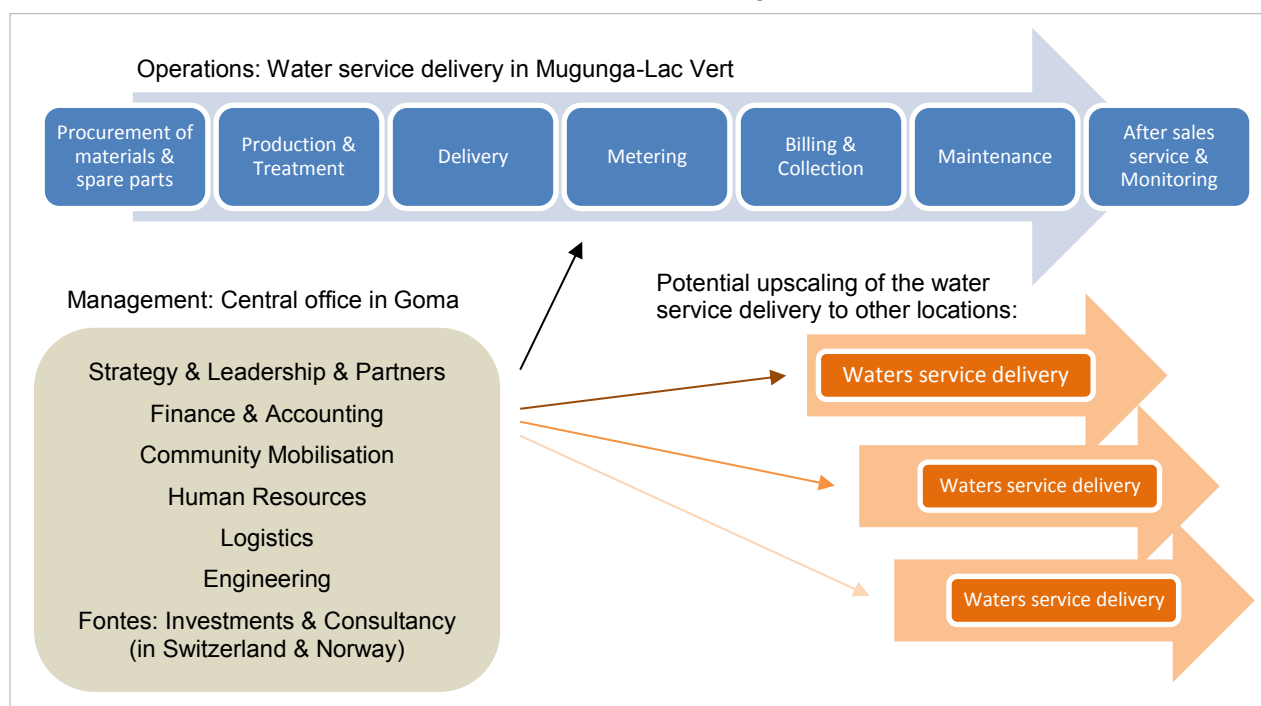
Having identified that business becomes a necessary driver for development if a company successfully works along the main elements (or the broad lines) of a sustainable business approach to poverty, as identified in chapter 2, the next step is to analyse the particular case of Yme Jibu. As mentioned in the introduction, Yme Jibu's mission is to provide sustainable water services over the long run and potentially for many other communities, in addition to Mugunga-Lac Vert, by reinvesting the surpluses generated through the water sales to reach more people. Therefore, Yme Jibu, currently being a small and dynamic start-up that has a good understanding of the local environment, seems to be in an optimal position to achieve this mission by being a for-profit social enterprise. Against this preliminary conclusion, this chapter assesses whether being a for-profit social enterprise is indeed a viable option for Yme Jibu and identifies the main challenges (and hence, the still unexploited potential) that Yme Jibu is currently facing in view of this transition. The experience gained during the stay in Goma helped the author gain a deeper understanding of the functioning of the water service delivery⁴ and its management. The own impressions and various discussions with YGL staff together with the customer interactions during the interviews and focus groups will build the basis for the assessment that follows in chapter 3.2. More specifically, sorting the findings from the field stay and presenting them in a structured way, allows the author to identify 18 key questions that represent Yme Jibu's unexploited potential of providing sustainable water supply as a social enterprise.

To provide the reader with a visual overview, figure 4 illustrates Yme Jibu's current operational and management activities. The core activity (or the operations) is the water service delivery in Mugunga-Lac Vert (in blue). The water service delivery describes the different steps needed to bring the water from Lake Kivu to the customers, including the related administrative tasks (e.g. monitoring, billing, etc.) and customer service (e.g. after sales service). The management (in grey) describes the main tasks that are executed in the Goma office — of course with regular contact and field visits to the communities of Mugunga-Lac Vert — and refer to more strategic activities as compared to the tasks of the water service delivery. Included in the management is Fontes in Switzerland and in Norway, which is responsible for the mobilisation of investments and consultancy for Yme Jibu. Finally, the small arrows in orange illustrate that Yme Jibu is starting to reach new locations. Although, Yme Jibu is still in the very initial "test" phase of the upscaling. Having said this, the intention of this chapter is not to undertake a detailed analysis of every single operational and management activity. Rather,

⁴ In certain water networks, the water service delivery is called water delivery chain or supply chain. However, Yme Jibu and Fontes are usually referring to it as "water service delivery".

the intention of figure 4 is to show how the areas are affected differently by the transition from NGO to social enterprise.

Figure 4
Yme Jibu's operational and management activities



Notes: Illustration of Yme Jibu's water service delivery in Mugunga Lac-Vert (in blue) and the management functions (in grey) that are exercised mainly from the central office in Goma (with regular field visits). The three water service delivery arrows (in orange) indicate that Yme Jibu is starting to scale up to new locations. So far, however, the upscaling is in its very initial phase and it needs to be seen in the future how it is best organised. *Source:* Own compilation.

On the one hand, the transition implies that the management needs to shift from NGO mindset to business mindset. This entails taking strategic decisions in order to make the company profitable (in line with elements 2 & 3 of the sustainable business approach to poverty). Chapter 3.2.1 looks at this in more detail and explains why there is a need to clarify the social and economic objectives and the extent to which Yme Jibu should be socially or financially oriented. In addition, chapter 2.4 suggests that the upscaling is among the biggest challenges of a social enterprise and should be planned from the beginning. Therefore, chapter 3.2.1 explains from a practical point of view why it is important to identify already now the critical moments that will need to be considered when scaling up in a later stage of the venture.

On the other hand, chapters 3.2.2 and 3.2.3 look at the water service delivery in more detail. In line with the three elements of a sustainable business approach to poverty, the water service delivery needs to be able to overcome the main challenges of a BOP environment (and specifically those that are prevalent the case of Mugunga-Lac Vert). In addition, the activities of the water service delivery need to be organised in the most efficient and effective way possible. Finally, it needs to take the needs and desires of potential and existing customers into account in order to purposefully create social impact. With this in mind, chapter 3.2.2 identifies the economic potential of Yme Jibu to improve its efficiency and profitability, which is more closely related to supply-side aspects. Chapter 3.2.3 identifies the social potential of Yme

Jibu to expand and improve its social impact, which is more closely related to demand-side aspects.

3.2 Assessment of the current situation of Yme Jibu

3.2.1 The need to strengthen the business mindset and the related objectives

First, it is important to understand that the transition from NGO to private company did not happen from one day to the next, but happened gradually within one year prior to the inception of Yme Jibu on June 1, 2017. Customers were made aware of the need to introduce water prices to keep the water service delivery running in the future and in the months before the start of Yme Jibu, the water sales generated revenues of around USD 13'000 per month. During that year, the staff had time to get used to manage the money collection, learn about the cost and revenue administration, and get a first impression about the main challenges of operating a business. What has changed since June 1, 2017, is that Yme Jibu is now bound by the requirements of its legal structure. This means that, apart from managing the daily operations, it needs to define economic objectives and develop sound business strategies aimed at ensuring the long-term existence of the business. Since Yme Jibu is now also accountable to its investors, it also needs to be able to provide information about the performance of the enterprise. As an NGO, the focus was on reporting monetary expenses and project outcomes. Yet a business needs to plan in advance how the monetary expenses will be covered by the revenues. Therefore, having exact revenue and cost data tends to be more important in a business than in an NGO. In fact, without collecting and interpreting the right data, it is difficult to get a complete picture of the company's situation, which makes it difficult to design appropriate business strategies.

Question 1: How can Yme Jibu make sure that the right data are collected correctly and interpreted so that they can serve as a basis for strategic decision making?

Question 2: How can Yme Jibu ensure that everyone understands the business opportunity of securing the long-term existence of the water service delivery in Mugunga-Lac Vert?

Considering the social side, as an NGO, the focus clearly was on the social mission of the organisation. As a *social* business, however, the social orientation does not disappear. In fact, it is one of the main objectives that a sustainable business approach to poverty must pursue, as identified in chapter 2. Yet in practice, social and economic aspects can easily come into conflict or create uncertainty. An illustrative example from Goma that highlights this dilemma is about the households with private connections: The monthly water bills are due eight days after the distribution of the invoice and if a household does not pay, Yme Jibu should disconnect this household from the water network until the amount due is paid. However, someone was asking: "We should cut certain connections because we have many open bills. But water is also a basic necessity and therefore, our services have a social focus. So, what should we do?". Another example that shows how social and economic goals can conflict was during the discussion about introducing automated water dispensers that would allow for better

monitoring and cash management. However, Yme Jibu employs various people from Mugunga-Lac Vert, for instance as tap operators, who would eventually be made redundant through the introduction of automated water taps. The dilemma is thus about how Yme Jibu should decide on such innovations if on the one hand, they could improve the economic performance of the company, but on the other hand, leaving people without employment in a context where finding a job is very difficult.

Question 3: How can Yme Jibu differentiate between the aspects that are included in its social mission and those that are not?

Question 4: How can Yme Jibu create a common understanding about the social orientation and institutionalise it?

A transition from NGO to social enterprise cannot only raise issues within the organisation, but it can also create confusion among stakeholders and partners. A key partner of Yme Jibu, for instance, is the water committee. The water committee is composed of people from Mugunga-Lac Vert who act voluntarily as representatives of the community and are the main point of contact for Yme Jibu to get crucial information about the customers, such as complaints or suggestions as well as information about leakages or illegal connections. During the meetings with the water committee, it seemed that the “commercialisation” of the water service delivery was seen in a rather sceptical light by them. For instance, it was pointed out several times that in Mugunga-Lac Vert there are living many vulnerable people and hence, Yme Jibu “needs to be more humanitarian” (see Appendix A). In a context where humanitarian organisations are widely present, like in Goma, it might be normal for an enterprise to face some resistance to paying for a service that was previously given for free to the beneficiaries. While the meeting with the water committee is just an illustrative example, Yme Jibu is likely to face similar situations in the future when it is dealing with new partners, for instance in locations where it seeks to expand its services. Therefore, it can be helpful and time-saving to have to have clear strategy on how to deal with these situations. This is even more important considering that in BOP environments, relationships are established on the basis of mutual trust rather than legal frameworks (see chapter 2.2).

Question 5: How can Yme Jibu demonstrate to its stakeholders and partners the social impact of the enterprise and why is this necessary?

Finally, successful business approaches to poverty also need to scale up, and as explained in chapter 2, it is crucial to plan the upscaling from the beginning. From a more practical point of view, Yme Jibu faces pressure to scale up relatively fast due to the increasing inflation that makes dollar expenses become disproportionately high. Since June 2016, the USD to Congolese Franc (FC) exchange rate has almost doubled (XE, 2017). Thus, the idea is that scaling up could help Yme Jibu generate the necessary revenues to achieve profitability. Further, Yme Jibu is receiving requests from customers and other organisations to either extend its network to underserved areas or to take over the management of existing water

infrastructure that has once been established by humanitarian organisations, but been abandoned. The fact that the inflationary pressure is evident and that questions about scaling up to other localities are not of theoretical nature, but have been raised now, shows the need for Yme Jibu to start planning the upscaling. However, at this point in time, the expansion is still in its very initial phase. Therefore, it is first and foremost important to manage the pilot phase in a way that enables Yme Jibu to use the learnings to elaborate a detailed scaling strategy in a later stage.

Question 6: In the initial phase of the upscaling, which aspects are most important to consider so that it facilitates scaling up and expanding the water supply system in a later stage?

Question 7: How can the water service delivery in the scaling location be organised so that it creates value for the company by increasing its profitability and value for the community by expanding the social impact?

3.2.2 Economic potential for the development of the water service delivery

The first aspect that can give an indication on the economic viability and performance of an enterprise are the costs. In the case of Yme Jibu, the costs are divided into operational and capital costs. The operational cost analysis below shows that during the period from January to June 2017, the following three categories of expenses were the highest compared to other operational cost categories. All other operational cost categories (under “other”) accounted for less than 6 percent of total costs each, and in total for 38.02 percent.

Diesel (87.46 % of variable costs):	27.46 % (at current consumption level)
Salaries for staff:	21.64 %
Salaries for tap operators & money collectors:	12.88 %
Other:	38.02 %
<u>Sum:</u>	<u>100 %</u>

As can be seen above, the comparatively high salary costs (more than 30 percent of total operational costs) are responsible for the fact that fixed costs are relatively high compared to variable costs. Due to the fact that the salaries are currently paid in USD and inflation is raising in the country, the fixed costs are likely to increase in the future while there needs to be disproportional increase in revenues to reach the same amount of money in USD to pay the salaries. Assuming that reducing the actual salaries is not a realistic option, the relative salary costs compared to the revenues could only be decreased if Yme Jibu reached economies of scale, for instance by expanding to other locations.

Question 8: Given the relatively high share of salary costs (i.e. fixed costs), how can the operations and the management be organised so that it allows Yme Jibu to reach economies of scale?

Apart from the salary costs also the diesel costs are high. They account for almost 90 percent of the variable costs per cubic meter of water produced, and cumulatively, for more than 27 percent of the total monthly operational costs. Reducing the actual costs per cubic

meter of water produced is difficult, but the relative diesel costs per cubic meter of water produced compared to the revenue that one cubic meter of water generates could be reduced in two ways. First, during the period from June to September 2017, the difference between water produced and water sold was on average 6733.05 m³ per month. This is also called non-revenue water and represents the water that is lost before it actually reaches the customer. Considering the diesel and chlorine costs of 380.97 FC and 54.60 FC per m³, respectively, Yme Jibu loses almost 3 million FC per month. One possible reason for this are physical water leakages from broken water pipes, which was mentioned by several respondents and by the water committee as a problem (see Appendix A). Further, there exists the possibility that a certain amount of water is lost due to illegal connections.

Second, payment recovery has been identified as a major challenge for Yme Jibu. Payment recovery rates are calculated as the percentage of money collected for water sales in relation to the amount of water consumed. The payment recovery rates are currently 98 percent for the tap stations, 62 percent for the private connections and 31 percent for the institutions. Here it is important to mention that the payment rates for the public taps are very high, but this percentage is calculated based on the assumption that only 2000 FC per m³ instead of 2500 FC per m³ is collected to account for physical water losses during the process of filling the jerrycans. If the expected revenues per cubic meter could be increased to 2500 FC, overall revenues could be increased significantly. In general, increasing revenue collection at public taps can lead to larger revenue increases as compared to increasing payment recovery for private customers because the latter make up only a small share of total consumption. More details on the consumption levels will be given in the next chapter and are represented in figure 9.

Moreover, the breakeven point gives an indication on the profitability of an enterprise. An organisation reaches breakeven when revenues equal total costs. Table 1 presents an overview of different breakeven scenarios. The details on the calculations that led to the conclusions in this table can be found in Appendix C. Due to some inconsistency of the exact numbers (mainly concerning the water sales in cubic meter over time) and because the relevant data needed for the calculation were only fully available for four months (February to May 2017), table 1 is meant to show the general tendencies if different scenarios were implemented. The table shows that currently, Yme Jibu manages to recover the operational costs, but covering the capital costs (i.e. the part of the revenue that goes to Fontes to repay the investments) is still a major challenge.

Table 1
Current and potential breakeven scenarios

Scenarios:		Breakeven point (excl. capital costs)	Breakeven point (incl. capital costs)
1	Current situation	profitable	not profitable
2	Breakeven at maximum collection rates (for private customers)	profitable	almost profitable
3	Breakeven at maximum collection rates (for private customers) and if expected revenue at public taps is increased to 2500 FC per m ³	profitable	profitable

Notes: The detailed calculations can be found in Appendix C. *Source:* Own compilation and calculation based on data received by YGL and Fontes.

However, under the assumption that all the open invoices of private customers could be collected, Yme Jibu would almost reach the breakeven point where operational and capital costs could be recovered (scenario 2). Table 1 shows that Yme Jibu has a huge potential to get even more money out of the system if in addition to recovering the payments from private customers, it also managed to increase the expected revenue at public taps from 2000 FC to 2500 FC per cubic meter: In scenario 3, Yme Jibu could operate as a profitable business that is able to recover operational and capital costs. Even though it might not be realistic to reach collection rates of 100 percent, the visualisation of these scenarios in table 1 can provide incentives to improve the current percentages of payments recovered gradually over time. Moreover, the above scenarios are based on the assumption that costs and demand for water services remain equal. However, additional cost-efficiency measures and demand stimulation can lead to reaching the breakeven point even sooner.

Question 9: How can Yme Jibu increase customers' willingness to pay in order to reduce non-revenue water and increase payment recovery rates at tap stations and private connections?

Question 10: Which other supply-side innovations can lead to increased profitability?

In view of this money collection challenge, Yme Jibu was discussing technological innovations to increase the payment recovery rates, monitoring transparency, and to facilitate money administration. For instance, to date, the meter indices are entered manually into a book from where the numbers are transferred manually to a computer. This takes a lot of time and may increase the possibility of typing errors. Furthermore, all the money is currently collected in cash and brought to the office in Goma by motorbike, where it is counted and transferred to a bank account. Organising the money collection and the cash administration requires a lot of time, logistical efforts, and security precautions due to the large distance that the money travels. Because of these reasons, one of the tasks during the stay in Goma was to find out whether the customers in Mugunga-Lac Vert would be willing and able to make

payments via their mobile phones and/or make prepayments for the water (see Appendix A & B for more details). The background for these questions was the remote possibility of introducing prepaid water meters where customers could use mobile money to charge a key with credit that is then used to access the water taps.

The discussions with Yme Jibu as well as the interaction with the customers have soon shown that replacing public taps by prepaid water meters is rather unrealistic in the near future. The reasons for this are partly the very high installation costs and the fact that some tap operators may lose their jobs. In addition, the focus groups (see Appendix A) provided further insights: The respondents indicated that generally the men and only a few women own mobile phones. In this context, the men would need to charge the phone with credit, but it is the women and children who are usually in charge of getting the water, which is why introducing mobile money could increase their dependency on the men. Furthermore, several women indicated that they would not be able to prepay for the water. On the other hand, those women who run a small business as well as the bicycle water vendors (see figure 5) need large amounts of water and would therefore welcome a prepayment system. For instance, one of the bicycle vendors said that he makes several turns a day to take the water to one construction site. The vendor indicated that his clients usually pay the water at once and sometimes at the end of the day, so that it can be difficult for the bicycle vendor to always have the exact amount of cash at hand when being at the tap station.

With regard to the customers of private connections (see Appendix A), 14 out of 23 respondents would accept to prepay for the water while 8 respondents would not. The main reasons mentioned in favour of the prepayment was that it allows them to better control the quantity of water consumed and to avoid abusive consumption. One client even mentioned that, for instance the automated standpipes could serve as a way to approach the children to new technologies. One element that was pointed out by both customers of public taps and



Figure 5: Bicycle water vendor filling jerrycans at a public tap to bring them to a construction site. Source: Own photograph taken on May 24, 2017



Figure 6: The IDP camp "Mugunga III" is an example of an area where some of the most vulnerable households live. Source: Own photograph taken on May 31, 2017



Figure 7: Typical house where a customer with private connection could live, indicating the diversity of Yme Jibu's private customers. Source: Own photograph taken on May 31, 2017



Figure 8: Restaurant (i.e. commercial customer) with a water connection, indicating the diversity of Yme Jibu's private customers. Source: Own photograph taken on June 7, 2017

those with private connections as well as by those in favour and by those against the prepayment, was that “one cannot find money every day” and that payments can be made when the money is available. This highlights that irregular incomes are a widespread phenomenon that people of different socio-economic backgrounds are facing in Mugunga-Lac Vert. In fact, the survey and focus group results show that there are different customer segments in terms of the amount of monthly household expenditures (which was used as a proxy for the income level): For the owners of private connections the monthly household expenditures were on average 316 to 335 USD. The users of public taps explained that the most vulnerable households are those without a wage earner. The latter typically have monthly household expenditures of 126 USD, while for those with a wage earner it is on average 267 USD per month. It has to be added that two out of the five focus groups were held around the tap stations 11 and 12, which is where some of the most vulnerable people of Mugunga-Lac Vert live (see figure 6). In general, the trend shows that users of public taps are less well-off than the private customers. Therefore, these differences need to be considered when evaluating the introduction of technological innovations.

Question 11: What are the main benefits and risks experienced by other water networks that adopted prepaid standpipes?

Question 12: Apart from prepaid standpipes, which other innovations allow for better monitoring transparency and more effective cash collection at public taps?

Unlike the users of public taps, the households with private connections all indicated owning at least one mobile phone. Seven-teen out of 23 respondents indicated using mobile money for personal affairs and 15 out of the 23 said that they would welcome paying their water bills via mobile phone in the future (see Appendix A). They mentioned the following advantages and disadvantages when asked about the option to pay the monthly water bills with mobile money:

Table 2
Advantages and disadvantages of mobile money

Advantages / Benefits	Disadvantages / Risks
<ul style="list-style-type: none"> • Avoid losing time to go to the office in Goma town • No movements needed (the transport costs to the office are high) • The phone is just “at hand” and direct • Possibility to pay from wherever and whenever the customers like • It is faster, it facilitates things • It reduces the risks of having an accident on the way to the office 	<ul style="list-style-type: none"> • Payment costs or transfer costs • Fear of not getting a payment confirmation • Clients are used to pay either at the office or to the money collectors • Fear of inserting the number wrongly (i.e. money does not get to the right beneficiary) • Not having the possibility to discuss potential problems (e.g. revindication) with the cashiers or accountants

Source: Own compilation based on the interviews held with households with private connections (see Appendix A).

The interviews with mobile network providers and one bank (see Appendix B) highlight that the practical implementation of mobile money needs to be well planned. The three interviews with representatives of mobile network operators, S. Muhindo (Orange), J. Ngalasi (M-Pesa) and S. Emene (Airtel) (personal communications, May 25, 2017), revealed that for a client to make a payment via mobile phone, he or she must have a SIM card of the same company. Most of the respondents indicated having either an Orange and Airtel SIM card in their households, although none of the mobile networks was present in all the households (see Appendix A). Therefore, Yme Jibu would need to make agreements with multiple network providers, which potentially increases costs and complexity in payment administration. The Trust Merchant Bank S.A. (TMB), through the mobile banking option “Pepele Mobile”, offers an option to receive clients’ payments through a “profil marchand” (T. Furaha, personal communication, June 1, 2017). Customers could open a Pepele money account free of costs, which they can charge with credit. There is no minimum amount for the transaction and clients do not pay a commission. An agreement with a bank thus seems to be more feasible than with a mobile network provider, but further investigation is needed on potential implementation strategies.

Question 13: Does it make sense to introduce mobile money for private customers and which are the main risks and benefits experienced by other water service providers?

3.2.3 Social potential for the development of the water service delivery

The social areas with potential for development assess to which extent the social impact can be increased and take into account the customer feedback gained during the interviews and focus groups (see Appendix A). Unlike the economic goal of attaining profitability, the social goals are less clear and numeric, and need to be defined by the organisation itself. Yme Jibu’s social mission is to deliver predictable, continuous and affordable water to the entire population, especially reaching the most vulnerable. Thereby, Yme Jibu will contribute to the

attainment of the SDG 6.1, stating that “[b]y 2030, achieve universal and equitable access to safe and affordable drinking water for all” (WHO, 2017, p. 7). In fact, chapter 2.3 showed that the SDGs can give useful insights on the type of value offerings that are beneficial for the BOP (Seelos & Mair, 2005, pp. 243-244). Moreover, the World Health Organisation (WHO) and United Nations Children’s Fund (UNICEF) Joint Monitoring Programme (JMP) for Water Supply and Sanitation, which monitors the progress of SDG 6, recently defined updated guidelines on what constitutes “safely managed water” (WHO, 2017, p. 12): The water needs to be located on the premises, available when needed and free of faecal and priority contamination. If the water is not located on the premises, but can be collected within 30 minutes for a roundtrip, including queuing, it is classified as “basic water service”. If a roundtrip to an improved water source exceeds 30 minutes, it is classified as “limited water service” (WHO, 2017, pp. 12-13). Against this background, table 3 on the next page presents an overview of possible indicators to measure Yme Jibu’s social impact from the point of view of these international guidelines. In addition, the indicators consider the information gained through the customer interactions (see Appendix A).

A first indicator of the social impact is the number of people that benefit from Yme Jibu’s water service delivery. To date, slightly more than half of the population of Mugunga-Lac Vert buys Yme Jibu’s water. Since the introduction of prices in March 2016, the cumulative consumption has shown an increasing trend, although with fluctuations within the year, which can be the result of seasonal changes in rainfall. In the future, the monitoring of consumption levels could give more insights on the reasons for these fluctuations. Figure 9 on page 29 illustrates the evolution of consumption levels over time. On average, consumption at public taps account for over 80 percent while consumption at private connections (incl. institutions) accounted for less than 20 percent of total monthly consumption. Even though, the monthly consumption per household is much higher for those with a private connection than at public taps. Users of public taps consume on average 2.5 m³ of water per household per month while households with private connections consume on average 25 m³. However, there is a large span in the consumption levels of households with private connections: While a few customers consume up to 100 m³, the majority consume less than 10 m³ per month. One reason for this could be that private customers not only include private households, but also institutions and people who use the water for commercial purposes.

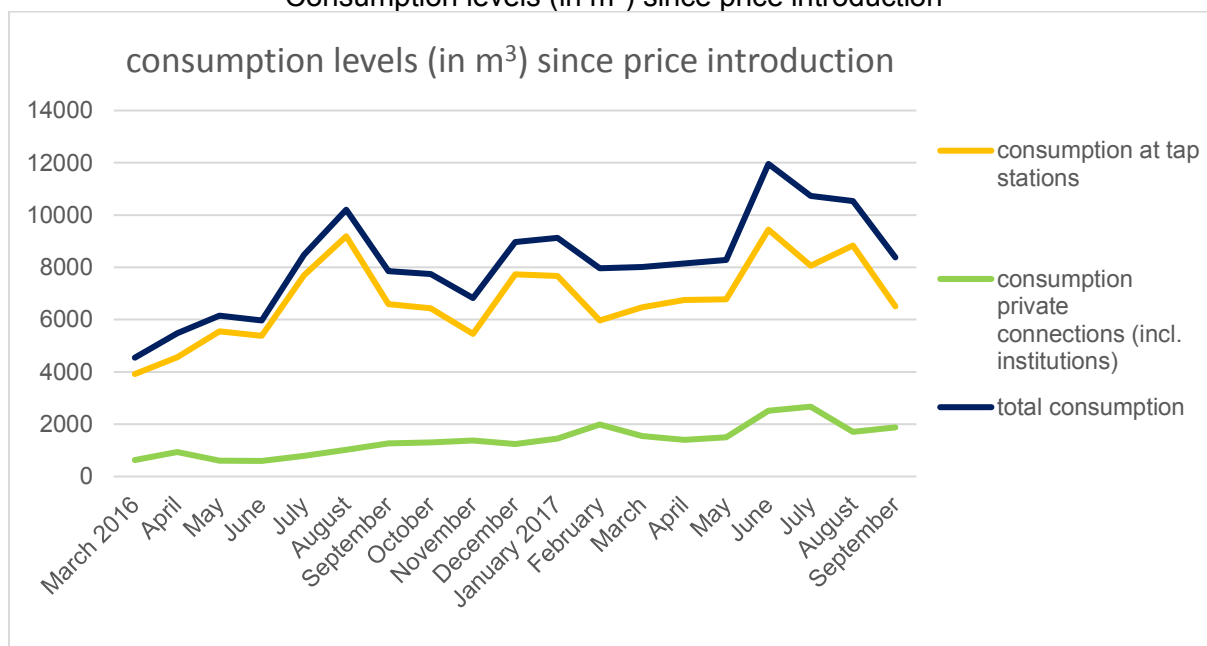
Considering the water consumed at public taps, the following conclusions can be drawn. The affordability analysis shows that even the most vulnerable households in Mugunga-Lac Vert should be able to buy at least 20 litres of water per person per day, yet they purchase less than 15 litres. Although, the focus group with women from Rusayo, a nearby village, showed that the latter are even less well-off than the poorest people from Mugunga-Lac Vert and that for them, affordability might indeed be a problem (see Appendix A). However, they make up only a small percentage of the total number of customers. In general, therefore, the price may be responsible for the fact that public tap users do not consume more than 20 litres per person per day, but it cannot explain why the households consume less than this amount.

Table 3
Indicators that measure the social impact of Yme Jibu

Indicator	Current level	Explanations
Number of clients reached	25'000	The total population of Mugunga-Lac Vert is estimated at 40'000. However, the tap stations are also frequented by people who live outside of Mugunga-Lac Vert.
Water consumed per person per day	PT: 14 l HH: 37-58 l	In stable situations, the recommended amount of water per capita per day is 50 litres, while in unstable situations the target is 20 litres. If it is less than 50 litres, laundry is likely to occur off-plot and hygiene could be compromised (WHO, 2004, p. 91).
Price per cubic meter	PT: 2500 FC HH: 2170 FC I: 1100 FC	Once the installation cost for the private connection of USD 100 has been paid, these customers get the water at a cheaper price than those who go to public taps. Moreover, it is not clear under which criteria certain institutions get an even lower tariff.
Affordability (if 50 FC per jerrycan of 20 l)	Everyone can afford 20 l per person per day, some customers can afford 50 l per person per day.	If affordability means that max. 5 percent of the monthly household expenditures can be spent on water (Frankhauser & Tepic, 2007, pp. 1039-1040), the households need incomes of: <ul style="list-style-type: none"> • min. 309.60 USD per month per household if assumed that 50 litres per person per day are needed • min. 123.84 USD per month per household if assumed that 20 litres per person per day are needed The lowest customer segment has average monthly household expenses of 126 USD, which is above the 123.84 USD needed to afford 20 l of water per day (see Appendix A).
Accessibility	At least "basic service"	People from Mugunga-Lac Vert should be able to get water at a public tap within less than 30 min for a roundtrip (basic service) (WHO, 2017, p. 12). As of September 2017, there were close to 100 households with a water connection on their premises (safely managed).
Water quality	Good	Safely managed drinking water is "free from pathogens and elevated levels of toxic substances at all times" (WHO, 2017, p. 6). In Mugunga, the water is potable at the point-of-use. It was pointed out several times by the customers, that YGL's water is of good quality (see Appendix A).
Service continuity	11-12 h per day	Safe water should be "readily available when needed" (WHO, 2017, p. 6; 12). The new water storage tanks can potentially increase service continuity. Several respondents pointed out the desire to have 24 hours water availability (see Appendix A).

Notes: PT = public taps, HH = private households, I = institutions. 1 USD = 1400 FC. For the PT, daily water consumption was calculated assuming that a household has on average 5.7 people and consumes 4.1 jerrycans/day (as in Kitumaini, 2016, p. 1 and/or EDS-RDC, 2014, p. 27 for urban households). Further, the sales statistics do not differ between private households and commercial customers. What can be concluded from interviews and statistics is that a HH is likely to consume 10 m³/month or less (329 l/day). The average number of beneficiaries of the water tap can vary from 5.7 (average HH size) to 9 (incl. guardians, construction workers or others, as indicated during the interviews). Source: Own compilation.

Figure 9
Consumption levels (in m³) since price introduction



Source: Own compilation based on data received by YGL and Fontes.

Some hints on other possible reasons for the rather low consumption levels were found during the focus group discussions (see Appendix A). The women indicated that, especially during the rainy season, they would only buy water for drinking purposes and use the rain water to cook and wash. This fact was reiterated during the meeting with the water committee. The women also explained that in general, it is only the households with children who use more water and those who need water to run their small businesses (e.g. to produce drinks or to operate a chicken coop). During the focus groups, respondents also indicated that they are aware of the benefits of safe water and that this enhances the development of the area. Nevertheless, one of the YGL staff members explained that “even if people are aware of the benefits of clean water, it does not mean that they are willing to buy the water or to use clean jerrycans. If someone suffers from cholera, for instance, there are many humanitarian organisations that will provide treatment for free. The villagers know this and therefore, they are less willing to pay to prevent diseases”. Given the above analysis, Yme Jibu could increase its social impact by increasing the daily amount of water consumed per person to the recommended level by the WHO, while this would also increase Yme Jibu’s revenues and therefore create value for the company. However, the right marketing strategy needs to be found.

Question 14: Given the results of the practical analysis and the main challenges of a BOP environment identified in chapter 2.2 (especially affordability, awareness, acceptability and trust), which marketing strategies exist to increase the demand for water by attracting new customers?

Question 15: Given the results of the practical analysis and the main challenges of a BOP environment identified in chapter 2.2 (especially affordability, awareness, acceptability and trust), which strategies does Yme Jibu need to adopt to increase the amount of water consumed by existing customers at public taps?

The reasons for why households with private connections use more water than users of public taps are attributable not only to the higher income of the former. In addition, the respondents indicated using the water also for other than drinking purposes, such as constructing houses or protection walls, feeding animals, to provide water to hotel guests, and to run factories or other commercial activities. Therefore, adding one private connection to the network increases water consumption (and thus revenues for Yme Jibu) significantly more than adding one new household as a customer of the public taps. Yme Jibu could increase the number of public taps from initially 28 connections to 99 connections as of September 2017. According to the JMP for Water Supply and Sanitation guidelines, promoting private connections increases social impact because only safe water sources located on the premises are classified as “safely managed” whereas public taps are classified as “basic services”. Nonetheless, increasing the number of private connections is of limited usefulness if the low payment collection rates remain at current levels. Moreover, figure 9 shows that the cumulative consumption of the private connections is rather stagnating since the beginning of this year despite the fact that 41 private connections were added to the system since February 2017.

Question 16: What are the benefits and risks of promoting the adoption of new private connections (for private households and commercial institutions)?

Finally, the level of client satisfaction could provide more information about the current consumption levels and payment recovery rates. A study by E. Kitumaini (2016, p. 5) about client satisfaction in Mugunga-Lac Vert, among other things, gives a first insight that customer satisfaction might be lower than desired: He found that only 42.3 percent of the respondents were either satisfied or very satisfied with the water service delivery. Yet he argues that the ideal level of customer satisfaction should reach around 60 to 80 percent. Against this background, the survey and focus group discussions conducted in Mugunga-Lac Vert by the author included questions about suggestions to improve the water service delivery (see Appendix A). This is crucial also in light of the findings of chapter 2.3, namely that it is important to include the customers' perspective with their needs and aspirations in the design of the offering. Hence, the customer suggestions can help improve the service quality of Yme Jibu.

In general, customers appreciate the good quality of the water (cleanness and good pressure), especially when compared to other suppliers in the town. The private connections are in high demand as they are “easy to install” and comfortable, even though certain people expressed that the high installation costs is preventing some potential users from getting connected to the system.

The main criticism relates to the communication channels in various forms: Customers of both public taps and private connections mentioned that they would like to be better informed

about breakdowns and interruptions and have points of information to bring complaints and suggestions. Especially the household with private connections mentioned that they would like Yme Jibu to “be closer to the clients”, for instance by visiting the households and providing advice on technical issues or to answer general customer questions. One respondent indicated that he would like Yme Jibu to help him dealing with the local authorities in the process of getting connected to the network and that Yme Jibu should help facilitate the communication with the local authorities. During the meeting, the water committee reiterated the need to improve communication channels between the customers and Yme Jibu, but also between the water committee and Yme Jibu.

Another topic that was frequently raised was of technical nature. Clients required the repair and strengthening of the tubes to reduce leakages. The analysis of the non-revenue water in the previous chapter showed that Yme Jibu is indeed losing a substantial amount of water before it even gets to the customers. Moreover, the clients with private connections expressed the desire of having access to the water 24 hours a day while users of public taps pointed out more generally that the available quantity of water per day needs to be increased. Similarly, the bicycle water vendors indicated that they record the highest demand during lunchtime, which is when the tap stations are closed. An unresolved issue is that at the more isolated tap stations, the tap operators seem to come late or leave their work too early whereas at the well-frequented tap stations, customers were complaining about frequent conflicts due to long queues towards the end of the day and uncertainty about whether or not the customers can fill their jerrycans before the end of the service hours. The new water storage tanks that were built in Nyabyunyu have the capacity of almost doubling the amount of water produced per day. This may allow for some changes in the service hours.

Furthermore, both the clients of public taps and those with private connections argued that Yme Jibu's water prices are high compared to Regideso. However, the analysis in table 3 shows that affordability should not be a problem — the same was argued in E. Kitumaini's (2016) study. On the contrary, Yme Jibu rather faces pressure to increase prices than to decrease them. One reason for this is the increasing inflation. Another reason is the somewhat unfair pricing, namely that households with private connections — who are usually better-off than the users of public taps — pay 2170 FC per cubic meter instead of the 2500 FC per cubic meter that users of public taps pay.

Question 17: How can Yme Jibu use the customer suggestions about the communication channels, the technical issues, and the pricing to improve its service offering?

Question 18: How can Yme Jibu achieve high customer satisfaction and which are the main benefits of satisfied clients?

3.3 Why Yme Jibu will achieve its mission only by being a for-profit social enterprise

Against the background of chapters 2 and 3, the author argues that the most sustainable way for Yme Jibu to achieve its mission is indeed by becoming a for-profit social enterprise. On the one hand, the results of the analysis in chapter 3.2 show that Yme Jibu has an enormous potential to become an economically viable business. For instance, table 1 with the breakeven analysis shows that, even without any increase in demand, Yme Jibu could already be a profitable enterprise if a stronger focus was put on recovering the payments from private connections and on increasing the expected amount of money collected per cubic meter from public taps. Taking additional measures to improve the economic performance of the water service delivery in Mugunga-Lac Vert will increase profitability even more. Although, high physical water losses, low payment recovery rates and unproportionally high salary costs are not only a challenge for Yme Jibu. They are among the main inefficiencies of fee-for-service water supply systems in general, as well as for Regideso (IMF, 2015, p. 11; Vousvouras, 2013, p. 23). Hence, overcoming these challenges requires a strong focus on adopting innovative and business-driven methods. Further, it will be important to envisage a financial surplus from operating in the current locations. As chapter 2.4 showed, this will allow Yme Jibu to show to its investors that it is worth investing in the company. Eventually, this will enable Yme Jibu to replicate its water supply system in other locations and thereby fulfilling its social mission. Therefore, adopting a for-profit organisational structure is key.

At the same time, the practical analysis revealed that there is a need to distinguish more effectively the extent to which Yme Jibu is socially and/or financially orientation. The reason for this is that the social mission was the primary and only goal of the NGO YGL while now, Yme Jibu has added the profit motive as a means to achieve this mission. The following paragraphs will explain why being a for-profit social business is the most sustainable way for Yme Jibu to achieve its mission, even though it is operating in the water sector, which represents a basic necessity that is vital for every human being. Adopting an inclusive approach to keep water services affordable for everyone is key. Chapter 2.4 showed that social enterprises are especially well-suited for reaching even the most vulnerable people of the community because of their motivation to continue in their efforts to supply water even though financial gains might be higher if the poorest were not explicitly targeted. Moreover, social enterprises will attract investors who value both social and economic gains. Usually, the sector of public services is rather unattractive for businesses that make profits their primary motive, since people are often used to access these services for free and are thus unwilling to pay fees sufficiently high to attract profit-maximising businesses' attention (Seelos & Mair, 2005, pp. 241-242). Nevertheless, the involvement of businesses in the water sector is of crucial importance because public spending does often not reach the poor efficiently and in sufficient quantity, and even less so the extremely poor (Seelos & Mair, 2005, pp. 241-242). In fact, public water supply in developing countries often only reaches the upper-income segment in

urban areas and if the water supply system reaches a peri-urban city slum, this access will not guarantee water quality (Vousvouras & Heierli, 2010, p. 6). This is also true for Goma, where public water supply is only available in the city centre. Without the availability of Yme Jibu's water services in Mugunga-Lac Vert, people would be forced to either drink water from the lake or buy water from the water trucks that sell water of unreliable quality and price.

Since water is such a vital service, one could argue that it should be given away for free by a charitable organisation rather than a social enterprise. However, even if humanitarian and development organisations have established many water supply networks and provided free water for some time, they cannot serve the entire need. This is not least because their projects are not scalable, as explained in chapter 2.1. As a consequence, a "free water dilemma" can emerge, where the rich get water almost for free from the public utility whereas the poor are excluded from this service and are forced to drink unsafe water or buy it at excessive rates, sometimes from unauthorised providers (Savenije & van der Zaag, 2002, p. 100). The phenomenon that the poor pay much more for a service of low quality than the rich do for a service of normal quality, is also called "poverty penalty" and was explained by Prahalad (2004, p. 11) to highlight the opportunity for private actors to fill this gap with affordable services of good quality. Therefore, charging a price for water to the poor is not necessarily unethical or exploitative, but it ensures the long-term survival of the water provision in areas excluded from the public utilities, even if water is a human right (Savenije & van der Zaag, 2002, p. 100). The same is also true for Yme Jibu: Only when charging a price can the long-term existence of the water service delivery be sustained. The advantage of Yme Jibu is that its customers represent a wide range of socio-economic backgrounds that can all be targeted by Yme Jibu's service offerings, potentially with different prices. This illustrates clearly that being a socially oriented enterprise does not mean giving water away for free nor does it mean to refrain from collecting the payments, because this would only jeopardise the survival of the water service delivery. "Social" rather means having clear guidelines on those aspects that are crucial to ensure good quality, affordability for everyone and to value customer feedback in order to improve the service offering. Other than that, the potential of a social *enterprise* lies in its ability to use business principles to achieve scalability, as compared to being a socially oriented NGO.

In summary, chapter 3 identified Yme Jibu's great potential to secure the long-term existence of affordable water services and to generate a surplus in order to reach more people by being a for-profit social enterprise. Given this conclusion, the realisation of this potential will depend on finding suitable strategies to overcome the challenges represented by the 18 key questions in chapter 3.2.

4 Realising Yme Jibu's potential of providing sustainable water supply

Having defined from a theoretical and practical point of view why Yme Jibu can only achieve its mission by being a for-profit social enterprise, the next step is to find a suitable business strategy that allows Yme Jibu to realise its potential and thereby becoming a sustainable social enterprise. Therefore, the aim of this chapter is to elaborate best practices that can serve as useful guidelines for Yme Jibu and any other organisation facing a similar situation. These ten best practices are based on the practical experience gained in Goma — represented by the 18 key questions identified in chapter 3.2 — and on a thorough literature review, mainly about social enterprises operating at the BOP and privately managed water utilities in developing countries, to combine theoretical knowledge and practical experience from other projects. The best practices can be summarised as: the need to internalise the role of being a for-profit social enterprise within the organisation; the need to optimise the water service delivery to create mutual value in the most efficient way, a concept defined by London (2016) to indicate the need of creating value for the community and for the company; and the need to start planning the upscaling in a well-structured way. To guide the reader, the coloured boxes summarise the main arguments of each of the ten best practices. At the end of each best practice, the practical implications for Yme Jibu are formulated and represent concrete ideas for business development and open questions that Yme Jibu may want to consider in the near future. Finally, a framework summarises the main findings in chapter 4.4.

4.1 Internalising the role of being a social enterprise in practice

4.1.1 Best practice I: Set targets and measure social and economic performance regularly

- Understand that profits are a necessary requirement to achieve the social mission
- Develop social and economic performance indicators and related targets
- Include in these indicators considerations about how the upscaling will affect the economic performance of the company
- Decide on the measurement strategy of social and economic performance
- Take strategic decisions based on regularly measured performance results

The first chapter addresses the aspect of how the remaining uncertainty concerning the new identity of the social enterprise can be clarified in order to better internalise the new role of being a social enterprise (questions 3 & 4), as identified in chapter 3.2.1. Related to this is the need to collect the right data in a more consistent way so that it can serve as a basis for strategic decision making (question 1).

Alter (2007) states that organisations that transform from one form to another “must first reorient their primary purpose then realign their organisation” (p. 14). Based on the findings of chapter 2.4, namely that an organisation needs to internalise its social mission and then put a

strong focus on achieving profitability (see Polak & Warwick, 2013, p. 13), a social enterprise must understand that economic value creation is a necessary means to ensure sustainability. In other words, when an organisation is transforming from NGO to social enterprise, even if the value proposition remains the accomplishment of a social mission, profit necessarily becomes “a function of sustainability” (Cho & Sultana, 2015, p. 301). Dees and Anderson (2003) put it simply by saying that “whether they view economic value as a means for creating social value or as inherently valuable on its own, for-profit social entrepreneurs have dual social and financial objectives that guide their managerial decision-making and determine their success” (p. 2).

This means that social enterprises should set up performance measures and profit requirements that allow the achievement of the defined mission (Dees & Anderson, 2003, p. 16). This performance measurement system should entail social and economic indicators (Goyal, Sergi, & Jaiswal, 2016, p. 420). Not only the literature on social businesses, but also practical experience from the water sector emphasises the importance of having a balance between economic and social indicators and targets (Hystra, 2011, p. 96). Economic indicators can follow standard business performance and financial measurement indicators (Alter, 2007, p. 86). A widely-used measure, for instance, is the breakeven point (Alter, 2007, p. 55). In addition, the cost structure and revenue streams must be balanced so that they avoid a drift away from the social mission and at the same time generate enough economic return (Goyal, Sergi, & Jaiswal, 2016, pp. 430-431). The financial targets should be clearly formulated, for instance in the form of key performance indicators and include target levels that are periodically adapted. In addition, cost efficiency targets and clear revenue models help avoid inefficiencies (Benhayoune, Chevrollier, & Mazon, 2017, p. 6). Not least, the enterprise must “understand the implications of scale” on the business, as pointed out by Benhayoune, Chevrollier and Mazon (2017, p. 7). They claim that the economic indicators need to include a projection of how different cost categories will be affected as the company grows as well as the necessary profit margins to account for unexpected costs (p. 7). Finally, as for the measurement of the social impact, to date there is no generalizable framework for quantifying social impact (Goyal, Sergi, & Jaiswal, 2016, p. 431). Each organisation must adopt measures that are “relevant to [its] own definition of success” (Alter, 2007, p. 87).

In a next step, performance must be measured and interpreted. The monitoring system should be as transparent as possible and evaluate periodically whether the expected outcomes have been achieved (Dees & Anderson, 2003, p. 17). Regular communication and feedback from the field, for instance from employees who are frequently on the ground or from customers themselves, further enhances accountability (Cho & Sultana, 2015, p. 303). Best practice V expands on the issue of how to do the monitoring and discusses options for water supply systems to obtain up-to-date and transparent data. Finally, the core findings of these periodical evaluations can be shared with the management team to take it as a basis for strategic decisions and to work towards a common goal (Cho & Sultana, 2015, p. 303). Cho and Sultana

(2015, p. 303) argue that regular meetings with important stakeholders, such as investors or partners ensure financial control and transparency.

Practical implications, ideas & open questions: The fact that Yme Jibu has the legal form of a limited liability company is a good basis for Yme Jibu to aim at generating the surplus that is needed to invest in the development of the organisation. As for the economic performance indicators, the analysis in chapter 3.2.2 showed that possible economic indicators, apart from the breakeven and profitability, could be the cost structure that indicates the relative share of each cost category on total costs, the amount of non-revenue water, the payment recovery rates, as well as cost-revenue ratios for operating a tap station one day. Working along these indicators will be of crucial relevance for Yme Jibu to achieve profitability. As for the social performance indicators, clearly Yme Jibu's value proposition provides the basis. More specifically, table 3 that was elaborated in chapter 3.2.3 provides ideas for a structured measurement framework of the social impact of Yme Jibu, the results of which could be shared with the team to foster a common understanding, but also with local partners or investors. Chapter 3.3 revealed that a key social performance indicator for businesses providing basic services is the affordability of these water services for everyone. On the one hand, affordability will be ensured by the pricing. On the other hand, a definition of the conditions under which institutions can get a reduced tariff may need to be added to the social indicators. An idea could be to discuss with the community (including the water committee, local chiefs, local authorities, etc.) the criteria that define the institutions (such as health centres, schools, etc) who are frequented by the most vulnerable people. This method of defining the most vulnerable groups of a community has worked well with Tearfund in other water projects in the DRC, as mentioned by Y. Tshikudju (personal communication, June 6, 2017). This would allow Yme Jibu to better institutionalise the extra steps it takes in achieving the social mission. In general, well-defined indicators and targets can serve as useful reference points for decision making and strategic planning.

4.1.2 Best practice II: Build a committed and entrepreneurial team

- Create a good team and be aware of potential tensions
- Internalise the new role of being a social enterprise and its values
- Foster internal enthusiasm about the business opportunity
- Focus on effective and result-oriented leadership
- Evaluate the need for financial and/or non-financial incentive systems
- Evaluate the need for capacity building and training in specific domains

While the previous chapter highlighted that having clearly defined performance indicators with appropriate targets can serve as useful guidelines for decision making, the new role of being a social enterprise also entails developing a deep understanding of this new identity within the team. Since YGL was an NGO and mostly the same people who were working for YGL are now working for Yme Jibu (at least partly), developing an understanding about the business role of Yme Jibu is important. Therefore, this chapter tackles the question of how to

create a common identity and an understanding about the business opportunity among the team (questions 2). Since the importance of people as a the most essential component in any organisation's success is widely acknowledged, the reorientation must emphasise on the people (Dees & Anderson, 2003, p. 19).

Moving from NGO to social enterprise means that the organisation must incorporate business practices into its daily management routine, which most likely requires hiring additional people who bring these skills. Finding suitable candidates can be tricky: People who have both the necessary business and social skills are rare and those who come from the traditional business sector may prefer opportunities in businesses with "bigger names", attracted by higher financial rewards than is usually the case in smaller organisations (Dees & Anderson, 2003, p. 9; Vousvouras, 2013, p. 159). The solution is often to create teams with motivated people from both sides (Dees & Anderson, 2003, p. 9). However, this bears the risk of internal conflicts centred on balancing financial and social objectives (Littlewood & Holt, 2015, p. 35). For instance, resistance to change can arise because the socially-oriented employees of an NGO might be sceptical of the profit motive while those coming from the business side might not understand the social part of the organisation (Dees & Anderson, 2003, p. 9). A first step to reduce potential tensions is to ensure that everyone has a "good sense of low-income customers", i.e. build a "BOP-centric management team" (Kennedy & Novogratz, 2011, pp. 54-55). This not only helps employees identify with the values of a social enterprise, but also contributes to their willingness to work for a salary that is probably lower than in big companies (Kennedy & Novogratz, 2011, p. 55). For example, new employees could be sent to spend time in target community and visit the organisation's institutions. This helps middle-class staff understand the perspective of low-income customers and thereby experience the organisation's social mission (Kennedy & Novogratz, 2011, p. 63). In addition, it reduces the "temptation to reproduce development models that are not properly adapted to local realities" (Faivre-Tavignot, 2016b, p. 46).

Since the transformation has implications on a company's organisational culture, the process of internal transformation and innovation must be made explicit so that employees understand why business approaches are used (Alter, 2007, p. 90; Littlewood & Holt, 2015, p. 35). The potential for scepticism about the profit motive to arise is particularly high in places where awareness and understanding of entrepreneurship is rather low and where the donor-funded projects are common (Littlewood & Holt, 2015, p. 35). Therefore, staff values should be supportive to the organisational objectives and be communicated clearly (Cho & Sultana, 2015, p. 301). Changing the organisational culture need not become an abstract endeavour if the focus is on changing some critical behaviours rather than changing abstract values (Katzenbach, Oelschlegel, & Thomas, 2016). Katzenbach, Oelschlegel and Thomas (2016, para. 10) argue that these behaviours should be actionable and tangible and the "mind-sets will follow" automatically. Further, they argue that the leaders of an organisation have to demonstrate the change they want to see. For instance, costs should be made visible to employees so that the company can announce and celebrate cost savings. When impacts are

shown quickly, it boosts motivation (Katzenbach, Oelschlegel, & Thomas, 2016, para. 16; 18). The goal should be to build “internal enthusiasm” about the business opportunity (Anderson, Markides, & Kupp, 2010, pp. 20-21). This includes being transparent about the business opportunities and threats, but also to identify “quick wins”, for instance through a pilot project with the goal of building greater commitment. In addition, identifying and communicating soft and hard objectives, such as social impact and economic targets, further enhances employee motivation (Anderson, Markides, & Kupp, 2010, pp. 20-22). To achieve this, standard business practices and tools should be integrated in the organisation. Only then can the management team demonstrate success and potential risks and be accountable to achieving the expected results. In summary, the management team must not fear change, but become flexible and result-oriented (Alter, 2007, p. 90).

In this process, good leadership is crucial. The example of BRAC, one of the largest NGOs in Asia that transformed to social enterprise, shows that a leader who is “self-confident, future oriented” and has “good leadership and risk-taking skills, apart from being innovative” will be likely to bring success to the organisation (Cho & Sultana, 2015, p. 302). Moreover, an emphasis on transparency and efficiency combined with financial management ability and knowledge about market conditions are essential (Cho & Sultana, 2015, p. 302). The case of Metalcon, a for-profit social enterprise, shows that the company's board also plays a key role: It can put pressure on the CEO to comply with the demands of the market logic (Bruneel, Moray, Stevens, & Fassin, 2016, p. 278). The board should be combined by people representing the social and the commercial logic and its role is to “watch over a sound balance between both logics” (Bruneel, Moray, Stevens, & Fassin, 2016, p. 279). For instance, it can include representatives from business, entrepreneurship, NPOs, and the public sector (Dees & Anderson, 2003, p. 20).

Employee commitment, and in turn a company's success, can further be enhanced through performance-based management tools that grant financial and non-financial rewards (Alter, 2007, p. 19; 86). Reward systems should focus on fostering teamwork and should be linked to the performance of the organisation (e.g. monthly financial targets) instead of individual performance (Ogbonnaya, Daniels, & Nielsen, 2017, p. 107). As for the non-financial rewards, Beugré and Offodile (2001, p. 544) who analyse management techniques in SSA, argue that price giving and giving employees public recognition is very appreciated and enhances the motivation and individual performance. Financial rewards should be spread across the organisation because if it is given only to a small proportion of the workforce, other employees may feel “maltreated” and may display a negative work attitude (Ogbonnaya, Daniels, & Nielsen, 2017, p. 107). Yet if the system is based on participation and teamwork, everyone can potentially benefit — even if it is with different percentages according to the rank of a staff member (Ogbonnaya, Daniels, & Nielsen, 2017, p. 108). Moreover, in many African cultures, group success is more valued than individual success and decisions are often taken on the basis of consensus after long discussions and negotiations. This collectivist nature may contribute positively to the development of teamwork (Beugré & Offodile, 2001, p. 538; 545).

Since NGOs do not need to act according to market forces, strategic business thinking and other marketplace survival skills are likely to be underdeveloped (Alter, 2007, p. 89). Yet business acumen is especially important at the start, when a social enterprise, like any company, needs to focus on the basics of doing business, such as strategic management, marketing, and bookkeeping (Kubzansky, Cooper, & Barbary, 2011, p. 172). The African Economic Outlook 2017 observes that in many schools, mathematics and science teaching at primary and secondary levels are rather unsatisfactory, which can be a hindering factor in the development of entrepreneurial skills (ADB, OECD, & UNDP, 2017, p. 213). Therefore, companies need to evaluate the need for trainings and may include technical support in their budgets (Kubzansky, Cooper, & Barbary, 2011, p. 16).

Practical implications, ideas & open questions: Currently, Yme Jibu only has a very small number of staff, which should facilitate the “business team building” process. Nevertheless, the experience from other organisations provide useful insights about how a common understanding of the business opportunity as well as the social orientation of the organisation can be fostered. This also includes working along well-defined performance indicators, as argued in best practice I. The present chapter also shows why Yme Jibu might want to discuss options to introduce financial and non-financial incentive systems and evaluate the need for training to further improve the enthusiasm and capacities of the team. In regard of Yme Jibu's plans to scale up, it is likely that in the future more people will be involved in the company. This increases the diversity of the team as well as the complexity of managing employees, especially if they work in different locations. Therefore, frictions can emerge. By keeping in mind the arguments mentioned in this best practice, potential tensions and scepticism can be prevented in advance.

4.1.3 Best practice III: Make sure the new identity is accepted by stakeholders and partners

- Have a clear mission that is understood by the entire team and can be communicated to relevant stakeholders and partners
- Establish good partnerships with various different actors to ease the access to new locations when scaling up
- Acknowledge and value the fact that good social relations with the community are the key to gain local trust and legitimacy
- Be aware that partners from within the community can help the company establish a competitive advantage by providing crucial market information, which serves the company to develop a deep understanding of the local environment
- Avoid over-embeddedness by keeping economic targets in mind and communicating with actors from outside the local environment

The practical experience described in chapter 3.2.1 indicates that the transformation from NGO to social enterprise might not only create uncertainties within the organisation, but possibly also among stakeholders and partners. Further, the establishment of trust between

the enterprise and the organisation is one of the five major challenges in BOP environment, as identified in the theoretical analysis in chapter 2.2. The chapter showed that, unlike in traditional markets, in a BOP environment, potential customers may face mistrust towards organisations that come from outside of the community. In this light, the situation encountered by Yme Jibu is not uncommon when an NGO transforms to social enterprise. Moreover, moving into new locations means establishing new contacts and building partnerships, and therefore, communicating a comprehensive identity is key to ensure acceptance in these new areas. Therefore, this chapter seeks to find ways of how Yme Jibu can show to its partners and stakeholders the social impact it is making despite, or rather because, of being a social business and to understand why this is so important (question 5).

Firstly, the entire team should have a common understanding of the organisation's mission (as proposed in best practices I and II) that can be shared with the outside world. This helps "screen" prospective partners, but also stakeholders like employees, customers and investors, "forming an implicit contract with them and encouraging positive self-selection" (Dees & Anderson, 2003, p. 14; 16). On the other hand, vagueness about the company's mission and objectives allows each stakeholder "to see what he or she wants in the venture" and leads to ambiguity and potential frictions (Dees & Anderson, 2003, p. 14). This facilitates finding new partners and reinforcing trust with existing partners. Indeed, partnerships are crucial to sustain and expand the company's competitive advantage because unlike in traditional markets where enterprises can protect its investments through legal mechanisms, in the rather informal BOP environments, social relations are the key (London, 2016, pp. 79-80). One advantage of having a solid network of partners is that they can pave the way for accessing new locations when a company is scaling up because they may have assets and competencies that the organisation lacks (Benhayoune, Chevrollier, & Mazon, 2017, p. 8; London, 2016, p. 78). Indeed, partnerships are important to manage the last-mile challenge when scaling a BOP venture. The last-mile challenge is understood as the difficulty in reaching customers in geographically dispersed and sometimes rather inaccessible locations (Polak & Warwick, 2013, p. 163). Rather than investing time and money into establishing a new network from scratch, partners can enable the company to access places where a given company has previously not had many contacts (London, 2016, p. 82). However, not everyone can be a partner: The latter should be selected according to clear selection criteria and they should align on the goals and the mission of the social enterprise (Benhayoune, Chevrollier, & Mazon, 2017, p. 8).

Besides helping to enter new locations, trusted connections make it possible for an enterprise to gain local legitimacy (London & Hart, 2004, p. 361; 364). While establishing trust and legitimacy is certainly key when moving to new locations, it is also important to re-establish or sustain trust within existing locations where the company was previously operating and being perceived as an NGO. Therefore, a newly born social enterprise needs to inform the customers, and its representatives such as the water committee, about social impact and be very transparent about their motives. Otherwise, the organisation risks that certain people think that the company could favour personal profits over quality services (Dees & Anderson, 2003,

p. 8). Examples of businesses operating in Africa have shown that these companies “are often expected to assist the communities in which they operate and that they are perceived to be part of” (Baumüller, Husmann, & von Braun, 2014, p. 334). The social business should develop a reputation for its social mission and products and services should meet the quality and cost requirements of competitors in order to survive in the market (Dees & Anderson, 2003, p. 15). It needs a considerable amount of patience, involving customers in decision-making, and explain to them “what you are doing and why”, especially when new service components are implemented (Heymans, Eales, & Franceys, 2014b, p. 2). Further, partners are not always other businesses, but can be development organisations, government agencies or other local structures (Goyal, Sergi, & Kapoor, 2017, p. 105). Anderson, Markides and Kupp (2010) who analyse extreme contexts such as conflict zones, slums and deep rural areas, emphasise that companies need to understand partnership in a very broad way, i.e. the goal should be to be considered as “one of us” (p. 11). When moving into new locations, it might be necessary to negotiate with village-level chiefs, religious leaders, or tribal leaders even when national authorities have already given approval (Anderson, Markides, & Kupp, 2010, p. 15). The example of Zain, a telecommunications company operating in Iraq, shows that a company can also gain local trust by getting involved in corporate social responsibility (CSR) activities: Zain demonstrates its engagement with the local community by sponsoring cultural activities, such as football games (Anderson, Markides, & Kupp, 2010, p. 12).

Thirdly, integrating within the local environment with the help of diverse partners enables the company to develop “social embeddedness”, a concept originally developed by London and Hart (2004) who argue that social embeddedness is the “ability to create competitive advantage based on a deep understanding of and integration with the local environment” (London & Hart, 2004, p. 364). Having a solid understanding of the local environment allows the enterprise to gain access to critical, market-specific information (London, 2016, p. 78). London (2016) argues that there needs to be engagement and information sharing with diverse stakeholders such as local individuals and organisations. He points out that quality of information is more important than quantity and that “leaders must be able to understand and weigh the motivations and potential biases of different sources of the information”, i.e. they must know how to interpret obtained information (London, 2016, pp. 83-84). A potential risk of social embeddedness is “over-embeddedness”, which moves the company “too much toward poverty alleviation, away from growth and profit making” (Simanis & Milstein, 2012, p. 85). They argue that companies should therefore keep a strong focus on identifying concrete opportunities that correspond to its economic targets and understand key economic drivers (Simanis & Milstein, 2012, pp. 86-87). Embeddedness can also make firms vulnerable to external shocks and prevents them from accessing information outside their network (Anderson, Markides, & Kupp, 2010, p. 24). Selfish partners may take advantage of the power they gained through the partnership to extract more economic rents. Therefore, partnerships should build on long-term relations and be based on trust (Anderson, Markides, & Kupp, 2010, p. 24).

Practical implications, ideas & open questions: This chapter showed why it is crucial for Yme Jibu to invest time and efforts in good social relations with partners from within the community. The findings of the field stay show that there are at least two potential elements in Yme Jibu's service offering that could be used to demonstrate the partners the social impact they are making — apart from the mere water provision — and thereby reinforce the acceptance of Yme Jibu as a business. These two elements are the affordability criteria and the reduced tariff for certain institutions, as identified in best practice I. Even though today certain institutions had to be disconnected due to outstanding payments, Yme Jibu makes a special effort to target school children and patients in health centres. This can be implemented by Yme Jibu as a strategy to gain trust and legitimacy within the community, which in turn reinforces the partnerships and fosters Yme Jibu's social embeddedness. Greater legitimacy of the firm can also reduce the potential for illegal connections since the social pressure by the community (and especially the community leaders, including the water committee) to pay for the water will be increased. While this could be applied in Mugunga-Lac Vert, having an idea on how to deal with the most vulnerable people in a community will also make it easier to be accepted as a social enterprise in new locations and thereby accessing crucial market information.

4.2 Developing the water service delivery to create mutual value

4.2.1 Best practice IV: Focus on achieving an optimal cost-revenue ratio

- Constantly search for possible cost reductions along the value chain
- Focus on achieving operational excellence and highest possible cost-effectiveness in the design of the water infrastructure
- Acknowledge that the potential for high profit margins is low, but keep in mind the possibility of adopting increasing tariff bands
- Be aware of the opportunity to cross-subsidize revenues by diversifying into higher-income segments within the BOP or slightly above

The analysis of the cost and revenue streams in chapter 3.2.1 showed that currently, Yme Jibu is losing a lot of money due to inefficiencies in the service delivery and that reducing these inefficiencies could considerably increase Yme Jibu's profitability. In addition, the high inflation reduces the dollar revenues and increases the costs of dollar expenses, such as salaries, and puts pressure on Yme Jibu to increase water prices. Moreover, when scaling up and/or expanding the network, new costs will incur for the installation of the infrastructure. Therefore, this chapter evaluates the possibilities for cost reductions and revenue increases on the supply side (question 10).

To increase the economic performance of a business, it is important to reduce costs and operational inefficiencies with the goal of achieving the best possible cost-revenue ratio. In the literature, this is promoted as a key innovation for social businesses (Gebauer & Jennings Saul, 2014, p. 6; Kennedy & Novogratz, 2011, p. 53). To improve productivity, a “razor-sharp

focus on operational excellence” and delivery costs that are optimised “to maximise performance and impact” are essential (Benhayoune, Chevrollier, & Mazon, 2017, p. 14; 17). Any enterprise that aims for economic viability must constantly search for cost reductions and minimise all costs that are not directly necessary to keep the operations running (Kennedy & Novogratz, 2011, p. 62). Polak and Warwick (2013, pp. 91-94) claim that a company must achieve “radical affordability” in the design of the offering: The biggest cost categories should be identified and systematically reduced; the design should be simple and include the features that the customers desire, but exclude all redundancies; the quality-cost trade off should be decided in favour of inexpensiveness; the product must be deliverable to remote areas at a cheap price; and the infrastructure should be easily expandable, low-cost and manufactured locally with locally available materials. Y. Tshikudju (personal communication, June 6, 2017) reiterated the importance of buying materials from the region. This not only facilitates the process of organising spare parts if needed, but it also boosts the local economy.

On the other hand, a company needs to evaluate the options for revenue increases. In high-income markets, companies can easily increase prices in order to achieve higher profitability. However, chapter 2.2 about the challenges in a BOP environment showed that in this context, a company needs to take into account that many consumers have very low and uncertain incomes and may depend on daily wages, which makes them highly sensitive to price increase. During the stay in Goma, the interactions with customers showed that many people in Mugunga-Lac Vert are struggling to find money every day. For a company to make a broad impact in a BOP environment, it is thus necessary to adopt affordable prices (Anderson & Billou, 2007, p. 17). This means that potential price increases must be considered thoroughly. While people are generally willing to spend more money on water, especially if they can get it at better quality, it is also true that “even a difference of \$0.01/jerrycan appears to drive significant differences in adoption rates” (Kubzansky, Cooper, & Barbary, 2011, p. 43; 118). A solution that is widely adopted by piped water networks is to implement tariff schedules in bands with increasing prices per cubic meter (Hystra, 2011, p. 182; 190; 205; Vousvouras, 2013, p. 127; 156). This ensures that the lowest-income customers can always get water at affordable prices, assuming that those who consume significantly more can afford to pay a slightly higher price. Tariff bands sometimes depend on the type of consumer, where commercial users are typically charged a higher price than private users and private users more than public tap users (Hystra, 2011, p. 190; Vousvouras, 2013, p. 156). Nevertheless, the potential for increased profit margins remains rather low.

Another strategy that is adopted by many social enterprises operating in an environment with very low purchasing power is to diversify into the customer segments with higher buying power. Practical experience shows that it has proven as a powerful tool to cross-subsidise costs with the revenues of those that are slightly better off (Kubzansky, Cooper, & Barbary, 2011, p. 114; 141). Especially when capital costs are not financed by a donor — certain enterprises only seek to cover operational costs, but not capital costs — achieving full cost recovery can be facilitated substantially when costs are cross-subsidised with revenues of

higher-income segments or commercial customers (Kubzansky, Cooper, & Barbary, 2011, p. 114; Heymans, Eales, & Franceys, 2014b, p. 9). In addition, diversification in the form of cross-subsidisation can account for the different needs and desires of different customer segments (Chiliova & Ringov, 2017, p. 49). Many water utilities, for instance, opt to offer private connections in addition to the water at public taps. This not only attracts higher-income customers, but potentially also some of the lower income customers for whom a private connection is aspirational and seen as a “mark of status”. Too much diversification, however, should be avoided, especially at the beginning, when an enterprise has not yet reached high sales volumes and scale, since it can make the value chain “hopelessly complex” (Karamchandani, Kubzansky, & Frandano, 2009, p. 29). Indeed, Karamchandani, Kubzansky and Frandano (2009) find that successful enterprises usually begin “as highly specialised enterprises”, focusing on exploiting economies of scale, “and for the most part remained so as they scaled up” (p. 29).

Practical implications, ideas & open questions: The insights about how to reduce costs will be important for Yme Jibu in two ways. First, it concerns the improvement of technical aspects of the water service delivery in Mugunga-Lac Vert, such as the reparation of the pipes, the replacement of broken water meters, and the procurement of spare parts. Moreover, it would be interesting to calculate the costs and revenues of one cubic meter of water for the private connections, as well as the costs and revenues for operating a tap station for one day (this could be calculated for a typical high-sales tap station and a low-sales tap station). Cost-revenue ratios can guide the decision making about the extension of the system and could be included in the economic performance indicators (best practice I). Further, if cost savings are achieved, these can serve as a motivational factor if they are communicated to the team (best practice II). Second, it concerns the process of the scaling up to new locations, when Yme Jibu needs to find a cost-effective way of setting up or modifying an existing water infrastructure. Other inefficiencies that were identified in chapter 3.2.2, such as the low payment recovery rates, relate to more service-oriented issues and will be discussed in best practice VII and VIII.

Concerning the pricing, in the DRC, where the 50 FC note is the smallest note, increasing the price per jerrycan would mean doubling the price. Yet price increases should be carefully evaluated due to the high price sensitivity of low-income customers. On the other hand, the analysis in chapter 3.2.3 shows that customers of private connections pay less than users of public taps. Increasing the price for private customers could thus lead to more price fairness. In addition, customers of private connections are generally better off than those of public taps, which means that they are more able to absorb price increases. Further, increasing prices per cubic meter need not mean doubling the price like at the public taps. As described above, many other water utilities adopt increasing tariff bands. In light of the large span of individual consumption levels at private connections, this might make sense for Yme Jibu. However, it also increases the complexity of administering the billing and collection process. Since Yme Jibu is already struggling to achieve higher payment recovery rates, adopting increased tariff bands might not be an ideal solution for now, but could be considered in the future. However,

Yme Jibu will only be able to grasp the opportunity of cross-subsidizing its revenues with the private connections when either the price is increased or adoption rates are significantly increased, for instance by targeting commercial customers more specifically (answer to question 16).

4.2.2 Best practice V: Adopt modern technologies for increased efficiency

- Use modern technologies to reduce inefficiencies and increase transparency in monitoring
- Be aware that mobile money can increase customers' willingness to pay and eases the correct monitoring of water revenues
- Be aware that mobile money needs appropriate support for customers and the company's capacity to administer the online payment platform, including the identification of received payments
- Adopt prepaid standpipes only when payment levels have reached an acceptable level, when customers have been appropriately sensitized and when they are willing to cooperate
- Search for other cost-efficient technological solutions, such as electronic metering or reducing the distance of cash movements

As explained in chapter 3.2.2, Yme Jibu was considering the possibility of introducing mobile money and/or prepaid standpipes (that could operate with mobile money). The discussions with YGL staff and the customer feedback indicated some uncertainty with regard to the viability of prepaid standpipes, whereas the introduction of mobile money for private customers seemed more feasible. However, a better understanding of the risks and benefits experienced by other projects using prepaid standpipes and/or mobile money is needed (questions 11 & 13). In addition, this chapter seeks to identify other innovations that allow for better monitoring transparency and more effective cash collection (questions 1, 9 & 12).

One of the key elements that reduces operational inefficiencies and in addition increases monitoring transparency is indeed technological innovation. Hammond (2011) argues that "historically, improved technology is the most important ingredient in improving productivity and enabling fundamentally new approaches" (p. 202). Consequently, it is important for companies to partner with global technology institutions and universities, which can ease the adoption of world-class technology (Hammond, 2011, p. 202). In the water sector, technological innovations are often associated with information and communication technology, such as electronic payment mechanisms and electronic collection and monitoring of customer data. While this facilitates transactions for customers, it also increases accountability and professionalism for the company (Plummer & Cross, 2006, p. 22). Nevertheless, high-tech technology often has high capital and maintenance costs (Chiliová & Ringov, 2017, p. 51). Even if donors come up for the up-front investments, the local community can often not bear the maintenance costs once the donations start to decrease and leaves expensive infrastructure to decay. Therefore, despite technological innovations being necessary to make businesses perform higher, it needs to be done at an affordable price for the local community (Hystra, 2011, p. 96).

Cashless payment mechanisms, frequently through mobile phones, are advertised as key innovation for water service providers (Gebauer & Jennings Saul, 2014, p. 6). Considering a piped-water network, customers typically pay either in cash, through bank transfers or mobile money, or any office or shop that offers payment transactions (Hystra, 2011, p. 86; 183; 224; 205; Vousvouras, 2013, p. 128; 157). Usually, those who own a private tap pay monthly bills while for those who use public taps or water kiosks cashless payment is often linked to prepayment, which will be discussed in the next section. Foster et al. (2012, p. 798) explain that in general — and in comparison to other payment channels — mobile money allows for considerable time and cost savings because transactions can be made at any point of the day and directly from home, i.e. no travelling time and costs nor waiting time at the payment centres is involved. If a customer needs to charge money on his or her phone, mobile agents are usually in walking distance and do not require large time and cost efforts (Foster, et al., 2012, p. 798). Krolkowski (2014, p. 244) confirms the fact that mobile money is more user-friendly: At a water supply utility in Dar es Salaam, customers had the possibility to pay at the water office or via mobile phone, but most of them opted for mobile payment. In this sense, mobile money creates value for the customers in that it facilitates the payment process.

On the other hand, mobile money also creates value for the company. Both Foster et al. (2012, p. 800) and Krolkowski (2014, p. 245) find in their studies that the increased user friendliness makes customers more willing to pay their bills, meaning that customers appear to pay their bills earlier. Further, mobile money makes the value chain shorter (Krolkowski, 2014, p. 248): The paper bill is replaced by an electronic bill that is sent directly to the customer via SMS and the customers pay the bills by sending the money via mobile phone, which frees up staff at the water utility for other tasks (pp. 243-243). As an additional service, customers can consult their account balance via SMS inquiry and the utility can remind the customers to pay their bills in case of delay (Krolkowski, 2014, p. 238). In addition, the automatization increases transparency and facilitates the monitoring of water revenues (Birkholz, Köse, Rosenthal, & Willi, 2011, p. 15). Practical experience from water utilities shows that manual entry of information is susceptible to manipulation, which has been observed as a common practice, and can result in financial losses (Gebauer & Jennings Saul, 2014, p. 6; Krolkowski, 2014, p. 249). Further, the evidence suggests that field agents who are in frequent contact with the customers “are endowed with more extensive discretionary power” compared to other staff of the organisation and can, for instance, negotiate with customers to prevent the disconnection of the water (Krolkowski, 2014, p. 246). The example of water kiosks in Kenya confirms that mobile payment facilitates monitoring of water revenues, enhances transparency and accountability (Birkholz, Köse, Rosenthal, & Willi, 2011, pp. 15-16). However, there are two main difficulties with mobile money, as Krolkowski (2014, pp. 245; 249-250) finds: First, customers usually prefer paper copies of receipts rather than a confirmation via SMS while the company may also need physical proof of payment in order to monitor the progress of payment recovery. Yet confirmations via mobile phone are difficult to locate after a certain period of time. Second, customers may be unfamiliar with mobile money services and need help

navigating the menus. Further, if they type the wrong account number, the money can disappear without anyone knowing.

The above-explained method of using mobile money to pay bills may work well for customers with private connections who pay their bills once a month. Yet for those who use public taps or water kiosks, using mobile money only makes sense when it is combined with prepayment since they buy small amounts of water at the time, but several times during the week. Prepaid public standpipes where customers can access the tap by using a key or token charged with credit in advance, for instance through the mobile phone, ideally have several benefits: They can ensure increased payment recovery rates, reduced water wastage and billing queries, they avoid unpleasant disconnections, and consumers get more control over their consumption (Heymans, Eales, & Franceys, 2014a, p. 21). However, it is also true that “most service providers underestimate what prepayment entails” (Heymans, Eales, & Franceys, 2014a, p. 23). First, prepaid water networks do not necessarily result in increased cost efficiency or less staffing needs (Heymans, Eales, & Franceys, 2014a, p. 48). Prepaid standpipes have very high capital and installation costs, as Heymans, Eales and Franceys (2014a, p. 32) explain. In fact, they explain that prepaid water needs a network of credit vendors who receive a small commission, a credit transfer device, a physical distribution network that operates 24 hours a day, and an effective customer service team. Since customers have paid in advance, they are entitled to expect a rapid response in case of a service problem, which can create additional maintenance and customer service costs for the company (pp. 22-23; 48). Second, prepayment might exclude the most vulnerable from the service since they cannot afford to prepay (Heymans, Eales, & Franceys, 2014a, p. 35). Third, comparing two prepaid systems in Africa, in Kampala and in Nairobi, it becomes clear that there is no one size fits all approach: While prepaid standpipes could reduce walking distances to taps, queuing times, and prices in Kampala (Heymans, Eales, & Franceys, 2014b, pp. 1-2; 5), the experience in Nairobi shows that prepaid standpipes can fail if there is no adequate community engagement at the beginning (Heymans, Eales, & Franceys, 2014c, p. 3). When no awareness raising to build acceptance on regular payment is made, people are likely to be unwilling to cooperate and may even bypass the meters. Furthermore, in Kenya, there was a high level of criminal activity in the area, which additionally contributed to low payment rates and illegal connections. In conclusion, prepayment with automated standpipes should “focus where people are likely to cooperate” and “should only be considered once payment levels are acceptable and established” (Heymans, Eales, & Franceys, 2014c, pp. 2-3).

A less costly and more inclusive way to achieve higher efficiency at public taps is to focus on electronic metering and/or reducing cash movements once the customers have paid. In fact, outsourcing payment transactions increases security in that no large amounts of cash needs to be transported from tap stations to the office every day nor need it be kept in a safe in the office (Vousvouras, 2013, p. 128). Partner-pay shops or mobile bank agents near the taps where the money can be brought could facilitate cash movements, even if they may charge a commission on revenues (Vousvouras, 2013, p. 128). With respect to metering,

electronic devices and computerised systems enhance monitoring transparency (Plummer & Cross, 2006, p. 28). Computerised billing systems are used in various other piped water systems in different countries: Sales agents working for a water utility in Paraguay and one in Bolivia use mobile billing handhelds to save users' consumption data when visiting customers or public tap stations. Upon return to the office, the handheld can be connected to a computer, where a software synchronises the information. Moreover, the software emits warning signals in case of unusual consumption levels of specific users (Vousovouras, 2013, p. 128; 159). This can help detect water leakages and minimising physical water losses (Hystra, 2011, p. 188). Transparent monitoring will be especially important as the company scales up and the distance between the central office and the scaling location increases. Only when there is a robust monitoring and evaluation system in place can the company benefit from ongoing learnings (Polak & Warwick, 2013, p. 149).

Practical implications, ideas & open questions: The findings of this chapter reiterate the preliminary conclusion from the experience in Goma: Introducing the option to pay monthly water bills via mobile money seems to be viable for private customers. The risks and benefits identified through the interviews are similar to those experienced by other water projects. Moreover, this chapter shows that mobile money, even if it is not connected to prepayment, is likely to generate higher willingness to pay among the customers. Nevertheless, there are a few critical points to consider in the implementation of mobile money: The interviews with the mobile network providers and the bank showed that only an agreement with the bank would allow for customers of all network providers to use the mobile money option without buying a new SIM card. Discussions with other banks, apart from TMB, might be necessary to check the available options for bank agreements. Further, the bank needs to have enough presence in Mugunga-Lac Vert via mobile counters so that people can charge their phones with credit. In addition, customers would need to accept to open a mobile money account at the bank with which Yme Jibu makes the agreement. Moreover, Yme Jibu would need to find a way to register the customers via mobile phone numbers so that it can reliably identify the remittent of the mobile payment. Further, Yme Jibu would need to invest time in sensitising the customers and provide appropriate customer support. For instance, a trial period within which customers have the option to use current payment channels and mobile money may serve to make learnings and improve the system.

Next, the findings of this chapter show that prepaid standpipes instead of staffed public taps should be avoided until the willingness to pay has reached an acceptable level, customers have been appropriately sensitized and they are willing to cooperate. Even though during the focus groups certain customers indicated that they would be willing and able to prepay, there is a considerable number of households that would not be able not prepay. Further, the water leakages in Mugunga-Lac Vert might also stem partly from illegal connections. Considering this current situation and the high installation costs, the installation of prepaid standpipes in Mugunga-Lac Vert would be rather unlikely to improve Yme Jibu's current performance. Therefore, other options are needed. Recently, Yme Jibu introduced a mobile application

where the “agent de collecte et de suivi” (ACS) can insert the meter indices during their field visit, which are then automatically used to produce statistics about the consumption levels. An unresolved issue remains the daily cash movement and administration. A possible solution to this could be to bring the money directly to a mobile bank counter, for instance by the ACS who collects the money at the end of every day, instead of transporting it back to the office. This option would allow Yme Jibu to directly monitor the inflow of money every day. On the other hand, it is not clear how Yme Jibu can make sure that the correct amount of money is brought to the bank. Further, Yme Jibu would need to clarify the responsibilities in case money is missing and it would need to find a way to identify which money belongs to which tap stations. Therefore, more investigation on this topic and discussions with Yme Jibu are needed.

4.2.3 Best practice VI: Evaluate different strategies for market creation and demand stimulation

- Keep in mind that “competitors” may not always be other businesses, but could be any other water source that potential customers are using
- Use below-the-line marketing to raise awareness about the benefits of the service offering
- Use economic arguments to increase existing customers' willingness to pay and new customers' willingness to acquire the service offering
- Use above-the-line marketing to achieve high sales volume, but be aware of the potential risks of this marketing strategy

Besides the need to make the supply processes more efficient, the analysis of the consumption levels in chapter 3.2.3 indicates that the latter are not as high as they could be. The cumulative consumption level is only slightly increasing, if not stagnating, despite more customers being added to the system, while the consumption levels per household are below the recommended minimum level by the WHO, especially for users of public taps. Increased consumption of clean water means increased social impact for the community while higher demand means more revenues for Yme Jibu. Therefore, this chapter assesses different marketing strategies to realise the potential for demand stimulation (questions 9; 14, 15).

Chapter 2.3 showed that in BOP environments, it can be misleading to think about a market that is already there. Rather, a company needs to create a market for its offering by making people aware of the benefits of the product. First of all, this means that the enterprise must be aware of potential competitors. However, in a BOP environment, market competition has a different meaning compared to traditional markets: London (2016) notes that “competition might not always be other enterprises [but it] may be the status quo” (p. 74). This means that for instance, a community that lives close to a natural water source may deem the existing water provision as sufficient, even though the water is contaminated. In this case, the competition can be river or a lake, i.e. what London (2016, p. 74) calls the “status quo”. Therefore, good marketing strategies are needed to convince the customers of the benefits of the service offering. The goal must be to create a service that is preferred by the customers over the services offered by the competition.

Kubzansky, Cooper and Barbary (2011, pp. 137-138) distinguish between below-the-line and above-the-line marketing: While the former aims at reaching out to the customers directly through field agents and retail presence, the latter is often used in a more centralised manner and seeks to advertise the benefits of the product. An important element of below-the-line marketing is not only to create awareness, but also to create trust in the company through village-level demonstrations and peer pressure by trusted locals and village chiefs: When people have “visual and tangible proof” of the benefits of an offering and when they see their neighbours adopt it, the last barrier to purchase can be overcome (Hystra, 2013, p. 10). One-to-one demonstrations are especially successful in raising awareness and willingness to acquire the product. Further, attracting customers on street fairs with entertainment establishes trust within the community (Kennedy & Novogratz, 2011, p. 68; 73). Social marketing campaigns should promote tangible and short-term cost savings through slogans that highlight “straightforward economic arguments” and promote risk-free solutions rather than cheap products (Hystra, 2013, pp. 5-6). In other words, because the main reason for poor people to be poor is that they do not have enough money, it should be shown to potential customers how the offering enables them to save or earn money (Polak & Warwick, 2013, p. 44). Y. Tshikudju (personal communication, June 6, 2017) states that an additional element that increases willingness to pay is if the leaders of a community, such as the police or the authorities — often it is them who do not pay — understand their role model function for the rest of the population. Furthermore, it is important to note that many people in low-income areas are transient and might have been displaced from rural areas where awareness about safe water is lower. Therefore, the water utility needs to be in constant interaction with the community to reach the new people (Heymans, Eales, & Franceys, 2014b, p. 2). K. Wundikwavwirwa (personal communication, June 9, 2017) pointed out that the willingness to pay may also depend on local customs: Where people perceive the water as God-given, it might need a lot of sensitisation work to make people aware of the need to pay for the water. In general, it might be a good idea to partner with local development organisations to perform these social marketing campaigns since it reduces costs for the company (Hystra, 2011, p. 206).

Above-the-line marketing, on the other hand, is said to be important to achieve high sales volumes to break even (Kubzansky, Cooper, & Barbary, 2011, p. 138). However, above-the-line marketing campaigns, for instance through television or radio communication and billboards, have only limited effects on demand, especially if they are not combined with below-the-line marketing (Hystra, 2013, p. 9). For instance, Waterhealth Intl. used posters, flyers and handouts to advertise their water filters, but these forms of marketing were not trusted by the locals (Kennedy & Novogratz, 2011, p. 68). Furthermore, since above-the-line marketing is executed in a generalised and centralised manner, it is more likely to increase the visibility of the company compared to below-the-line marketing. Yet Chilova and Ringov (2017, pp. 54-55) note that high visibility of a brand or a company should be minimised at initial stages of a venture and only increased at later stages. High visibility can be associated by the community with high profitability, even if the company might be still struggling to achieve economic viability.

This can increase “claims from rent-seeking constituencies to share profits or financially help those in need”, which is why visibility should only be increased once the community understands and supports the social benefits and objectives of the organisation (Chiliova & Ringov, 2017, p. 55). Therefore, a company should carefully evaluate the potential benefits and risks of adopting above-the-line marketing strategies.

Practical implications, ideas & open questions: Since people in Mugunga-Lac Vert are generally aware of the benefits of clean water, this chapter suggests focussing on transforming this awareness into willingness to pay. Achieving this may need below-the-line marketing. Questions to research in the future could be: How much money do customers save in terms of health treatment costs by using Yme Jibu's water? How much money do customers save in terms of money used to buy charcoal to boil the lake water? What are the monetary benefits of using clean water not only for drinking, but also for cooking and washing? The analysis in chapter 3 showed that the customers of public taps mainly use the water only for drinking purposes. With a good marketing strategy, a typical customer may be convinced to buy more water than the current average and new customers may be acquired.

When it comes to the promotion of private connections, below-the-line marketing as described above may not be needed since the demand is already quite high and during the past months, many new connections were added to the system. Problems were rather encountered with respect to their willingness to pay after the water has been consumed. Since the households with private connections in Mugunga-Lac Vert may be perceived as respectable persons within the community, it is crucial to make them aware of their role model function for other customers and to explain them how important it is to pay for the water. Apart from that, the author believes that the solution should focus primarily on improving the customer service for private customers to achieve better client satisfaction. This will be discussed in best practices VII and VIII.

It is argued in this chapter that above-the-line marketing can be used to achieve high sales volumes, which is indeed needed in the case of Yme Jibu. However, the findings also illustrate certain risks with this type of marketing strategy. Since Yme Jibu is not yet a fully profitable company, it might be better to postpone above-the-line marketing and first focus on being fully accepted as a social enterprise within the local community (best practice III) and to improve the services to the satisfaction of the customers to ensure their willingness to pay (best practices VII & VIII) before investing in increasing the visibility of the company by applying above-the-line marketing strategies. Another difficulty that may arise with above-the-line marketing is finding a way to transmit the desired message. Chapter 2.2 showed that illiteracy is widespread in the DRC, especially among the women, and media are consumed rather rarely (apart from the radio). Therefore, direct and personal interactions with the community by applying below-the-line marketing strategies, might be better suited.

4.2.4 Best practice VII: Develop a customised and aspirational service offering to increase client satisfaction and willingness to pay

- Keep in mind that awareness about the benefits of the service offering alone will not translate into demand unless the customers are willing to buy the service
- Create a customised service offering that is co-created with the clients and is distinct from other types of water sources
- Measure customer satisfaction regularly and take into account the customer feedback
- Make the service offering aspirational to increase customers' willingness to pay

Best practice VI highlighted that below-the-line marketing is an important tool to create a market. However, making customers aware of the benefits of a product is not enough. Transforming awareness into willingness to pay is especially important in urban areas in SSA (including Mugunga-Lac Vert), where customers generally “manifest strong demand for clean water” and “few people choose to drink untreated [...] water if they have access to (or can afford) clean water” (Kubzansky, Cooper, & Barbary 2011, p. 117). The problem, however, is that this demand alone combined with usually regulated prices for water with low leeway for change, water service providers face difficulties in covering their costs (Kubzansky, Cooper, & Barbary 2011, p. 117). Therefore, it is even more important for water networks to invest in demand stimulation by adopting the right marketing strategies. Hence, this chapter looks at how Yme Jibu can improve the design of its service offering in order to attract new customers and increase existing customers' willingness to pay (questions 9 & 14-18).

First, when the service offering is adapted to the needs of the customers, it enhances their acceptance (Anderson & Billou, 2007, p. 19). This means that understanding the local context and the needs of customers is a key success factor and managers should be open to learn from the interaction with the local community (London, 2016, p. 17; Kennedy & Novogratz, 2011, p. 56; Anderson, Markides, & Kupp, 2010, p. 22). Kennedy and Novogratz (2011, p. 57) further argue that offers must have a “human-centric design”, which means that they need to fit within the given culture and context to create acceptability among the customers. This means that service development should happen in collaboration with the BOP by engaging them as active participants in designing solutions and hearing their voices (London, 2016, pp. 57-58). Only if this inclusiveness is given, a company will be able to create products and services that are customised and desired by the community (Gebauer, Haldimann, & Jennings Saul, 2017, p. 562). Once the service offering has been established, periodical surveys and the establishment of complaint and feedback mechanisms enable consumers to participate in monitoring and oversight (Plummer & Cross, p. 28). Many organisations offer hotlines, through phone calls or SMS messaging, for customer service requests (Hystra, 2011, p. 94; 179; 190; Vouvouras, 2013, p. 128; 157). Customer satisfaction surveys and regular communication with community leaders help assess the level of client satisfaction (Hystra, 2011, p. 190). The Hystra report (2013, p. 9) highlights that in BOP environments, markets are created “village by village” through several steps: In the first place, potential customers must become aware of

the social benefits of the offering. Yet awareness alone does not mean that people are automatically willing to buy. There must be active attempts to create trust and positive word of mouth among the customers. Only then will a company be successful in achieving higher market penetration (Hystra, 2013, p. 9).

One way of increasing clients' willingness to pay is to make the service offering aspirational. Some authors argue that BOP customers, even though their incomes are very small, are willing to spend money not only to cover their basic needs, but may pay for convenience or social status (Birkholz, Köse, Rosenthal, & Willi, 2011, p. 15; Prahalad, 2004, p. 14). Polak and Warwick (2013, p. 12) make a comparison with Coca-Cola and argue that it is "just a flavoured, fizzy sugar water", but the company was able to convince the customers that it is worth to pay for this brown sugar water. Another example concerns WaterHealth Intl., which realised that its customers were not necessarily willing to pay if the water looked and tasted the same as the polluted river water. Instead, they were willing to pay for water temperature, taste, colour, packaging and transportation (Kennedy & Novogratz, 2011, p. 69). In the case of Spring Health, a social enterprise that brings clean water to rural areas in India, the taste of chlorine was seen by the customers "as assurance that the water was safe to drink", despite the somewhat unusual taste of chlorine (Polak & Warwick, 2013, p. 158). As for the public tap stations, locating them in high-traffic areas can increase convenience and a modern design with a focus on clean tap stations and jerrycans attracts customers (Birkholz, Köse, Rosenthal, & Willi, 2011, pp. 15-17). In addition, a private water connection can be seen as more comfortable and as a "mark of status" in comparison to public water taps, and may be desired by the customers even if it is more expensive to install (Hystra, 2011, p. 225). Positioning services as "status symbols" helps "breaking through some strong local preferences" (Chilova & Ringov, 2017, p. 53). However, even if private connections are very desired, high upfront costs can prevent customers from getting connected (Hystra, 2011, p. 179). Therefore, Chilova and Ringov (2017, p. 49) suggest reducing upfront investments by adopting innovative financing mechanisms, such as the possibility to pay in staggered amounts. Another aspirational element is the payment channel: This was already analysed as an innovation to increase monitoring and payment collection efficiency (best practice V). In addition, cash-less payment eases the payment of bills through increased convenience and promptness (Gebauer, Haldimann, & Jennings Saul, 2017, p. 557). In summary, people need to be aware of the benefits of safe water, they need to be able to distinguish between different types of water sources, and they need to be willing to pay for the water (Birkholz, Köse, Rosenthal, & Willi, 2011, p. 15; 21). Once a company is able to design a service offering that satisfied these conditions, it will be able to establish a lasting competitive advantage that outperforms different types of competitors (London, 2016, p. 79).

Practical implications, ideas & open questions: This chapter revealed that the water services of Yme Jibu can be improved by adapting them to the needs and desires of the customers in order to create positive experiences among them so that tell their friends and neighbours about the benefits of Yme Jibu's water service delivery. The insights gained

through the customer feedback and presented in chapter 3.2.3 provide some ideas on how the services can be adapted. For instance, Yme Jibu could improve the service at public taps by extending the service hours for those tap stations that record significantly higher sales than others. Another idea is to open the tap stations along the main road for bicycle vendors during the lunchtime, if this is technically feasible with the new storage tanks. Importantly, the water committee can provide crucial and regular information about the suggestions of the customers (best practice III). Moreover, establishing direct feedback channels for the customers further enhances customer satisfaction. For instance, Yme Jibu might want to evaluate the costs of introducing a phone hotline where customers can bring their complaints or suggestions for free. Improving the communication channels between the customers and Yme Jibu as well as between the water committee and Yme Jibu was mentioned several times during the interviews and focus groups with the customers as well as during the meetings with the water committee.

With respect to making the services aspirational, the following conclusions can be drawn: Like the example of Spring Health showed, also Yme Jibu's water tastes of chlorine. This is a first element that distinguishes the water from the lake water. Additional differences can be created, for instance, by putting a stronger focus on keeping the tap stations and jerrycans clean so that "cleanness" becomes related to good quality and high standard water. Eventually, this can increase peer pressure to buy Yme Jibu's water. In fact, in Mugunga-Lac Vert it could be observed that some tap operators are promoting the use of clean jerrycans among the customers, while others do not. More research on possible aspirational elements can give further insights on this topic. In addition, private connections are highly demanded in Mugunga-Lac Vert and are perceived as a status symbol. However, there seem to be many households for which the installation costs are too high. According to this chapter, Yme Jibu could make the private connections easier to adopt by offering, for instance, the option to pay in instalments. However, considering the low payment collection rates for monthly bills, it is unclear whether Yme Jibu would be able to recover the installation costs once the household has been connected to the network. Therefore, a strong focus on effective payment recovery is needed before offering options that facilitate the upfront investments for private connections. An option to increase private customers' willingness and promptness to pay is the introduction of mobile money (best practice V). An aspirational element about mobile money could also constitute in the possibility to save money. Chapter 2.2 showed that the poor do often not have access to formal banks and credit institutions, which makes saving extremely difficult. In addition, good after sales service can further increase customers' appreciation for Yme Jibu's services, which in turn enhances their willingness to pay. Since this is closely related to the performance of the local service team, this will be discussed in best practice VIII.

4.2.5 Best practice VIII: Establish a high-performance local service team

- Increase customer satisfaction and generate positive word of mouth through effective after sales service and a local service team that is frequently and physically present in the field
- When building the local service team, involve the community by offering them income-earning opportunities
- Focus on clarifying the responsibilities and duties of each of the field agents
- Provide incentives to the field agents to achieve higher performance and efficiency

Best practice VII highlights that it is key to create a customised service offering to increase client satisfaction and to make this service offering aspirational to increase customers' willingness to pay. An additional element that ensures customer satisfaction and thus helps spreading positive word of mouth is having a good local service team (Hystra, 2013, p. 9). Therefore, this chapter analyses how Yme Jibu can improve its services in this respect (question 9 & 18).

The local service team of a piped water network is usually composed of tap operators, metering, billing and collection agents (sometimes referred to as sales or commercial agents), and local technicians who perform general maintenance work. Compared to the other employees of the enterprise, they spend a lot of time in the field and are frequently in contact with the customers and their representatives (for instance, the water committee). To create value for the customers, the local service team must be frequently and physically present in the community. Even if metering, billing and/or collection is partially or fully automated or digitalised, the company must maintain a regular physical presence and stay in contact with the customers in order to be informed about what is happening locally (Heymans, Eales, & Franceys, 2014b, p. 8). This includes providing the customers with adequate information about the water service delivery. If needed, physical presence can be enhanced by establishing customer centres where clients can make complaints or suggestions and even pay their bills (Goyal, Sergi, & Jaiswal, 2016, p. 429). Furthermore, the engagement of locals along the value chain (for instance as field agents) increases awareness, acceptance and trust by the customers (Goyal, Sergi, & Jaiswal, 2016, p. 429). Chilova and Ringov (2017, p. 53) argue that when locals can earn an income or act as entrepreneurs for the social business it increases their pride and identification with their role. Not least, it enhances local employment and is thus a social value added by the enterprise. Therefore, having a good local service team is "a critical component" of success (Chiliova & Ringov, 2017, p. 53). Practical experience from other water supply systems shows that with adequate community engagement, high collection rates are possible even without prepaid meters (Hystra, 2011, p. 231). In summary, even though the public taps are operated by staff, high payment collection rates can be achieved: Daily cash collection and innovative mechanisms to involve civil society for billing and collection significantly lower thieveries and ensure cost recovery, thus improving the overall level of governance (ADB, 2008, p. 4; 29).

In order to achieve a high efficiency of the local service team, the company can apply several measures. For instance, if functional responsibilities and procedures are clarified, it promotes accountability and professionalism (Plummer & Cross, 2006, p. 21). Moreover, the team's tasks should be standardised so that the workforce can perform them without needing a high degree of specialised qualifications (Kennedy & Novogratz, 2011, p. 53). This means that, when recruiting service team members, an organisation should not primarily focus on experience in sales or branch-specific knowledge, but rather look for individuals who are open to learning (Benhayoune, Chevrollier, & Mazon, 2017, p. 26). However, building a high-capacity local service team requires time and therefore, a company should evaluate the need for building additional skills and invest in trainings if necessary (Chilova & Ringov, 2017, pp. 53-54; Gebauer & Jennings Saul, 2014, p. 5). Adequate training increases individual performance significantly, as Benhayoune, Chevrollier and Mazon (2017, p. 26) argue. As for the technical maintenance part, Y. Tshikudju (personal communication, June 6, 2017) explained that Tearfund in the DRC puts efforts into maintaining regular contact with the local service team, and especially with the technicians. She emphasised the importance of the local workforce to be able to solve basic problems independently and not to "import technicians from Goma". They held contact via telephone where Tearfund gives advice and orientations on how to solve specific problems. Experience from Kampala also shows the importance of having staff who can undertake most repairs themselves (Heymans, Eales, & Franceys, 2014b, p. 6).

In order to increase the speed of potential small breakdowns, Evidence Action who manages a network of public chlorine dispensers, pays "circuit riders" to do maintenance work whenever needed on the basis of phone notifications (Benhayoune, Chevrollier, & Mazon, 2017, p. 16). Another way of managing service breakdowns rapidly and efficiently is to set explicit time targets that water network breakdowns should not exceed, as water service providers have experienced in Bolivia and in the Philippines (Hystra, 2011, p. 223; Vousvouras, 2013, p. 157). Certain organisations also implement performance contracts with competitive compensation for their local service team, which ideally works full-time and is mobile (Hystra, 2013, p. 13). For instance, two water utilities in Senegal (Sénégalaise des Eaux) and in Mali (2EAP) remunerate their staff on the basis of water sold, which creates incentives to increase sales and keeping prices at affordable levels. Other organisations grant money collectors a commission of, for example 10 percent, of water sales for billing and collection (Hystra, 2011, p. 94; 188; 229).

Practical implications, ideas & open questions: Considering the customer feedback obtained from Mugunga-Lac Vert, the customer service can be increased by providing customers with better information about breakdowns and interruptions. Since the tap operators, the ACS and the water committee are in frequent contact with the customers, better coordination among them and Yme Jibu could help improve customer service. Furthermore, the tap operators and the ACS (who read the meters, distribute the bills and collect the money) have a key role in generating positive word of mouth among Yme Jibu's customers. Therefore, it is important to focus on them for achieving good service quality. Considering the payment

recovery rates for private customers, the findings of this chapter suggest that the ACS could be incentivised to collect the money more effectively by adopting contracts that provide a commission on the percentage of bills that have been paid. Combined with a stricter enforcement policy of disconnecting the water in case of non-payment, this could lead to high payment recovery rates. Similarly, the tap operators could be incentivised by a remuneration contract that is based on a fixed salary and a commission. This commission could be tied to the amount of water sold per day in order to increase sales at public taps. On the other hand, the tap operators could be incentivised to respect more carefully the service hours, to be polite and correct in the interaction with customers — it was reported that sometimes, tap operators may not fill the jerrycans to the top but still charge the customers 50 FC — and to maintain tap stations clean and promote the use of clean jerrycans. This might need a training for tap operators where their responsibilities and duties are clarified. If the tap operators are thereby incentivised to be more cautious in handling the water delivery and money collection, Yme Jibu could start to steadily raise the expected amount of money collected from 2000 to 2500 FC per cubic meter. This would help increasing Yme Jibu's profitability considerably.

4.3 Planning for scale in a well-structured way

4.3.1 Best practice IX: Scale up gradually by learning from pilot locations

- Scale up gradually, by setting up pilot tests, and apply previous learnings to design further steps
- Formulate clear learning goals and analyse the achievement of the set goals for each pilot location
- Develop a structured template that defines market selection criteria, general processes and success criteria to facilitate the upscaling and to avoid inefficiencies

One of the elements of the sustainable approach to poverty identified in chapter 2.4, is to become a scalable social enterprise. Chapter 2.4 showed that this is one of the biggest challenges for small local businesses with a great vision. However, once successful, expanding to new locations will significantly increase the social impact and it will help the social enterprise improve its financial performance through economies of scale and the better availability of capital. Since Yme Jibu is facing pressure to scale up relatively quickly (see chapter 3.2.1), this chapter analyses how the initial phase of the upscaling can be best planned (question 6).

As chapter 2.4 highlighted, the upscaling should happen gradually and not before the business model has been tested in the market. A first pilot test should be “small enough to be affordable, feasible to implement with minimal fuss, and manageable by a tiny core staff” (Polak & Warwick, 2013, p. 147). As soon as small units have proven to work, they can be reproduced in other communities (Faivre-Tavignot, 2016b, p. 42). London (2016) states that a pilot “should be consciously designed as a learning vehicle” (p. 69). He argues that specific learning goals must be articulated and these should be about successful experimentation and not yet about sustained impact. Failures should be seen as an opportunity to learn and improve. Finally, the

pilot must take into account the potential risks it poses to the consumers, who might simply not have the resources to absorb undesired outcomes generated by the experiment (London, 2016, pp. 68-71). It will be key to analyse the learnings in a structured way and to allow customers and employees to provide feedback in order to enable continuous improvement (Polak & Warwick, 2013, pp. 148-149). This is a good way to institutionalise the learnings, reduces the risk of failure and enhances market-based knowledge as well as trust and acceptance by the BOP (Goyal, Sergi, & Kapoor, 2017, p. 102). In doing so, it can be useful to develop “a branch management handbook” that records the management and operating procedures that can then be applied by other branches in a later stage (Benhayoune, Chevrollier, & Mazon, 2017, p. 15). In order to achieve cost-efficiency during the upscaling, the scaling procedures and responsibilities need to be as standardised as possible, for instance by a template that focuses on cost reductions, affordable technological innovations, managing social and economic aspects of the business, marketing, and offering income opportunities to the local community (Chiliova & Ringov, 2017, p. 57). A business model template “is a working system of organisational routines that serve as the referent or guiding example for an organisation that intends to grow by replication” (Chiliova & Ringov, 2017, p. 45). However, it is important to note that too narrowly defined procedures create excessive adaption costs, while more generally, guiding principles that account for location-specific factors have proven successful (Gebauer, Haldimann, & Jennings Saul, 2017, p. 560).

While a good network of partners can facilitate the first moves into a new location, a company also needs to define market selection criteria, clear processes and success criteria, which will allow for maximum impact in a cost-efficient way (Benhayoune, Chevrollier, & Mazon, 2017, p. 7). A key decision, for instance, is whether or not a water network supplier is going to scale up in locations where the physical infrastructure is already there (even if partly) or to build the infrastructure from scratch. This is crucial because utility networks are typically very expensive to install, especially over long distances (Kubzansky, Cooper, & Barbary, 2011, p. 101; 105). Combined with low-purchasing-power customers, it becomes very difficult for enterprises to recuperate their capital expenditures, although many utilities have managed to recuperate operational costs at affordable prices for the poor (Kubzansky, Cooper, & Barbary, 2011, p. 101; 105). Therefore, many social enterprises rely on external funding to cover the high upfront investment costs (Gebauer, Haldimann, & Jennings Saul, 2017, p. 560). Partnerships with locally operating development organisations or global fundraising networks can support scale (Hammond, 2011, p. 197; 202; 204).

In a next step, the learning goals for the pilot location should include the way of allocating the tasks between the central office (or head office) and the locations to which the organisation has scaled up its operations (also referred to as branches). Practical experience shows that the focus should be put on reaching “economies of scale in back-office and advanced maintenance” while fostering “lean decentralised management in daily operations, billing and collection” (Hystra, 2011, p. 86). Thereby, the branches are operated by local teams who know the customers and understand their needs, and a centralised platform is responsible for the

management of key processes (Hystra, 2011, p. 92). Typically, this is organised through a franchise system where the local operator is under the strategic leadership of the franchisor, but has some degree of commercial freedom (Vousvouras, 2013, p. 98). Vousvouras (2013) notes that “under the term “microfranchising”, [franchising] gained a higher profile in the development community” and “provides opportunities for fast growth and tackles the typical problems of small businesses in developing countries” (p. 98). However, the evaluation and elaboration of the final scaling method can be done at a later stage, when the learnings of the pilot locations have been analysed, and is thus not the goal of the present thesis.

Practical implications, ideas & open questions: Having already identified two possible pilot locations, Yme Jibu can experiment and learn with the goal of developing an appropriate scaling template (for instance in the form of a handbook) with success criteria, clear principles and proven strategies. Thereby, the best practices identified in this thesis can be highly useful. For instance, the success criteria could be linked to the social and economic indicators identified under best practice I, so that scale increases Yme Jibu's profitability and its social impact. Further, best practices IV to VIII give insights on how the water service delivery is organised in the most efficient way while attracting a sufficient number of clients to reach profitability. Next, Yme Jibu should also think about the market selection criteria. The findings show that an important aspect for piped-water networks is the upfront investment needed to make the water infrastructure running. Important questions to answer will be: How will Yme Jibu finance these investments? Will Yme Jibu only “select” markets where the water infrastructure is already there and in which physical state should this water infrastructure be? Given that the fuel costs make up a large part of total costs, are there more cost-efficient ways of purifying the water in the scaling locations? Under which type of agreement could the relation between the central office and the scaling locations best be organised? Will Yme Jibu focus on semi-urban areas like Mugunga-Lac Vert or does it also seek to provide rural places with water? In case that Yme Jibu targets rural places as well, different strategies may be needed as compared to urban or semi-urban areas. The current pilot locations can give insights about these issues and will allow Yme Jibu to formulate guiding principles for the future upscaling. In a next step, best practice X discusses the potential allocation and organisation of the operations according to the learnings of best practices III to VIII. This provides further ideas on the critical aspects that need to be considered when designing a scaling template.

4.3.2 Best practice X: Find the optimal balance between centralisation and decentralisation

- Seek to achieve synergy effects at the central level while allowing for decentralised management at the local level
- Ensure transparent and regular communication between the central office and the local level
- Foster community empowerment at the local level to ensure the well-functioning of the water network

This chapter looks at the actual water service delivery in more detail and develops ideas on how the operations could be best organised and allocated so that it creates value for the company and value for the community (questions 7 & 8). This will be done in accordance with what has been found in best practice IX, namely to search for synergy effects at the central level (i.e. in the office in Goma) while allowing for decentralised management at the local level.

The centralisation of tasks leads to efficiencies that small-scale utilities would not be able to achieve (Chiliova & Ringov, 2017, p. 50). Vousvouras (2013, p. 95) argues that when tasks with potential synergy effects are allocated at the central level and those activities that need to consider local particularities are decentralised, it can lead to significant cost savings for the organisation. Furthermore, digitalisation improves performance, especially when the company grows more complex (Benhayoune, Chevrollier, & Mazon, 2017, p. 15). Usually, the central office manages the access to investments and investor relations, legal aspects, information management, and takes the main strategic decisions (Vousvouras, 2013, p. 96; 97). On the other hand, the local level is responsible for delivery, production and treatment in locations that are not connected to the main utility, customer management, and money collection (Vousvouras, 2013, pp. 96-97). Key points to focus on are the adoption of low-cost operations and low-cost technology that is affordable to the poor, but still creates higher performance (Hystra, 2011, p. 96). However, when it comes to billing, collection and monitoring, for instance, it is not as clear where the specific activities of these tasks should be allocated in practice, as Vousvouras (2013, p. 97) argues: Locally embedded billing and collection agents could attain higher payment recovery rates, but an automated system that allows for centralisation might generate more cost synergies. Doing the monitoring of sales activities locally benefits from local knowledge, yet the central platform might still need to be present to prevent opportunistic behaviour that may arise from information asymmetries (Vousvouras, 2013, p. 97).

One way to ensure the well-functioning of a complex and scaled-up water network is effective communication between the central office and the branch. Regular contact and a strong focus on transparent communication is a key success criteria and was confirmed by both Y. Tshikudju (personal communication, June 6, 2017) and K. Wundikwavwirwa (personal communication, June 9, 2017) who are working in Goma for Tearfund and Oxfam, respectively. K. Wundikwavwirwa (personal communication, June 9, 2017) emphasised the importance of having a good contact person reduces potential conflicts of interest. In the case of Oxfam in Sake, they helped with the establishment of a local structure that acts like a water committee, which is responsible for the well-functioning of the water network and for communication with Oxfam. The case studies of other water networks usually empower local managers and entrepreneurs to be responsible for different tasks, such as billing, payment collection, and sometimes also internal cost accounting (Hystra, 2011, p. 94; 180; 221; 230). In many projects, a representative from the head office meets the local managers once a month to discuss key performance indicators (Hystra, 2011, p. 221). Further, weekly calls and exchange of written reports with the local managers on utilisation and performance levels as well as the provision of recommendations help increase trust and ownership (Hystra, 2011, p. 229; 231). More

specifically, K. Wundikwawwirwa (personal communication, June 9, 2017) explained that even if the construction phase is over, it can happen that there are still many technical problems. Solving them requires close cooperation between the local employees and the central office. The latter can give useful advice or step in if complex reparations are needed (Vousvouras, 2013, pp. 96-97). In addition, daily interactions reduce the potential for information asymmetries (Vousvouras, 2013, p. 93). Anderson, Markides and Kupp (2010, pp. 24-25) argue that it is important to respect the business partner and develop a relationship of trust. Further they state that it is essential to focus on developing a relationship that is not based on short-term gains, but rather on a long-term connection.

In addition to good communication, practical experience shows that the involvement and empowerment of the community to which the water network is expanded is extremely important. The study by Pervez, Maritz and de Waal (2013, p. 62) finds out that "community engagement" is a necessary characteristic of these firms' success strategies. Engagement means that the company must go beyond simply selling the service, but perceive the BOP as "a pool of creative and innovative talents" that can participate in creating the offering, but also in delivering it, for instance as entrepreneurs or field agents (Pervez, Maritz, & de Waal, 2013, p. 63; London, 2016, p. 60). At the same time, community participation can facilitate the ready availability of the service. This is a key element to keep in mind since traditional distribution channels are often fragmented or non-existent (Anderson & Billou, 2007, p. 15). Practical experience from water utilities in semi-urban areas shows that many water providers have hired a local manager from within the community, who in turn can hire employees for local positions (Vousvouras, 2013, p. 97). London (2016) explains the importance of having a local manager for each location of the water network by saying that "just because someone is from the host country doesn't necessarily mean this person respects or even understands the BOP" (p. 62). The local manager is usually granted decision-making power for key decisions about their service area, which allows him or her to take into account certain local particularities (Hystra, 2011, p. 221; Vousvouras, 2013, p. 96). Furthermore, the company can capitalise on the already existing network of local entrepreneurs for other local positions to be filled. The local entrepreneurs have a good understanding of how to manage the environment, which is sometimes too complex to comprehend for outsiders (Anderson, Markides, & Kupp, 2010, p. 14). Therefore, they could operate as sales and commercial agents or other positions that might be needed at the local level. For instance, the Indian-based social enterprise Spring Health enters in a partnership with the best shopkeeper in each rural village. He or she will then be responsible for selling the water and earn a commission on sales (Polak & Warwick, 2013, p. 155). In areas with very low security levels, local entrepreneurs can also help avoid vandalism and theft. They could act as partners in that they take responsibility for equipment that is located on their property (Anderson, Markides, & Kupp, 2010, p. 15; 23). In addition, Anderson, Markides and Kupp (2010, p. 23) argue that these people know the area very well and can provide the company with valuable information. The practical experience of a water sewerage company in Kenya that provided considerable community ownership, which in turn

reduced vandalism incidents, reiterates this finding (Kubzansky, Cooper & Barbary, p. 113). All in all, local empowerment enhances local employment and collective responsibility and ensures high payment collection rates (Hystra, 2011, p. 180; 183). In fact, Kubzansky, Cooper and Barbary (2011, p. 108) find that this contributed to payment recovery rates over 90 percent in most of the analysed case studies whereas the project that achieved significantly lower payment collection rates was a private company, which did not grant any degree of community ownership.

Practical implications, ideas & open questions: In the case of Yme Jibu, one of the critical aspects will be to achieve the desired economies of scale, i.e. that the same number of staff in Goma can manage multiple scaling locations without excessive costs at the local level. While this is a challenge for any water network, it is particularly important for Yme Jibu because its water service delivery is less digitalised and automated compared to other water utilities: It is so far based on staffed tap stations, partially manual data collection, and large cash movements, which would make it difficult for the Goma office to monitor local activities in more distant places. In other words, the office in the scaling location would need to be equipped with several computers to enter that is manually collected, a safe to store the cash and people to administer it, and motorbikes to collect the money, etc. In this scenario, it would be difficult to achieve synergy effects and the monitoring capacity of the Goma office would then depend on the willingness of the local office to share the data. Therefore, a focus on digitalising as many processes as possible and reducing cash movements is highly important to achieve higher profitability. Of course, the particularities of each locality need to be assessed, but in general, best practice V can provide useful reference points about possible technological innovations.

Moreover, the practical experiences in this chapter provide ideas on how to establish a good communication between the Goma office and the scaling localities. However, digitalising processes to facilitate the monitoring of the Goma office does not mean that there is no room for decentralised management. On the contrary, best practices III to VIII showed how important it is to include the community and the local employees in the process of assessing the level of awareness and the need for market creation as well as designing appropriate service offerings to reach a high level of customer satisfaction. All this requires an effective local management team that knows the local environment and is able to provide good customer services.

4.4 The only roadmap towards sustainable water supply in Goma


The roadmap towards sustainable water supply in Goma contains two crucial parts. First of all, chapter 3.3 demonstrated that Yme Jibu's transition from NGO to for-profit social enterprise represents a viable and necessary driver for development: On the one hand, the sustained existence of a water supply network over the long term can only be ensured when the managing organisation is able to become financially self-sufficient. On the other hand, applying the sustainable business approach to poverty (with the three elements identified in chapter 2) has the additional advantage of fostering the achievement of profits. This in turn will allow Yme

Jibu to reinvest its surpluses to reach more communities that lack access to safe water and to attract the necessary investments. Having identified this potential represents the first part of the roadmap to sustainable water supply in Goma.

The practical part of this paper has also shown that, in order to succeed in this transition, several challenges need to be overcome. This implies developing the organisation along the ten best practices identified in chapter 4, and more generally implementing cost-effective innovations in three areas: Firstly, internalising the role of being a social enterprise in practice (chapter 4.1) will enable Yme Jibu to create a common understanding about the new role that can be shared with the team as well as with local partners and international investors. Further, having clear social and economic performance indicators will foster the social business mindset and facilitate strategic decision making, even when the organisation grows and becomes more complex. Secondly, developing the water service delivery to create mutual value (chapter 4.2) is needed to ensure that Yme Jibu operates in the most efficient way and provides a service that is supported and desired by the community. Thirdly, planning for scale in a well-structured way is of utmost importance because reaching scale is a major challenge for social enterprises (chapter 4.3). Even if Yme Jibu is not yet fully ready for scale, the small number of staff in Yme Jibu is now required to think innovatively in search of a scalable business model that will allow it to provide sustainable water supply for a larger population. The findings of this paper show that sound planning must start from the beginning so that a scaling strategy can be developed over time and in accordance with the learnings from the pilot locations. In summary, the insights gained in chapter 4 provide useful reference points about how Yme Jibu can complete the transition from NGO to social enterprise. By this, the author means that the business model can be refined in order to improve its performance and to prepare it for the upscaling.

The findings in chapter 4 represent the second part of the roadmap to sustainable water supply in Goma and are visualised in figure 10: The questions on the left are based on the assessment of Yme Jibu's current situation (18 key questions identified in chapter 3) and identify those aspects that have the potential for economic and social development if the right strategies are found to tackle these challenges. The best practices summarise the main findings of chapter 4 (the detailed arguments for each best practice can be found in the coloured boxes throughout chapter 4) and can provide useful insights to any organisation facing the same challenges as Yme Jibu. On the right, the practical implications, ideas and open questions that will be specifically relevant for Yme Jibu in the near future are summarised. These aspects are thought to highlight critical moments that can be further discussed with Yme Jibu and Fontes.

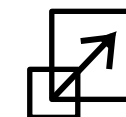
Figure 10
The roadmap towards sustainable water supply in Goma

Identifying Yme Jibu’s potential for development (main challenges)	Realising Yme Jibu’s potential for development:		From NGO towards becoming a sustainable for-profit social enterprise:
	Best practices	Practical implications, ideas & open questions	
<ul style="list-style-type: none"> • How can Yme Jibu make sure that the right data are collected correctly and interpreted so that they can serve as a basis for strategic decision making? • How can Yme Jibu differentiate between the aspects that are included in its social mission and those that are not? • How can Yme Jibu create a common understanding about the social orientation and institutionalise it? • How can Yme Jibu ensure that everyone understands the business opportunity of securing the long-term existence of the water service delivery in Mugunga-Lac Vert? • How can Yme Jibu demonstrate to its stakeholders and partners the social impact of the enterprise and is this really necessary? 	<p>I Set targets and measure social and economic performance regularly</p> <p>II Build a committed & entrepreneurial team</p> <p>III Make sure the new identity is accepted by stakeholders and partners</p>	<ul style="list-style-type: none"> ✓ Develop social and economic performance indicators and related targets (the indicators used in chapter 3.2 can serve as reference points) ✓ Measure the achievement of the targets regularly and take them as a basis for strategic decision-making and to foster a common understanding about the company’s social orientation and economic objectives within the team ✓ Foster enthusiasm about the business opportunity by communicating objectives clearly and celebrating success ✓ Evaluate the need for financial and/or non-financial incentive systems ✓ Demonstrating the social impact, especially to stakeholders who might express scepticism about the commercialisation, is important to gain trust & access to crucial market information (more legitimacy may also prevent illegal connections) ✓ Evaluate the idea of institutionalising the affordability criteria and the reduced price to health centres and schools (according to specifically defined criteria) to show Yme Jibu’s special effort to provide water services for everyone 	 <p>Internalising the role of being a social enterprise</p>
<ul style="list-style-type: none"> • How can Yme Jibu increase customers’ willingness to pay in order to reduce non-revenue water & increase payment recovery rates at tap stations and private connections? • Which other supply-side innovations lead to increased profitability? • Does it make sense to introduce mobile money for households with private connections and which are the main risks and benefits experienced by other water service providers? • What are the main benefits and risks experienced by other water networks that have adopted prepaid standpipes? 	<p>IV Focus on achieving an optimal cost-revenue ratio</p> <p>V Adopt modern technologies for increased efficiency</p>	<ul style="list-style-type: none"> ✓ Constantly search for cost savings and use local materials ✓ Calculating the cost-revenue ratio of a typical high- and low-sales public tap provide more insights about their profitability ✓ Evaluate the feasibility of increasing prices per m³ for private customers (for instance after having reached a certain threshold of m³ per month) and of targeting more commercial customers ✓ Introducing mobile money for private customers is accepted by the latter and is likely to generate higher willingness to pay, more investigation about the concrete implementation is needed ✓ Since the risks of introducing prepaid standpipes in Mugunga-Lac Vert outweigh the benefits, continue developing the mobile application for electronic metering and search for possibilities to reduce cash movements 	<p>+</p>

<ul style="list-style-type: none"> • Apart from prepaid standpipes, which other innovations allow for better monitoring transparency and more effective cash collection at public taps? • Given the results of the practical analysis and the main challenges of a BOP environment, which marketing strategies exist to attract new customers? • Given the results of the practical analysis & the main challenges of a BOP environment, which strategies exist to increase the amount of water consumed by existing customers at public taps? • What are the benefits and risks of promoting the adoption of new private connections (for private households and commercial institutions)? • How can Yme Jibu use the customer suggestions about the communication channels, the technical issues, and the pricing to improve its service offering? • How can Yme Jibu achieve high customer satisfaction and which are the main benefits of satisfied clients? 	<p>Evaluate different strategies for market creation and demand stimulation VI</p> <p>Develop a customised & aspirational service offering to increase client satisfaction and willingness to pay VII</p> <p>Establish a high-performance local service team VIII</p>	<ul style="list-style-type: none"> ✓ Since the awareness about clean water seems to be high in Mugunga-Lac Vert, focus on translating this awareness into willingness to pay by generating positive word of mouth (i.e. high customer satisfaction), at first through below-the-line marketing ✓ Options to increase the willingness to pay at public taps are: demonstrate to customers how much money they are saving by consuming safe water; focus on keeping jerrycans and tap stations clean to distinguish them from other water sources; focus on providing good information about service breakdowns & interruptions and politeness of tap operators; evaluate the option to extend service hours. More investigation on other elements might be needed. ✓ Options to increase the willingness to pay for private customers are: focus on good after sales service through a local service team that is frequently and physical present in the field; aspirational option to pay via mobile money; facilitate the upfront financing. ✓ Focus on more effective payment collection and stronger enforcement of water disconnection in case of non-payment. Only then does it make sense to promote the adoption of private connections ✓ Establish more direct feedback channels for customers & from the water committee (e.g. hotline) to increase proximity to customers ✓ The performance of the local service team could be increased by contracts with commissions on sales for tap operators (incl. an increase in the expected amount of revenues per m³) and commissions on percentage of payments collected for ACS
<ul style="list-style-type: none"> • In the initial phase of the upscaling, which aspects are most important to consider so that it facilitates scaling up and expanding the water supply system in a later stage? • How can the water service delivery in the scaling location be organised so that it creates value for the company by increasing its profitability and value for the community by expanding the social impact? • Given the relative high share of salary costs, how can the operations and the management be organised so that it allows Yme Jibu to reach economies of scale when it scales up? 	<p>Scale up gradually by learning from pilot locations IX</p> <p>Find the optimal balance between centralisation and decentralisation X</p>	<ul style="list-style-type: none"> ✓ Establish learning goals for the pilot locations and use the learnings to establish a template (or handbook) with market selection criteria, guiding principles and success criteria ✓ Focus on reaching economies of scale in the Goma office through digitalisation for more effective monitoring; good communication with the scaling location; and reduced cash movements for better money management ✓ Foster community empowerment by allowing for decentralised management to ensure the well-functioning of the water service delivery, i.e. high demand and high payment collection rates ✓ Empower the local team to account for local particularities in the design of the service offering and the marketing strategies ✓ Use the findings from best practices III to VIII to organise the water service delivery in the scaling locations



Water service delivery with value for the company (economic viability) and for the community (social impact)



Well-planned upscaling

5 Conclusion

The present thesis analyses the case of Yme Jibu, a privately managed company that runs a semi-urban water network in the surroundings of Goma in the DRC. The case of Yme Jibu's water supply system is quite common in the developing world: A water infrastructure is built by humanitarian organisations who run the project for a couple of years. Since the financial resources are scarce, these organisations may leave the area to provide their services in other emergency locations, before a sustainable solution has been found. The incapacity of aid agencies to supply water over the long term and on a large scale combined with the widespread lack of public water utilities, especially in semi-urban and rural areas of the Global South, provides a huge opportunity for private initiatives. Despite the increasing trend of private ventures entering the water sector, viable business models have yet to be developed. Against this background, this paper evaluates whether the change from NGO to social enterprise represents a necessary driver for sustainable development and how Yme Jibu can best manage this transition. First and foremost, this thesis contributes to the further business development of the specific case of Yme Jibu. Nevertheless, the analysis also provides useful insights to other organisations that are facing similar challenges to those of Yme Jibu.

The first part of this thesis' goal is the identification of the broad lines of what constitutes a sustainable business approach to poverty. Chapter 2 is based on a literature review of the BOP proposition as well as the social enterprise concept, which is related to the BOP models. The main conclusion is that business is indeed a key driver for development. However, for business to act as a driver for sustainable development, the author finds that a company must be able to fulfil three main requirements. Firstly, the organisation must overcome the main challenges of a BOP environment, namely to ensure the availability and affordability of their offerings as well as the acceptability, awareness, and trust by the community. Secondly, the organisation needs to collaborate with the BOP, e.g. existing and potential customers, to enable the creation of an innovative business model that takes the needs and aspirations of the customers into account and actively creates social impact. Thirdly, an organisation should adopt a for-profit organisational form to reach profitability because only this allows the company to attract sufficient investments and/or reinvest the profits to expand the impact to a larger population — which is ultimately what makes the difference between small-scale development initiatives and large-scale solutions to poverty.

Chapter 3 is based on the findings gained during the field stay in Goma and identifies Yme Jibu's potential for providing sustainable water supply as a social business. The results from this practical analysis clearly show that Yme Jibu will only be able to provide sustainable water services over the long term and for a larger population, including the most vulnerable people, if it operates as a for-profit social enterprise. This is because only if it manages to operate profitably, Yme Jibu can break the cycle of dependency on donations and expand its social impact by investing the surpluses in new projects, as envisaged by its mission. Since Yme Jibu is currently a small start-up with a great vision, which has not yet realised its full potential, the

above-stated overarching objectives of a sustainable business approach to poverty facilitate the transition from an NGO mindset to a business mindset and thereby the further development of the business model. More specifically, the practical evaluation in chapter 3 identifies the main challenges (represented by 18 key questions) regarding this change. Overcoming these challenges will be crucial for Yme Jibu to realise its potential of providing sustainable water services as a social enterprise.

These challenges build the basis for the analysis in chapter 4. The result of this investigation are ten best practices based on the practical experience gained in Goma and on theoretical as well as practical knowledge from literature. In addition, critical moments, concrete ideas and open questions, that will be important to consider in the near future, are highlighted. The ten best practices can be summarised in three broad areas where Yme Jibu needs to find innovative strategies: The first area of innovation concerns the need to internalise the new role of being a social enterprise. Having clarity on the extent to which Yme Jibu is socially and/or financially oriented and having indicators that measure the performance thereof, eases strategic decision making. In addition, it also fosters a common understanding about the role and objectives of the organisation within the team, that will then be able to communicate the identity to outside parties. The second area of innovation is the water service delivery. Reducing supply-side inefficiencies by adopting modern technologies and searching for optimal cost-revenue ratios increases profitability. Moreover, implementing marketing strategies that focus on making the water services customised and aspirational will increase customers' willingness to pay and to acquire the service by creating positive word of mouth. In addition, it is important to have a high-performance local service team that provides effective customer service to increase clients' willingness to pay and is incentivised to efficiently collect the payments. Thirdly, it will be important to plan for scale in a well-structured way by learning from pilot locations and finding the right balance between centralisation and decentralisation of the activities between the Goma office and the scaling locations.

In conclusion, the results of the present thesis contribute to the successful completion of the transition from NGO to sustainable social enterprise by providing ideas for the further business development. Throughout this transition, Yme Jibu's business model will be refined and prepared for the upscaling. Once this has been achieved, a proper scaling strategy will need to be developed. This will pave the way for the final step in reaching a large-scale development impact over the long run. Therefore, ideas for future research could be developed along this aspect.

Bibliography

- African Development Bank (ADB), Organisation for Economic Co-operation and Development (OECD), & United Nations Development Programme (UNDP). (2017). *African Economic Outlook 2017: Entrepreneurship and Industrialisation*. Paris: OECD Publishing. Retrieved from <http://www.africaneconomicoutlook.org/en/home>
- Asian Development Bank (ADB). (2008). *In the Pipeline Water for the Poor: Investing in small piped water networks*. Mandaluyong City: Asian Development Bank.
- Alter, K. (2007). Social Enterprise Typology. *Virtue Ventures LLC*, 12, 1-124.
- African Ministers' Council on Water (AMCOW). (2015). *Water Supply and Sanitation in the Democratic Republic of Congo*. World Bank WSP, AfDB, UNICEF, WHO.
- Anderson, J. L., Markides, C., & Kupp, M. (2010). The Last Frontier: Market Creation in Conflict Zones, Deep Rural Areas, and Urban Slums. *California Management Review*, 52(4), 6-28.
- Anderson, J., & Billou, N. (2007). Serving the world's poor innovation at the base of the economic pyramid. *Journal of Business Strategy*, 28(2), 14-21. doi:10.1108/02756660710732611
- Banerjee, A. V., & Duflo, E. (2007). The Economic Lives of the Poor. *Journal of Economic Perspectives*, 21(1), 141-167.
- Baumüller, H., Husmann, C., & von Braun, J. (2014). Innovative Business Approaches for the Reduction of Extreme Poverty and Marginality. In J. von Braun, & F. W. Gatzweiler, *Marginality: Addressing the Nexus of Poverty, Exclusion and Ecology* (pp. 331-351). Springer Netherlands. doi:10.1007/978-94-007-7061-4_20
- Benhayoune, S., Chevrollier, N., & Mazon, V. (2017). *Ready, Steady, Scale!* Cambridge: MIT Practical Impact Alliance. Retrieved from <http://sdvinfo.wixsite.com/mitsdv/copy-of-2017-conference>
- Beugré, C. D., & Offodile, O. F. (2001). Managing for organisational effectiveness in sub-Saharan Africa: a culture-fit model. *Human Resource Management*, 12(4), 535-550.
- Birkholz, C., Köse, D., Rosenthal, N., & Willi, L. (2011). *Developing a Business Model for Solar-Powered Watershops in Kenya*. St. Ursen: REPIC Platform.
- Bruneel, J., Moray, N., Stevens, R., & Fassin, Y. (2016). Balancing Competing Logics in For-Profit Social Enterprises: A Need for Hybrid Governance. *Journal of Social Entrepreneurship*, 7(3), 263-288. doi:10.1080/19420676.2016.1166147

- Büscher, K., & Vlassenroot, K. (2013, March 21). The humanitarian industry and urban change in Goma. *Open Democracy*. Retrieved from <https://www.opendemocracy.net/opensecurity/karen-b%C3%BCscher-koenvlassenroot/humanitarian-industry-and-urban-change-in-goma>
- Chiliova, M., & Ringov, D. (2017). Scaling impact: template development and replication at the base of the pyramid. *Academy of Management Perspectives*, 31(1), 44-62.
- Cho, S., & Sultana, R. (2015). Journey from NGO to Sustainable Social Enterprise: Acceleratory Organisational Factors of BRAC. *Asian Social Work and Policy Review*, 9, 293-306.
- Dees, J. G., & Anderson, B. B. (2003). For-Profit Social Ventures. *Social Entrepreneurship*, 1-26.
- Easterly, W. (2006). *The White Man's Burden: Why the west's efforts to aid the rest have done so much ill and so little good*. Oxford: Oxford University Press.
- EDS-RDC. (2014). *Deuxième enquête démographique et de santé (EDS-RDC II 2013-2014)*. Kinshasa: Ministère du Plan et Suivi de la Mise en oeuvre de la Révolution de la Modernité & Ministère de la Santé Publique. Retrieved from <http://dhsprogram.com/what-we-do/survey/survey-display-421.cfm>
- Faivre-Tavignot, B. (2016a). Introduction. In B. Faivre-Tavignot, & D. Ménascé (Ed.), *Social Business and Base of the Pyramid: Levers for Strategic Renewal* (pp. xiii-xxiii). London: ISTE Ltd.
- Faivre-Tavignot, B. (2016b). From CSR to Business Models of Access to Goods and Services for All. In B. Faivre-Tavignot, & D. Ménascé (Ed.), *Social Business and the Base of the Pyramid* (pp. 3-62). London: ISTE Ltd.
- Foster, T., Hope, R., Thomas, M., Cohen, I., Krolikowski, A., & Nyaga, C. (2012). Impacts and impediments of mobile water payments in East Africa. *Water International*, 37(7), 788-804. doi:10.1080/02508060.2012.738409
- Frankhauser, S., & Tepic, S. (2007). Can poor consumers pay for energy and water? An affordability analysis for transition countries. *Energy Policy*, 35, 1038-1049.
- Gebauer, H., & Jennings Saul, C. (2014). Business model innovation in the water sector in developing countries. *Science of the Total Environment*, xxx, 1-9. doi:10.1016/j.scitotenv.2014.02.046
- Gebauer, H., Haldimann, M., & Jennings Saul, C. (2017). Business model innovations for overcoming barriers in the base-of-the-pyramid market. *Industry and Innovation*, 24(5), 543-568. doi:10.1080/13662716.2017.1310033

- Goyal, B. S., Sergi, B. S., & Jaiswal, M. P. (2016). Understanding the challenges and strategic actions of social entrepreneurship at the base of the pyramid. *Management Decision*, 54(2), 418-440.
- Goyal, S., Sergi, B. S., & Kapoor, A. (2017). Emerging role of for-profit social enterprises at the base of the pyramid: the case of Selco. *Journal of Management Development*, 36(1), 97-108. doi:<https://doi.org/10.1108/JMD-05-2015-0070>
- Hammond, A. (2011). BoP Venture Formation for Scale. In T. London, & S. L. Hart, *Next Generation Business Strategies for the Base of the Pyramid* (pp. 193-216). Upper Saddle River: Pearson Education, Inc.
- Hammouda, H. B.-J. (2006). *Diversification: towards a new paradigm for Africa's development*. Economic Commission for Africa.
- Heymans, C., Eales, K., & Franceys, R. (2014a). *The Limits and Possibilities of Prepaid Water in Urban Africa: Lessons from the Field*. Washington D. C.: Water and Sanitation Program.
- Heymans, C., Eales, K., & Franceys, R. (2014b). *Prepaid Water in Kampala: Case Study*. Washington D. C.: The World Bank, Water and Sanitation Program.
- Heymans, C., Eales, K., & Franceys, R. (2014c). *Prepaid Water in Nairobi: Case Study*. Washington D. C.: Water and Sanitation Program.
- Hystra. (2011). *Access to safe water for the base of the pyramid - lessons learned from 16 case studies*. Paris: Hystra hybrid strategies consulting.
- Hystra. (2013). *Marketing Innovative Devices for the Base of the Pyramid*. Paris: Hystra - hybrid strategies consulting.
- IMF. (2015). *Issues in managing water challenges and policy instruments: regional perspectives and case studies*. Washington D.C.: International Monetary Fund (IMF).
- Karamchandani, A., Kubzansky, M., & Frandano, P. (2009). *Emerging Markets, Emerging Models*. Monitor Group.
- Karnani, A. (2007a). The Mirage of Marketing to the Bottom of the Pyramid: How the Private Sector Can Help Alleviate Poverty. *California Management Review*, 49(4), 90-111.
- Karnani, A. (2007b). Misfortune at the Bottom of the Pyramid. *Greener Management International*, 51, 99-110.
- Katzenbach, J., Oelschlegel, C., & Thomas, J. (2016). 10 Principles of Organisational Culture. *strategy+business*(82). Retrieved from <https://www.strategy-business.com/article/10-Principles-of-Organizational-Culture?gko=71d2f>

- Kazeem, Y. (2017, May 23). More people fled conflict in DR Congo than in Syria and Iraq last year. *Quartz Africa*. Retrieved from <https://qz.com/989693/almost-a-million-people-fled-their-homes-in-the-democratic-republic-of-congo-in-2016/>
- Kennedy, R., & Novogratz, J. (2011). Innovation for the BoP: The Patient-Capital Perspective. In T. London, & S. L. Hart, *Next Generation Business Strategies for the Base of the Pyramid: New Approaches for Building Mutual Value* (pp. 45-77). Upper Saddle River: Pearson Education, Inc.
- Kitumaini, E. (2016). [Résultats de l'enquête sur la satisfaction de la clientèle à Mugunga-Lac Vert]. Unpublished raw data.
- Kolb, R. W. (2008). *Encyclopedia of Business Ethics and Society* (Vol. 1). New York: SAGE Publications, Inc. doi:<http://dx.doi.org/10.4135/9781412956260>
- Kolk, A., Rivera-Santos, M., & Rufin, C. (2014). Reviewing a Decade of Research on the "Base/Bottom of the Pyramid" (BOP) Concept. *Business & Society*, 53(3), 338-377. doi:10.1177/0007650312474928
- Krolikowski, A. (2014). Can Mobile-Enabled Payment Methods Reduce Petty Corruption in Urban Water Provision? *Water Alternatives*, 7(1), 235-255.
- Kubzansky, M., Cooper, A., & Barbary, V. (2011). *Promise and Progress: Market-Based Solutions to Poverty in Africa*. Monitor Group.
- Landrum, N. E. (2007). Advancing the "Base of the Pyramid" Debate. *Strategic Management Review*, 1(1), 1-12.
- Littlewood, D., & Holt, D. (2015). Social and Environmental Enterprises in Africa: Context, Convergence and Characteristics. In V. Blitzler, R. Hamann, M. Hall, & E. W. Griffin-EL, *The Business of Social and Environmental Innovation* (pp. 27-47). Cham: Springer International Publishing Switzerland. doi:10.1007/978-3-319-04051-6_2
- London, T. (2016). *The Base of the Pyramid Promise: Building Businesses with Impact and Scale*. Stanford: Stanford University Press.
- London, T., & Hart, S. L. (2004). Reinventing Strategies for Emerging Markets: Beyond the Transnational Model. *Journal of International Business Studies*, 35(5), 350-370.
- London, T., & Hart, S. L. (2011). Introduction. In T. London, & S. L. Hart, *Next Generation Business Strategies for the Base of the Pyramid: New Approaches for Building Mutual Value* (pp. 1-16). Upper Saddle River: Pearson Education, Inc.
- Mair, J., & Martí, I. (2006). Social entrepreneurship research: A source of explanation, prediction and delight. *Journal of World Business*, 41, 36-44. doi:10.1016/j.jwb.2005.09.002

- Norwegian Refugee Council (NRC). (2017, October 23). UN 'Level 3 emergency' declared in DR Congo highlights scale of crisis. *Norwegian Refugee Council (NRC)*. Retrieved from <https://www.nrc.no/news/2017/october/un-level-3-emergency-declared-in-dr-congo-highlights-scale-of-crisis/>
- Ogbonnaya, C., Daniels, K., & Nielsen, K. (2017). Does contingent pay encourage positive employee attitudes and intensify work? *Human Resource Management Journal*, 27(1), 94-112.
- Pervez, T., Maritz, A., & de Waal, A. (2013). Innovation and Social Entrepreneurship at the Bottom of the Pyramid - A Conceptual Framework. *SAJEMS*(16), 54-66.
- Plummer, J., & Cross, P. (2006). *Tackling Corruption in the Water and Sanitation Sector in Africa: Starting the Dialogue*. Washington D. C.: Water and Sanitation Program (WSP).
- Polak, P., & Warwick, M. (2013). *The Business Solution to Poverty*. San Francisco: Berrett-Koehler Publishers, Inc.
- Porter, M. E., & Kramer, M. R. (2011). Creating Shared Value. *Harvard Business Review*, 89(1/2), 62-77.
- Prahalad, C. K. (2004). *The Fortune at the Bottom of the Pyramid*. Upper Saddle River: Pearson Education, Inc.
- Prahalad, C. K., & Hammond, A. (2002). Serving the World's Poor, Profitably. *Harvard Business Review*, 80(9), 4-11.
- Prahalad, C. K., & Hart, S. L. (2002, January 10). The Fortune at the Bottom of the Pyramid. *strategy+business*, First Quarter 2002(26).
- Rangan, V. K., Chu, M., & Petkoski, D. (2011, June). Segmenting the Base of the Pyramid. *Harvard Business Review*, 113-117.
- Savenije, H. H., & van der Zaag, P. (2002). Water as an Economic Good and Demand Management Paradigms with Pitfalls. *Water International*, 27(1), 98-104. doi:10.1080/02508060208686982
- Seelos, C., & Mair, J. (2005). Social entrepreneurship: Creating new business models to serve the poor. *Business Horizons*, 48, 241-246. doi:10.1016/j.bushor.2004.11.006
- Simanis, E., & Milstein, M. (2012). Back to Business Fundamentals: Making "Bottom of the Pyramid" Relevant to Core Business. *Field Actions Science Reports*(Special issue 4), 82-88.
- Simanis, E., Hart, S., & Duke, D. (2008). The Base of the Pyramid Protocol. *innovations*, winter 2008, 57-84.
- Snow, D. (2013, October 9). DR Congo: Cursed by its natural wealth. *BBC News*. Retrieved from <http://www.bbc.com/news/magazine-24396390>

- United Nations Development Programme (UNDP). (2004). *Unleashing Entrepreneurship: Making Business Work for the Poor*. New York: UNDP. Retrieved from http://ycsg.yale.edu/sites/default/files/files/unleashing_entrepreneurship.pdf
- United Nations Development Programme (UNDP). (2017). *Human Development Report 2016*. New York: United Nations Development Programme (UNDP).
- Vousvouras, C. A. (2013). Large-Scale, Small-Scale, and Hybrid Water Utilities in Cities of the Developing World: The Impact of Scale beyond "Economies of Scale". Zürich: Studentendruckerei.
- Vousvouras, C. A., & Heierli, U. (2010). *Safe Water at the Base of the Pyramid - how to involve private initiatives in safe water solutions*. Den Haag: 300in6 Initiative (under Aqua for All).
- Wheeler, D., McKague, K., Thomson, J., Davies, R., Medalye, J., & Prada, M. (2005). Creating Sustainable Local Enterprise Networks. *MIT Sloan Management Review*, 47(1), 32-40.
- WHO. (2004). *Guidelines for Drinking-water Quality*. Geneva: World Health Organisation.
- WHO. (2017). *Safely managed drinking water*. Geneva: World Health Organisation & United Nations Children's Fund.
- Yunus, M. (2008). Creating a World Without Poverty: Social Business and the Future of Capitalism. *Global Urban Development Magazine*, 4(2), pp. 16-41.
- Yunus, M., Moingeon, B., & Lehmann-Ortega, L. (2010). Building Social Business Models: Lessons from the Grameen Experience. *Long Range Planning*, 43, 308-325. doi:10.1016/j.lrp.2009.12.005

Internet Sources

- Water.org (2017). *The Water Crisis*. Retrieved from <https://water.org/our-impact/water-crisis/>
- World Development Indicators (WDI). (2017). *Poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population)*. Retrieved from <http://data.worldbank.org/data-catalog/world-development-indicators>
- World Bank (WB). (2017). *Ease of Doing Business in Congo, Democratic Republic*. Retrieved from <http://www.doingbusiness.org/data/exploreeconomies/congo-dem-rep#starting-a-business>
- XE. (2017). *XE Currency Charts: USD to CDF*. Retrieved from <http://www.xe.com/currencycharts/?from=USD&to=CDF&view=5Y>

Appendix

Appendix A: Customer feedback: Question templates and results

This part of the appendix presents the findings of the various forms of customer feedback that the author has obtained. It includes a survey with households owning a private connection (1), focus groups with customers of the public taps (2), interviews with two bicycle water vendors (3), and some information gained during two meetings with the water committee (4).

1. Survey with private customers

SURVEY TEMPLATE:

A. Questions générales

A.1	Sexe :	<input type="checkbox"/> Femme <input type="checkbox"/> Homme
A.2	Combien de personnes sont bénéficiaires de votre robinet ?	
A.3	Il y a-t-il un membre du ménage qui a un téléphone ?	<input type="checkbox"/> Oui <input type="checkbox"/> Non
A.4	Qui sont ces gens qui ont le téléphone ?	<input type="checkbox"/> Le père <input type="checkbox"/> La mère <input type="checkbox"/> autre
A.5	Réseau de téléphone :	<input type="checkbox"/> Orange <input type="checkbox"/> Vodacom <input type="checkbox"/> Airtel <input type="checkbox"/> MTN
A.6	Depuis quand êtes-vous connecté sur le réseau d'eau de Mugunga ?	
A.7	Quelles sont les dépenses moyennes de votre ménage par mois (en FC) ?	
A.8	Quelle est la moyenne des coûts mensuels pour l'eau pour votre ménage (en FC) ?	
<i>Si le répondeur a eu des difficultés à répondre à A.8, permettez d'éclater en 3 ou 4 grandes composantes les dites dépenses :</i>		
A.8.1	1. Combien environ dépensez-vous par jour pour le repas (alimentation) familial ?	
A.8.2	2. Combien environ dépensez-vous par trimestre pour la scolarité des enfants ?	
A.8.3	3. Combien environ dépensez-vous par trimestre pour les soins de santé ?	
A.8.4	4. Combien environ dépensez-vous par mois pour l'énergie ?	
A.9	Qu'est-ce que vous utilisez comme énergie ?	<input type="checkbox"/> Pétrole <input type="checkbox"/> Lampe tempête <input type="checkbox"/> Bougie <input type="checkbox"/> Bois (braise) <input type="checkbox"/> panneaux solaires <input type="checkbox"/> autre : _____

B. Questions sur la satisfaction de la clientèle et modalité de paiement

B.1	Êtes-vous satisfaits des services de Yme Grands Lacs (façon de vous approvisionner en eau) ?	<input type="checkbox"/> Oui	<input type="checkbox"/> Non	<input type="checkbox"/> Moyen
B.2	Pourquoi ?	_____		
B.3	Quels sont les problèmes les plus fréquents avec votre raccordement en eau ?	_____		
B.4	Selon vous, que peut faire Yme Grands Lacs pour améliorer le service ?	_____		

C. Payment channels and prepayment

C.1	Qui est responsable pour payer la facture de l'eau dans votre ménage ?	<input type="checkbox"/> l'homme <input type="checkbox"/> la femme <input type="checkbox"/> pas de personne spécifiée <input type="checkbox"/> autre : _____
C.2	Comment payez-vous vos factures chez Yme Grands Lacs ?	<input type="checkbox"/> En espèce au bureau, <input type="checkbox"/> Versement à la banque, <input type="checkbox"/> En espèces aux agents de recouvrement, <input type="checkbox"/> Par téléphonie mobile (Airtel money, M-Pesa, Orange money) <input type="checkbox"/> autres : _____
C.3	Quel serait la modalité de votre choix ?	<input type="checkbox"/> En espèce au bureau, <input type="checkbox"/> Versement à la banque, <input type="checkbox"/> En espèces aux agents de recouvrement, <input type="checkbox"/> Par téléphonie mobile (Airtel money, M-Pesa, Orange money) <input type="checkbox"/> autres : _____
C.4	Pourquoi ?	_____
C.5	Connaissez-vous les services de paiement par téléphone ?	<input type="checkbox"/> Oui <input type="checkbox"/> Non
C.6	Utilisez-vous les services de paiement par téléphone ?	<input type="checkbox"/> Oui <input type="checkbox"/> Non
C.7	Souhaiteriez-vous effectuer les paiements pour l'eau par téléphone ?	<input type="checkbox"/> Oui <input type="checkbox"/> Non <input type="checkbox"/> Je ne sais pas
C.8	Pourquoi ?	_____
C.9	Êtes-vous d'accord de faire un prépaiement pour l'eau au début du mois ?	<input type="checkbox"/> oui <input type="checkbox"/> non <input type="checkbox"/> je ne sais pas

	<p><u>Explication</u> : Vous pouvez par exemple acheter 5m³ au début du mois (cela correspond à 10'850 FC) et si vous ne consommez pas tout, le montant restant sera transféré au prochain mois. Si vous consommez plus, vous pouvez toujours acheter plus d'eau.</p>	
C.10	Pourquoi ?	<hr/>

SURVEY RESULTS:

(23 respondents)

A. General questions:

- In 4 cases, the person responsible for paying the water bill was not available. In these cases, we talked to their spouses.
- The number of people living in the plots varies between 1 to 26 persons and on average there are 9 persons using the water tap. This number is higher than the household size of 5.7 persons found in E. Kitumaini's study (2016, p. 1). In some plots, there are living extended families, workers (if the plot is in construction) or visitors (plot used as a hotel/place for reunions) who all drink the water from the tap. In some cases, the owner was not living in Mugunga, but 1 or 2 persons (e.g. the guardians) would use the water tap.
- All the respondents are connected to several mobile phone networks. The most common network is Orange (incl. Tigo) (20 respondents), followed by Airtel (19 respondents).
- The average monthly household expenditures are of 316-335.40 USD (1 USD = 1400 FC), including expenditures for food, water, energy, and school enrolment of children. The average is a range because sometimes the customers indicated their expenditures in ranges (e.g. "for the water, I spend 9 to 10 USD per month"). The average does not comprise health expenditures, as the respondents were either not able or preferred not to answer to this question. Some respondents directly told us their total monthly expenditures (question A.8). For those who did not know the total, we asked for the following information (questions A.8.1-8.4):
 - average monthly expenditures per household for food: 201.10 USD
 - average monthly expenditures per household for water: 12-15.50 USD (this corresponds to 7.8-10 m³). The amount varies according to whether there are visitors, owner is in Mugunga or not, plot in construction, etc.
 - average monthly expenditures per household for school enrolment: 80.30 USD

- average monthly expenditures per household for energy: 34 USD
- 15 out of 18 respondents – in the first few interviews, the question about energy consumption was not yet included – have a solar panel (out of which one respondent indicated that his solar panel was stolen and another one indicated that he will soon install a solar panel). 16 out of 18 respondents use charcoal to cook (only a few use wood). 3 households are connected to the SNEL and only very few use a generator, gas or a lantern with kerosene (called “pétrole” colloquially).

B. Customer satisfaction:

- 20 out of 23 respondents indicated being satisfied with YGL’s services while 3 respondents are only moderately satisfied.
- The clients appreciate the following (answers were mentioned several times):
 - Existence of YGL’s services
 - Clean and potable water
 - The connection to the system is easy
 - Disposability and permanence of the water
 - Easy access to water, without the need of making efforts to get water from the tap stations
 - Good pressure
 - Water is continuous, the breakdowns are not numerous (less than with Regideso)
 - One client said : « Yme Grands Lac n’est pas brutale comme la Regideso qui coupe l’eau quand on ne paye pas tout de suite »
- They mention the following problems (6 out of 23 respondents indicated finding no problem at all with YGL’s services):
 - From time to time, there are breakdowns, but not very frequently
 - The water comes with great pressure, but the tubes are too small and can break. Sometimes, this results in leakages.
 - The water meter is broken.
 - Compared to Regideso and compared to life in general, the water is expensive. Two respondents said that their last bills were very high and they did not know why.
 - Have had no water while the rest of the network did have water.
 - The interference of the local authorities in the process of connecting to the water system as a problem.
 - The client who uses his plot as a kind of hotel for visitors said that he needs time to fill the tanks so that the visitors have enough water. However, the water interruptions by YGL do not allow him to fully fill the tanks. He would like to have access to the water 24/24h.
 - The installation costs are high. The client knows many other people who would like to get connected to the system. He knows that they would be able to pay for the monthly water costs, but they cannot afford the installation costs, they are too high.

- They made the following suggestions for YGL to improve the services:
 - YGL should communicate to the clients the hours of interruptions and breakdowns.
 - YGL should facilitate the communication between the clients and the local authorities.
 - YGL should fence the areas where the tanks are (« toute personne peut mettre des produits impropres dans l'eau »).
 - Before releasing the water, YGL should check if the filtration has been done properly.
 - Replace the tubes of small dimension and those that have been perforated.
 - Having an office in Mugunga for assistance and clarifying answers.
 - YGL should be closer to the clients.
 - YGL should come by the households and provide advice on technical problems
 - YGL should replace or repair the pumping machines because if there is a breakdown, the clients are forced to use the water from the lake even though they know that it is not safe.
 - Reduce the price per m³.
 - Make the water accessible 24/24h.
 - One client mentioned that YGL should authorise him to resell the water.

C. Payment channels and prepayment:

- In 13 households, the men is responsible for paying the water bill, in 7 households it is the women and in 3 households there was no person specified.
- Current payment method:
 - 9 respondents pay their bills to the money collectors.
 - 9 respondents pay their bills at the office in Goma town.
 - 3 respondents pay their bills to the money collectors or at the office in Goma town.
 - 2 respondents pay their bills at the “bureau du quartier” in Mugunga or to the money collectors.
- Preferred payment method (respondents could choose multiple options) & reasons:
 - To the money collectors: 9 respondents
 - The money collector is often on the ground
 - The money collector is honest
 - To avoid movements and costs of transport
 - Possibility of seeing the money collectors and discuss potential problems
 - “Nous connaissons le recouvreur”
 - Via mobile phone: 8 respondents
 - At the office in Goma town: 4 respondents
 - Via bank transfer: 3 respondents
 - At the “bureau du quartier”: 1 respondent
 - Good transparency

Except for 2 respondents, everyone knows about the possibility to make payments via mobile phone. 17 out of 23 respondents already use this payment method (mostly for personal affairs) and 15 respondents would like to pay the water bills via mobile phone in the future (one respondent answered “I don’t know”).

Payment via mobile phone	
Advantages	Disadvantages
<ul style="list-style-type: none"> - Avoid losing time to go to the office in Goma town - No movements needed (the transport costs to the office are high) - The phone is just “at hand” and direct - Be able to pay from wherever and whenever we like - It’s faster, it facilitates things - It reduces the risks of having an accident on the way to the office 	<ul style="list-style-type: none"> - Payment costs / transfer costs - Fear of not getting a payment confirmation - Clients are used to pay either at the office or to the money collectors - Fear of inserting the number wrongly (i.e. money does not get to the right beneficiary) - Not having the possibility to discuss potential problems (e.g. revindication) with the cashiers or accountants

As for the questions about the prepayment, 14 respondents say that they would accept to prepay while 8 respondents do not accept it (1 person answered “I don’t know”).

Prepayment	
Advantages	Disadvantages
<ul style="list-style-type: none"> - Several respondents know the “Cash Power” system for electricity in Rwanda and compared the prepayment with that system: <ul style="list-style-type: none"> o “On consomme la quantité qu’on est sûr à consommer sur une période en fonction de son argent” o Consumption according to the funds o Trustworthy and transparent system, carefully considered o Avoid abusive consumption (pedagogical element) o With this system, one can approach the children to new technologies o Avoid wasting money - Prepay to facilitate expenses during the following months 	<ul style="list-style-type: none"> - Two of the respondents said that they are unemployed and hence, for them it would be difficult to make a prepayment. They said that they need water even if they don’t have the money to pay for it (“l’eau c’est la vie”). - Very frequent answer : “On ne peut pas trouver l’argent tous les jours”. - Some of the clients mentioned that they would not want that YGL turns off the water when they don’t pay the bill because one cannot know when exactly the salary arrives. - One cannot pay what one has not yet consumed.

- Even if the clients were generally willing to prepay, a frequent comment was that they would pay when they have money.	
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2. Focus groups with customers of public taps

QUESTIONS:

(5 groups, 8-12 respondents)

- 1) Combien de personnes êtes-vous dans un ménage en moyenne dans votre milieu ?
- 2) Combien de bidons consomme un ménage en moyenne dans votre communauté ?
- 3) Quelles sont les facteurs déterminants le nombre de bidons d'eau consommée par un ménage par jour ?
- 4) Pour combien de jours approvisionnez-vous en eau ? Pourquoi ?
- 5) Comment jugez-vous l'accès à l'eau par vos ménages en comparaisons entre la saison séché et celle de pluies ?
- 6) Quelles sont les ressources d'énergie qui sont beaucoup utilisées dans votre milieu ?
- 7) Pensez-vous que dans chaque ménage dans votre communauté existe des membres avec de téléphones ? Si oui, qui en détiennent et pourquoi ?
- 8) En votre connaissance quels sont les services pour lequel le téléphone sert à l'utilisateur ?
- 9) Souhaitez-vous être abonné à une borne ? Pourquoi ?
- 10) Qu'est-ce que vous appréciez dans l'approvisionnement en eau par Yme Grands Lac ?
- 11) Qu'est-ce que vous desappréciez dans l'approvisionnement en eau par Yme Grands Lac ?
- 12) Qu'est-ce que vous recommanderiez à Yme Grands Lacs ?

RESULTS:

The focus groups were held at the tap stations 1, 3 (one group of women, one group of men), 11 and 12 (group with women from Rusayo, a nearby village without access to safe water). In general, it is the women and children who come to the tap stations to buy water. Among the four groups in Mugunga-Lac Vert, there are no big differences, although the group from Rusayo, indicated consuming slightly less water and having somewhat lower daily household expenditures.

Water consumption: On average, there are between 6 and 7 people in each household, but the maximum size of a household could go up to 13 people. They consume around 4-5 jerrycans per day per household. This is comparable to what E. Kitumaini found in his study (2016, p. 1), i.e. 4.1 jerry can per day per household. We observed that households with children and women with small businesses (chicken houses, manufacturer of local drinks) tend

to use relatively more water. During the rainy season, all the groups explained that they would only buy 1-2 jerrycans per household for drinking purposes. They get the rest of the water from the rain and use it to cook and wash. A few respondents (mainly women with small businesses) said that they would not buy water every day, but store it for up to 4 days. This allows them to prevent breakdowns and interruptions in water supply.

Household expenditure: As for their daily expenses, the groups from Mugunga-Lac Vert spend roughly 5899-12'428 FC (= 4.20-8.90 USD) per day per household (1 USD = 1400 FC). This is equivalent to 126-267 USD per month per household. The range of household expenditures was similar in each of the groups. The respondents explained that the main difference between the households is whether or not there is a wage earner (i.e. the higher amount of 8.90 USD per day represents households with a wage earner). Those households who cannot afford to send their children to school, those without a phone and those who cannot afford to pay for health care services, would spend even less than 4.20 USD per day. E. Kitumaini's (2016, p. 1) study found that the average daily expenditures equal 4.50 USD per day, although his study did not include costs for telephones, energy and the soap.

The total expenditures are the sum of the costs for:

- Food: 2000-7000 FC per day (6000-7000 FC for households with a wage earner)
- Water: 200-250 FC per day
- Energy: 400 FC in Rusayo and 1200-1700 FC for the others
- School enrolment of children: the highest amount of money goes to primary school fees (only 1 in 15 children was enrolled in secondary school). In Rusayo, only around half of the children go to school while in the other groups most of the children do. The participants told us that they have been sensitized to send kids to school (also the girls), but they cannot always afford to pay the fees. Therefore, school attendance is very irregular. Primary school fees are between 12 and 16 USD per trimester (= 16'800-22'400 FC). Per day, this is 187-249 FC per child. Considering that there are 4-5 children per household, this is equivalent to 842-1121 FC per day.
- Health care: this cost was difficult to estimate, as costs would only occur in times of sickness. According to E. Kitumaini's (2016) study, around 300 FC per day are spent for health purposes. The Rusayo group indicated not having the means to pay for medication at all, they only use the local natural plants (for instance eucalyptus to treat malaria).
- Phone charges: 200 FC to charge the battery (around 2 times a week, i.e 57 FC per day) and 1000-1500 FC for the credit each day.
- Soap ("OMO") (this element was mentioned when we asked the groups about other important daily expenditures): 300-500 FC per day

Determinants of the amount of water purchased every day:

- Group from Rusayo: The tap station is far away, they can take maximum 2 jerrycans at the time
- Several groups said the revenue is the determining factor
- Two groups mentioned that they do not have enough jerrycans to store the water
- Women group in Lac Vert: it depends for what the water is used. For those who need the water for their small businesses, this is the determining factor.

Energy consumption:

- Wood: the Rusayo group explained that they don't have the money to buy wood, they collect it in the forest. Of the Mugunga group, some of the women said that they can afford to buy the wood.
- Charcoal: All except for the Rusayo group use charcoal to cook.
- Electric torch: very commonly used
- Lamp oil for traditional lamp or lantern: very commonly used.
- Solar panel: "only the patrons" use solar panels, nobody among the respondents had a solar panel in their household.

Use of mobile phones: All groups confirmed that usually men own mobile phones because they use them to find work. The groups at the tap stations 1 and 3 said that almost every household has at least one member with a mobile phone. Those at tap stations 11 and 12 (Rusayo) said that only around a third of the households have mobile phones. Some of the respondents knew about the possibility to make payments via mobile phone, however, none of them was actually using these services.

Prepayment:

- "On ne trouve pas l'argent tous les jours" was one of the most common answers. Some of the respondents concluded from this that they cannot prepay while others said that this is the reason why they would like to make a prepayment. It would "disburden" them for a few days because if one day they have more money, they could make a prepayment and therefore, they would not have to worry for the next few days. Prepaying for a whole month or even a week, however, would be difficult for most of them, they would only be able to prepay for a couple of days.
- The men group said that prepayments would be helpful as it allows them to leave the money for the women when they are not around and their wives could then buy the water.
- Prepayments would also be helpful for women with small businesses as they need to buy large amounts of water and store it anyway (to prevent breakdowns).

Customer satisfaction:

The clients appreciate the following factors:

- People are happy to have safe water close to their homes. Taking water from the lake is dangerous not only because it is no safe, but also because children have died in the lake (especially the Lac Vert has a steep shore) and in car accidents while crossing the main road. They know that having safe water helps them prevent cholera.
- The water is regular and of good quality.
- It contributes to the development of the area, people are healthier and cleaner
- The Rusayo group argued that they would not need to walk long distances if they had a tap station in their village.

The clients see the following factors as problems:

- The number of tap stations is insufficient. There are often long queues and it can create conflicts, especially before the tap stations close in the evening. The water quantity produced every day is sometimes not sufficient to serve all the clients that are waiting in the queue.
- Especially during the dry season, the water quantity is insufficient and people have to go to Lac Vert to get the water, knowing that the water there is polluted.
- If there were more tap stations, people from Mugunga said they would not necessarily consume more, but it would avoid conflicts. People from Rusayo said that they would consume 4-5 jerrycans per day per household instead of 2-4 jerrycans if they had a tap station in their village.
- Sometimes, the operators do not fully fill the 20l jerrycans and they “don’t even give some water to the passengers”.
- People are not happy about the breakdowns.
- Some of them mentioned that the costs are high. If they do not find the 50 FC, they have to go to the Lac Vert, knowing that the water is polluted.

Recommendations:

- Reduce the price per jerrycan.
- Strengthen the pipes.
- Regulate and fix the breakdowns and disconnection times.
- Increase the number of tap stations.
- Especially people from Rusayo pointed out their need for a tap station in their village. They mentioned that this is their main concern.

3. Short interviews with bicycle water vendors

(2 respondents)

1) Where do you bring the water?

A: We bring the water to Mugunga and Lac Vert. Rarely also to Ndosho.

B: To the construction sites in Mugunga and Lac Vert.

2) How many jerrycans do you sell per day and who are your clients?

A: I sell about 150 jerrycans per week (i.e. around 21 per day). We bring the water to the construction sites. I only serve one construction site per day. If a second one calls, I give the job to one of my colleagues.

B: We usually bring 10 jerrycans to the construction sites and 6 jerrycans to the fabricants of drinks. We do this 3 times a day.

3) In which season is your activity profitable?

A: During the rainy season, we have almost no work. The people at the construction sites use the rain water for their activities. They would only call me when they don't have any more water. The work is very hard and during the night my muscles hurt, but I need to get food for my family. The price for one jerry can is 150 FC while during the rainy season, the price is 100 FC.

B: During the dry season, the water is highly demanded.

4) Do you have more than one site of getting the water from?

A: We get the water from YGL's water stations, but sometimes, when there is a breakdown, also from the lake. However, at the lake there are waves which can pull away the jerrycans. We also prefer the water from YGL because the construction workers can also drink it.

B: Here at the tap station 9, but if there is breakdown I go to Nyabyunyu.

5) Which difference is there between YGL's tap stations and other water sources?

A: It is better to take the water from YGL's tap stations. The lake is far away and the water there is not treated. The water from the tap station has a higher quality. This is why we take the water from here, even though it is expensive. We would recommend YGL to buy some longer and more flexible tubes so that we don't need to dismount all the jerrycans every time. With a more flexible tube, we could leave the jerrycans on the bicycle while we fill them with water. We would also like that YGL reduces the price for us vendors. Regideso for instance has a special tariff for bicycle vendors. Another difficulty is that when the tap stations are shut off during lunch time and in the evening, it is when the demand is highest for us. We would wish that the water is running during this time.

B: I don't know anymore how to do the comparison because it has been a long time ago that I do not go to the lake to take water. We appreciate the presence of the water because it facilitates our jobs. We charge the fabricants 125 FC per jerry can and 200 to 250 FC to the

construction sites. The amount of money depends on the distance, the fabricants, for instance, are just next to us. I would like to do a prepayment because I need to come to the tap station several times a day and I do not always have all the money. The people at the construction site usually pay at once. However, the problem is the rotation of the operators, this makes that we cannot make any prepayments.

4. Meetings with the water committee

Date: June 7 & 10, 2017

This discussion is thought complement the survey and focus groups. There are 28 persons in the water committee and in each avenue, there is one member of the committee. Their main responsibilities are to mobilise the community and to do sensitisation work so that they consume clean water. They were trained by YGL and work on a voluntary basis. Once a month, the committee meets YGL to discuss issues raised by the clients to the water committee. If there are urgent matters, extraordinary reunions are held.

The water committee pointed out that YGL is taken as a commercial organisation, but “it needs to be more humanitarian”. One of the YGL staff members explained that it is not a long time ago that Mugunga was something like a “bidonville”. People got water and other services such as medical care for free. The clients as well as the water committee were used to this system and it takes time until they understand the change.

The main issues with the water service delivery mentioned during the meetings were:

- Some tap stations have taps that are not working, hence, there are long queues.
- The tubes are not buried under the soil. It happens that children play with stones and break the tubes. In the dry season, there are many fires that can hit the tubes.
- During the dry season, there is a lot of wind and heavy waves in the lake. This makes that the pumps are not functioning well. Also, during this season more people cannot afford to buy water and have to go to the lake.
- The operators are sometimes not at the tap stations when they need to be there, for instance, instead of starting at 6h they start at 8h in the morning and finish at 16h instead of 18h. This is mainly the case at isolated tap stations. Further, there are too few operators. They are supposed to have 1 day off after 4 days of working. However, now there are some operators that work the whole week without any days off.
- The operators do sometimes not keep the tap stations clean, they don't take care of the hygiene.
- There are two groups of operators, those who received a training by YGL and the water committee in 2013 and those who did not receive any training. It happens that there is some discrimination among the two groups. Another problem is that they are not well trained to solve technical issues (nor is the water committee). When there is a technical problem, a technician from Goma town needs to come. Yet it would be better if the operators would be further trained.

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- There should be points of information for clients in each avenue (customers do not know where to bring complaints and suggestions). If, for example, the operators do not respect the opening hours of the tap stations, it is the responsibility of the water committee to communicate this to YGL. Yet at the same time it was mentioned that since this information is confidential, the complaints or suggestions should go directly to YGL.
 - Communication between the water committee and YGL should be improved. It should be defined which problems can and should be solved locally and what should be communicated to YGL. On the other hand, YGL should better inform the water committee on breakdowns and interruptions so that they can pass the information to the clients.
 - Sometimes, the tap operators do not respect the orders of the water committee. Their responsibilities of each should be defined.
 - People here are poor, they buy a few jerrycans to drink and the rest they get it from the lake.

Appendix B: List of interview partners and interview results

1. List of interview partners:

Date	Name	Function	Organisation & place of the interview
25 May 2017	Sylvain Muhindo	Responsable Régional	Orange Money, Goma
25 May 2017	Jay Ngalasi	Regional Sales Manager Kivu/Maniema	M-Pesa, Goma
25 May 2017	Soguys Emene	Sales and Marketing	Airtel, Goma
1 June 2017	Tatjana Furaha	Commercial Department	Trust Merchant Bank S.A. (TMB), Goma
6 June 2017	Yvonne Tshikudju	Deputy Wash Program Manager	Tearfund DRC, Goma
9 June 2017	Kakule Wundikwavwirwa Muzee	Ingénieur chef d'équipe	Oxfam DRC, Goma

2. Interview with NGO representatives

The information below represent summaries of the main arguments made during the interviews, they are not literal transcripts. The interviews were semi-structured in nature where the main questions stated below represent the guiding framework, but during the interview, smaller questions were asked to investigate or clarify the details.

Interview with Yvonne Tshikudju, Deputy Wash Program Manager at Tearfund DRC:

1) Where are your interventions taking place (those related to water supply)?

We do the construction of the pits and the management of the sources. We are intervening in North Kivu (e.g. Rutshuru), South Kivu (e.g. Fizi territory) and Maniema where we do the adductions and the sources. The projects are working very well. In Rutshuru we have a project where we have not gone back in 4 years and it is still working.

2) How does the system work?

We pump the water from the lake, then chlorinate it, then the water goes to the tanks and from there it is transferred to the tap stations by gravity.

First, there is the preparation phase. It is very important that the community is involved in every step as well as in the decision-making process. It is them who need to take care of the system. The community also takes the decision with regard to the payment system. We present the whole monthly budget to the community (costs for maintenance, chlorination, fuel, etc.).

Once the community agrees, they have to sign a document. This means that the community takes the full responsibility for the project. Further, Tearfund takes care of the formation of local technicians. They need to be able to solve problems locally, and not to “import” technicians from Goma when a problem occurs. The technicians are not paid on a monthly basis, but only when a problem occurs.

People pay for the water on a monthly basis. They pay in cash at the local office. In Vitchumbi, for instance, the cost is of 1000 FC per months. The costs, however, is not linked to consumption, which means that once the consumers have paid, they can consume whatever amount of water they like. The client receives a receipt with which he or she can go to take water. Each tap station has one agent who is responsible for the money collection of those who have not yet paid. He needs to bring the money immediately to the local office at the end of each day. From there, the money is transferred to a bank account. Withdrawals are possible only with the signature of 2 or 3 people. The community is divided into axes and each axe corresponds to one tap station where people can fetch water. Sometimes, people don't have the means to pay for the water. They can pay in kind (with a Tilapia if they are fishers, or with manioc if they are farmers). This applies for instance to one project in Kale and in Butari, where people have difficulty to find the 1000 FC at the end of the month.

3) How do you manage the project, once the infrastructure has been built up?

Once the system is built up, Tearfund holds regular contact with the community. However, after the period of sustainment, the contact is not anymore very regular. The community itself is responsible for the management of the system. They need to buy the chlorine, the fuel and they need to pay the staff. The president of the water committee is not paid, but the cashier as well as the persons in charge of the money collection and maintenance are paid on a monthly basis.

The communication is also seen as a sort of orientation. Tearfund orients them on where and how to buy the materials such as chlorine or fuel of good quality. It is essential not to import many things. If something breaks, it is very difficult to find the spare parts if, for example, the material is imported from Rwanda. Therefore, material should always come from around Goma or Bukavu.

The water committee is supported by the village committee, who is responsible for water, hygiene and sanitation issues.

4) What are the challenges?

We had a project with solar panels, but where the military is, you cannot install solar panels. They took them away and we had to use a pumping system with fuel. This was in the Fizi territory.

There is the aspect of vulnerability. If a community has 7000 households, there are at least 1500 of them who are classified as vulnerable. Tearfund asks the community to define those people who are vulnerable. These are for instance the elderly, people with chronic diseases,

and orphans. The community decides on who does not have to pay for the water nor in cash nor in kind. However, those people are asked to pay in the form of labour. When there is a breakdown or some reparations are needed, those people have to be there and help fix the problem.

Another difficulty is that there are still people who don't pay. Especially in the dry season, there are many clients who cannot find the means to pay. If they work in agriculture, they will not harvest much.

5) What are the lessons learned?

First, there is the implication on the community. The first ones with whom to talk are always the authorities. Often it is the leaders like the police, for instance, who do not pay. Yet it is supposed that these people have money because they have a salary. Therefore, it is important to start with them. They have to understand that they are the role models and as such, they need to pay. For the rest of the population, it is just a matter of sensitisation.

Second, it is important to insist and make the water committee dynamic. The focus is on them. At the beginning, the contact has to be very regularly. Tearfund calls them and asks about the problems they face. The most common problems are about the payment and about breakdowns. When payment problems occur, we try to go meet the community. During these meetings, it is important that the local leader takes the lead. He always has to be involved. He needs to talk to the community and Tearfund is just there as an observer. Once even the rural Minister had been involved. At the end, people complained about the water committee and that breakdowns were not repaired in due time. Therefore, they stopped paying. In the end, the solution was to change the water committee. On the other hand, when the problem is about a breakdown, Tearfund tries to orient the local technicians on how to solve the problem via phone. It is important that they learn themselves how to repair breakdowns.

Interview with Kakule Wundikwavwirwa Muzee, Ingénieur chef d'équipe at Oxfam DRC:

1) Where are your interventions taking place (those related to water supply)?

We have a project in Sake, where we have helped build up a local association, Asirep, that would manage the project independently in the future. With the new law, many of these projects are being put in place. But even if the idea is present since a long time, there is still a long way to go. At the moment, the status of Asirep is on the territorial/provincial level. However, we would like to improve their status up to the national level.

Asirep has been built one year ago and has 12 members. It is a very small association. The members were selected by the "conseil d'administration" (CA) of the village (voluntary members). In each area of the village – Sake has 46'000 inhabitants – there is a deputy. Those deputies have then elected the Asirep. But at the beginning, it had no legal structure. Only with the time there was built a structure that allowed us to negotiate and discuss things.

2) How does the system work and how do you manage the project, once the infrastructure has been built up?

At the moment, there are 85 public tap stations and around 280 private connections. There were two phases of support that Oxfam has provided to Asirep. The first phase is the construction phase while the second phase concerns sustainability. After the infrastructure had been built up, Oxfam had been supporting Asirep for 3 months from March to May 2017. Therefore, it is only very recently that Oxfam has reduced its support. During the 3 months, Oxfam has rented an office for Asirep (the contract will be end in November 2017). We also paid the salary for the manager, a plumber, a cashier and an accountant (the last payment was in May 2017). From June until December we will provide them with technical advice on their request. They mainly call us when there is a breakdown.

The objective for the future is to introduce a payment system that charges a price per quantity consumed. At the moment, payments are made each month. Those who use the public tap stations, pay 200 FC per month and can then consume the quantity of water that they wish. There is one operator at each tap station who is responsible for the payment collection of the beneficiaries around his or her tap station. For the private connections, it is 1 USD per month. However, we were confronted with several problems.

3) What are the challenges?

First, there are still many technical problems, even though the construction phase is already over. At this stage, there should normally not be high costs for the maintenance of the infrastructure. However, we are losing money because of this. For instance, when we wanted to introduce water meters at the tap stations, the community refused. There are also many spare parts that need to be replaced and it is difficult to get the money for this. This reduced the speed with which we could proceed.

The second problem concerns the payment recovery. In March, they only collected 250 USD, but with the private connections alone there should have been 280 USD. This is a huge problem. You have to understand that until not long ago, the population got the water for free. They are supposed to pay only since last year. Before that, money was sent there as emergency response. However, there are also cultural reasons for why people don't pay. People believe that "l'eau est l'or de Dieux" and hence nobody should pay for it. We have another project in Kasindi that works very well. The local association is able to collect 6000 USD per month. In Kasindi, the emergency response seized earlier than in Sake, but this is not the only reason for the difference. People in Kasindi are more open to innovations. If they see that something is going to help them, they are supporting the idea. In Sake, however, the situation is different. Therefore, there is a lot of sensitization needed in Sake.

4) What are the lessons learned?

First of all, the local association Asirep has to understand and support the idea of payment per quantity consumed. We need to educate them on water safety. The responsibility is

incumbent on them, this is what they need to understand. They have to understand that if they don't collect the money, the system will not work. Once Asirep understands, the community has to be sensitized. We do radio transmissions through the community radio. Moreover, the members of Asirep sensitize the community, they provide information about deactivations of the system, and do community mobilisation. This works very well. Some people have even started to come to our office to pay the bills. They do not anymore wait until the agents go to them to ask for the money. The other thing that we achieved is having a good contact person. There are now no more conflicts of interest and we can move forward with them.

3. Interview with mobile money service providers

The information below represents a summary of the main information obtained during the interviews. The interviews were semi-structured in nature.

Interviews with mobile network providers:

- Sylvain MUHINDO, Responsable Régional Orange Money
- Jay NGALASI, M-Pesa Regional Sales Manager Kivu/Maniema
- Soguys EMENE, Airtel

The three companies offer mobile payments through a "compte marchand". YGL would get access to an Internet platform to observe the payments that have been made (in the case of Orange it is not an Internet platform, but Excel files would be sent to YGL on a regular basis). As soon as the payment is made, the client receives a feedback SMS with the amount of money paid. This SMS can be shown to the vendor as a proof of payment. This means, however, that the person in the household who has the mobile phone must be present at the tap station when buying the water.

In the case of applying the mobile payment system to the users of the public taps, there are several challenges:

- The amount of minimum charge is CDF 500 for Orange and Airtel. The representative of M-Pesa was not sure whether it is 500 or 1000 CDF. This means that the customers must be able to prepay for at least 10 jerrycans.
- In order to make a payment via mobile phone, the client must have a SIM card of the same company, i.e. if someone has a SIM card from Orange, he cannot pay via an Airtel or M-Pesa mobile money account. In the survey, we can try to find out which companies are the most common.
- Airtel charges a commission of 1% of the payment to the client every time the payment is made. This would probably discourage the consumers to make payments via their mobile phones. Orange and M-Pesa offer the services to the clients for free.
- Although it is possible to have one SIM card for several tap stations, the representatives of the companies suggested YGL has one SIM card for each tap station. However, it can complicate the payment tracing for YGL if there are too many SIM cards.

- In order to make a payment, the client must go through a menu with several steps. For people with no or a very low educational background it might be difficult to understand the process.

Interview with the Trust Merchant Bank (T.M.B.):

On Thursday, 1 June 2017, the author had the chance to talk to Tatjana Furaha, Commercial Department at TMB. She presented the mobile banking option “Pepele Mobile”, an account for mobile money that works for all the mobile phone networks (Orange, Tigo, Airtel, Vodacom, MTN).

There are three possible options for mobile payment:

- Account to account transfer: This option is less interesting for YGL as it concerns people who have a bank account with TMB. The bank charges the money sender a commission of 0.3 UDS (equivalent of 436 FC) per transaction up to 50'000 FC. From 50'000 FC to 125'000 FC, the bank charges a commission of 0.4 USD and above 125'000 FC it charges 1% of the transaction.
- Account to cash transfer (“profile entreprise”): YGL can use this option to transfer the salaries to its employees. The employees need to have a Pepele account. They will be notified via SMS and can collect their salaries in cash directly at the bank or at one of its mobile agents. For this transaction, TMB charges 1% of the total value of the salaries or 1 USD for each transaction that is below 100 USD.
- Cash to cash transfer (“profile marchand”): This option is for receiving clients’ payments. The clients need to open a Pepele money account (free of costs), presenting their ID and their phone number at one of the TMB agents. Clients can charge their accounts with credit. They can transfer the money by sending an SMS. In case the client does not have a Pepele account, he or she cannot do the payment from home. He or she needs to go to one of the TMB agents and transfer the money there via his mobile phone number. There is no minimum amount for the transaction for the client. The transaction is without costs for the client. YGL as “marchand” pays 1% of the total of the transactions up to 50'000 and 500 FC for transactions above 50'000 FC. The aspect of the commission, however, is negotiable. YGL will have access to an online platform where the transactions are visible in real time. The money will be transferred to the bank account within 24h. The clients are identified via a reference code. YGL will equally receive a SMS with the confirmation of payment. The clients can use any telephone (does not need to be a smart phone) to do the payments.

Appendix C: Details on the breakeven calculation

The following data and calculations build the basis for table 1 with the current and potential breakeven scenarios presented on page 23. The calculations are based on the data that was shared with the author by YGL and Fontes; on an exchange rate of 1 USD = 1400 FC; and on the status quo as of June 2017 of 26 tap stations and an average of 6-7 new private connections per month. Since there are different price levels per cubic meter of water for the three different types of consumers (2500 FC for users of public taps, 2170 FC for private customers, and 1100 FC for institutions) and because the payment recovery rates as well as the monthly consumption levels differ considerably between the types of consumers, it was only possible to calculate the breakeven points for the months of February to May 2017. For the other months, the necessary data was not available. Further, the author encountered some inconsistency of the exact numbers, mainly concerning the water sales in cubic meter over time. Therefore, the calculations are meant to present a general tendency rather than exact measures.

The following numbers were used for the calculation (representing the monthly averages for the months February to May 2017):

	Tap stations	Private connection	Institutions
Consumption per type of consumer as % of total	87.80	10.11	2.10
Payment recovery rate (as reported by YGL, in %)	98.1	62.4	31.2
Price per m ³ (expected revenues in FC)	2000	2170	1100
Average monthly total water consumption (in m ³)	7884.98		

	Fixed costs	Variable costs: Diesel	Variable costs: Chlorine
Operational costs, monthly average (in FC)	8'554'868	3'003'900	430'500
Variable costs (in FC per m ³ of water consumed)		380.97	54.60

Notes: The consumption of private connections and institutions as percentage of total are based on actual monthly consumption levels, not on cumulative consumption levels.

The following functions were used to calculate the breakeven points:

amount of water in m³

prices per type of consumer (users of tap stations, private connections, institutions)

average amount of revenues collected from new instalments of private connections

percentage of total consumption of each type of consumer

Potential revenue function:

$$f(x) = 942'500 + (2000 * 0.878x) + (2170 * 0.1011x) + (1100 * 0.021x) = 942'500 + 1998.49x$$

Revenue function at current payment recovery rates:

payment collection rates (= payment recovery rates) per type of consumer

$$g(x) = 942'500 + (2000 * 0.981 * 0.878x) + (2170 * 0.624 * 0.1011x) + (1100 * 0.312 * 0.021x) = 942'500 + 1866.74x$$

Cost function (excl. capital costs): fixed costs + variable costs

$$i(x) = 8'554'868 + 380.97x + 54.60x = 8'554'868 + 435.57x$$

Cost function (incl. capital costs): fixed costs + variable costs + capital costs

Capital costs are estimated at 30 % of the revenues, i.e. 30 % of the revenue function (in j(x)) it is 30 % of the potential revenue function, f(x); in k(x) it is 30 % of the revenue function at current payment recovery rates, g(x)):

$$j(x) = 8'554'868 + 435.57x + 0.3*(942'500 + 1998.49x)$$

$$k(x) = 8'554'868 + 435.57x + 0.3*(942'500 + 1866.74x)$$

The calculations yield the following results:

Scenarios:		Breakeven point (excl. capital costs)	Breakeven point (incl. capital costs)
1	Current breakeven point	5318.98 m ³	9062.97 m ³
	Difference with current water consumption level	+ 2566.00 m ³ profitable	- 1178.00 m ³ not profitable
2	Breakeven point at maximum collection rates for private customers	4870.61 m ³	8195.31 m ³
	Difference with current water consumption level	+ 3014.37 m ³ profitable	- 310.33 m ³ almost profitable
3	Breakeven point at maximum collection rates for private customers and if expected revenue at public taps is increased to 2500 FC per m ³	3802.53 m ³	6213.35 m ³
	Difference with current water consumption level	+ 4082.45 m ³ profitable	+ 1671.63 m ³ profitable

Declaration of authorship

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