



Grundfos LIFELINK – Sustainable & transparent drinking water solutions for the developing world

Case summary

In 2007 Grundfos, a global leader in advanced pump solutions and a trendsetter in water technology, established Grundfos LIFELINK, a company that delivers sustainable water systems and associated infrastructure to low-income markets, combining existing water service technologies with innovation in business models and systems of payment and provision. This comprehensive case study outlines the challenges of developing business solutions that enable access to safe drinking water; describes Grundfos LIFELINK's innovative turn-key solution, incl. how it was rolled out in Kenya; discusses the work done by the company to assess the socio-economic and environmental impacts of the LIFELINK system; and shares the lessons learned by the company after three years of operation on the ground.



The business case

The market for water solutions in developing countries is mainly comprised by organizations in the development sector and public sector. The total aid budget for investment in water and sanitation projects in 2009 was US\$ 8.4 billion (OECD). Currently, 884 million people do not have access to safe water near their home. In order to meet the Millennium Development Goals ([MDGs](#)) on water and sanitation, the United Nations (UN) estimates that a yearly investment of US\$ 11.3 billion is needed up to 2025. The market potential for companies that can deliver the right solutions is therefore significant.

Although water is a natural resource and a human right, it does not become available without a cost. According to the World Resources Institute, the total annual spending on water by the four billion people in the low-income segment (i.e., with annual incomes below US\$ 3,000 in local purchasing power) amounts to an estimated US\$ 20.1 billion. Often, households in urban areas without access to piped water spend between 3 and 11% of their income on water. This not only shows a great need for better and more

affordable solutions, but also shows an economic potential for developing sustainable business models where the ongoing cost of management and



Every day, millions of women and children fetch water from rivers and other unsafe sources.

maintenance can be derived from the revenue of water sales.

This is the business challenge that Grundfos LIFELINK has taken up: to develop innovative solutions for sustainable water supply for low-income populations, including solutions for the ongoing management and maintenance of the water system.

Context

More than one billion people around the world have no access to clean drinking water. 200,000 people die every month as a result of water-borne diseases; half of them are children under the age of 5 (UN World Water Development Report 2009). Families and communities are caught up in a spiral of poverty when water is a scarce resource. Often, women spend several hours every day to fetch water for the family, taking time from more productive activities.

Bringing access to safe drinking water for all is defined in Target 7C of the Millennium Development Goals ([MDGs](#)), a set of internationally agreed targets to eradicate poverty and other social ills by 2015. But access to water will have a broader positive effect on human development. Thanks to improved health, livelihoods improve, women's workload will be reduced, and children will be better able to attend school. In fact, the UN Development Program estimates that every US\$ 1 invested in access to safe water will give an eightfold return in terms of improved living conditions and productivity in the communities.

In spite of many years of development aid and hundred thousands of community water projects having been implemented, ensuring access to water for all is still a major development challenge. This is not least because the sustainability rate on water projects is alarmingly low. An evaluation of 7,000 rural water schemes in Ethiopia showed that 30-40% of these were non-functional (UN World Water Development Report 2009). The lack of sustainability is primarily due to lack of resources, capabilities and spare parts for service and maintenance. This goes both for community based projects and public infrastructure in most developing countries. Therefore, water projects must include not only high quality technology, but also a sustainable model for ongoing management and maintenance.

Using Grundfos' core competencies to make a difference

With an annual production of more than 16 million pump units, Grundfos is one of the world's leading pump manufacturers, employing approximately 18,000 people in 82 companies in 45 countries worldwide. Grundfos has over 60 years of experience in developing, selling, and servicing pumps for water supply, industry and building services. With Grundfos LIFELINK, Grundfos has decided to use its core competencies in pump technology to provide solutions to the water challenge on a commercial basis.

Grundfos LIFELINK is the newest company among the Grundfos New Business companies. It was established in 2007, and is the first initiative to specifically aim at

developing solutions to improve living conditions for people in developing countries, primarily covering rural and peri-urban areas in Africa, Asia and Latin America. The target is to enable access to safe drinking water for 1.5 million people by 2015.

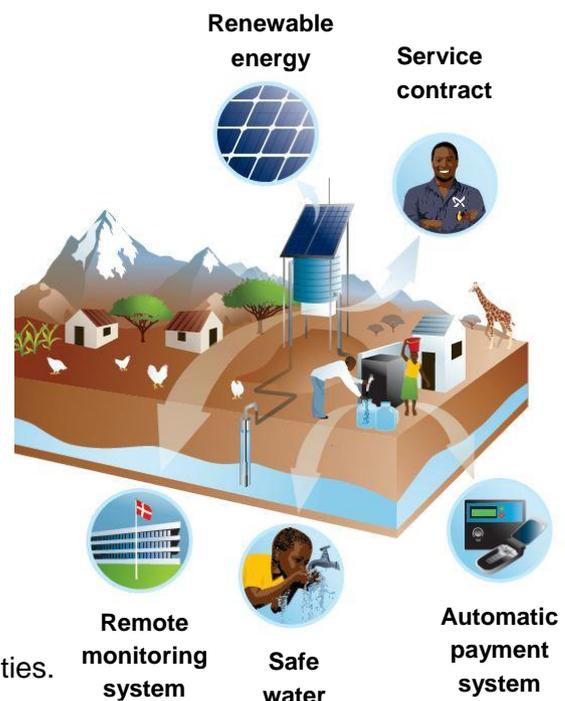
Sustainability is a cornerstone in all aspects of the Grundfos LIFELINK solution, leveraging the four following pillars:

1. Technical – through the remote monitoring system and integral after sales service
2. Financial – through the automatic and transparent revenue management system
3. Environmental – through the use of renewable energy and improved water resource management
4. Social – reliable access to safe water means improved health and living conditions

Grundfos LIFELINK – an innovative turn-key solution

Grundfos LIFELINK offers a turn-key solution for sustainable water supply in both community based water projects and for public or private water service providers.

Technically, the Grundfos LIFELINK system consists of a submersible pump which is submersed into a borehole with clean drinking water. The pump is operated by solar panels which deliver inexpensive, reliable and environmentally friendly energy. The users tap the water from the automatic water dispenser using a smart card with water credit. In order to ensure the water plant's sustainability, it is fitted with a surveillance unit that allows remote monitoring of plant operation via the Internet. The LIFELINK concept includes a service contract where a local service team is in charge of service and maintenance activities.



The payment system is one of the key factors of sustainability as it ensures that the means for service and maintenance are paid into a closed bank account. Behind the innovative payment system is a partnership between the Kenyan mobile company Safaricom (joint venture between Vodafone and Kentel) and Grundfos LIFELINK. Via [an interface using the successful mobile banking system M-PESA](#), the community members can use a mobile phone to transfer credit to the water key, which they use to draw water by the tapping station. The payment is transferred in a closed circuit to a service account, where it finances the ongoing service contract with Grundfos LIFELINK.



1. Loading credit on water key 2. Tapping water automatically 3. Support from service team

A new Global Revenue Management System has been developed in view of supporting the global expansion of Grundfos LIFELINK. It operates independently of mobile banking, but with the same level of transparency and user friendly transfer system.

The price of water in the LIFELINK system is decided by the local water committee and is in line with public tariffs for municipal water supply. Often, this price is much lower than the prices that the communities used to pay for dirty water.

The capacity of the LIFELINK system is specified according to the estimated water consumption in each project. By experience, 12 cubic meters of water per day will be appropriate for a community of approximately 2,500 people. Also, the LIFELINK system has the options of adding several distribution points to e.g. the school, the hospital, or a farmers' group.

Lastly, with the launch of a new LIFELINK water treatment unit in 2013, Grundfos LIFELINK will be able to provide safe water from both groundwater and surface water.

Grundfos LIFELINK in Kenya

Kenya was chosen as the first country of operation due to existing relations between Denmark and Kenya, and being one of the more stable countries in Africa. Another factor for choosing Kenya was the presence of Safaricom and the M-PESA mobile banking service, which has become a central part of the Grundfos LIFELINK payment system.

Operations were kicked off in Kenya during 2008 with the establishment of the company Grundfos LIFELINK (Kenya) Limited, which is as a joint venture between Grundfos and the Danish Investment Fund for Developing Countries ([IFU](#)).

In Kenya, around half of the population does not have access to improved water sources near their home. The main target areas for LIFELINK in Kenya are the rural communities in the arid and semi-arid parts, where surface water is scarce most of the year and people often walk long hours in search of water. Another important market is the newer settlements in peri-urban areas, where public infrastructure cannot keep up with the demand for basic services like water and electricity.

Two years after the installation of the first LIFELINK system in Kenya in March 2009, twenty LIFELINK systems have been sold and implemented, providing clean water every day for approximately 50,000 people. Now, LIFELINK is catching momentum and the orders in the pipeline have been doubled by four in 2011. The company is expecting to follow the same pattern in 2012 in Kenya and is getting ready to expand to more countries in East Africa.

Although Grundfos has been supplying solar powered pumps to the development sector for many years, Grundfos LIFELINK is in many ways entering into new territory. This is the first business initiative where Grundfos is involved on the ground in the entire process of site identification, social mobilization, technical implementation, community development training, and after sales service. With the total concept of Grundfos LIFELINK the focus is not only on providing high quality technology, but also on working with the communities to ensure a good everyday management of the project and stimulate sustainable development in the community from having access to clean water.

After three years with a steep learning curve, Grundfos LIFELINK is now becoming widely recognized as an innovative and trusted player in the field of water and development in Kenya and internationally.

Different business models

The initial business model of Grundfos LIFELINK was based on a commercial model where communities or entrepreneurs would obtain a loan to cover the upfront cost of the LIFELINK system, and pay back the loan on an ongoing basis through the water consumption.



The first water project in Musingini, Kenya, has been supplying clean water for the community since March 2009. More men are now involved

However, based on the first four projects implemented in 2009 it became clear that this was not a viable way forward in Kenya, since the population density, water consumption, and price level would not generate sufficient revenue to pay back the loan. Therefore, LIFELINK changed the business model in Kenya into a 'donation model', where the upfront cost of the system is funded by an external donor from the public sector, development organizations, private foundations, or corporate social responsibility programs. The ongoing water consumption in the community finances the service and maintenance, thus ensuring a reliable and sustainable water supply.

Grundfos LIFELINK expects that a semi-commercial and commercial business model based on a loan for the upfront investment will become relevant when expanding to urban areas with higher population density and when moving to Asian countries in the coming years, where population density and water price is also higher.

The first years of experience have also shown a demand in the market for the components of the LIFELINK system sold on a separate basis to enable e.g. urban water service providers to improve their service levels by acquiring the revenue management system. This has led Grundfos LIFELINK to apply a more flexible dual business strategy, with one leg being the full LIFELINK concept and the other leg being the components of the system sold on a separate basis. The LIFELINK brand is only applied for the total solution where Grundfos LIFELINK is fully in charge as an implementing partner and service provider, whereas the component (original equipment manufacturer - OEM) business model will be based on the Grundfos brand only.

Partnership across sectors

On the financing side, Grundfos LIFELINK has engaged in a range of partnerships. For commercial business models involving a loan from the community or an entrepreneur, a partnering financing institution will provide the loan.

For the donation-based business model, the partners are also to be seen as the customers for Grundfos LIFELINK. In this instance, Grundfos LIFELINK implements the sustainable water projects in partnership with institutions like UNICEF, the World Food Program, the Red Cross, the Government of Kenya, the Danish International Development Agency (Danida), private foundations, and corporate social responsibility programs. The partnership models vary, but the common goal of these partners is to achieve 10 to 15 years of sustainability on their water projects by using the Grundfos LIFELINK system instead of one of the more traditional and less sustainable options available.



School kids getting safe water from Grundfos LIFELINK and Kenya Red Cross

Implementation of sustainable water projects is not only about installing a water system. It is also about mobilizing and training the community to manage their water system well and to understand the value of safe water. The Grundfos LIFELINK team carries out all the necessary community work related to mobilization and implementation of the LIFELINK system. Also, the community consultant conducts a program of community training in health and development.

Depending on the donor and the project model the water projects can also entail expanded components of community development like hygiene and sanitation programs, or support of income generating activities. In 10 water projects being implemented in Kenya in partnership with the Red Cross, the element of hygiene training and awareness

of safe water is carried out by personnel from Kenya Red Cross. Furthermore, the projects include a component of food security and income generating activities by implementing the '[Amiran Farmer's Kit](#)', a 'business in a box' kit consisting of small greenhouses with drip irrigation systems, which also includes training of the community members in how to select and grow the best crops.

It is the vision of Grundfos that the LIFELINK system can provide a platform for community development in rural and peri-urban communities, and therefore Grundfos LIFELINK welcomes other partners who have products and services to offer that will improve the livelihood of people.

Impact

Grundfos LIFELINK is a business with a social purpose. Therefore, it has a high priority to measure the social dynamics and the social impact of the LIFELINK system in the communities. The actual water consumption of each LIFELINK installation can be followed on a daily, monthly and annual basis via the remote monitoring system. This data is publicly available on the Grundfos LIFELINK [website](#).

A framework has been developed that measures the impact on key indicators such as time spent and distance covered to fetch water, and the average daily water consumption before and after having access to the LIFELINK system. These basic impact measurements are supplemented by a more thorough socio-economic impact assessment carried out by social research consultants. This is both to document the impact of the LIFELINK system towards stakeholders and customers, but also to contribute to a growing knowledge about what makes a good and sustainable water project, and what the potential for social development is.

Socio-economic impact

One of the major impacts in the communities of having access to safe water is that the health situation of both children and adults improve radically. In the impact assessment surveys it is reported from both community members and health facilities that the occurrence of water borne diseases amongst children is reduced by at least 50%.

One very interesting insight from the work on impact assessment has been that with

the new and innovative LIFELINK system being installed, more men opt to fetch water for their family, thereby freeing the women of one of the most time consuming burdens of the family. The reason is simple: men like high tech!



Douglas and his wife run a water distribution business in Rurii in the outskirts of Nairobi, which enables them to send their kids to better schools

In the rural communities people take up growing of kitchen gardens since the sufficient and reliable water supply all year round will get the plants through even the driest season and thereby contributes to the food security of the family.

Also micro-business and income generating activities grow from the LIFELINK communities. In the majority of the communities entrepreneurial people have started a small business of water distribution to households in the area, thereby expanding the reach of the safe water and generating a profit for themselves. Other activities popular amongst youth groups and women groups include growing and selling of tree seedlings, and even the farmers report that their livestock is much healthier and stronger because the animals benefit from the safe water.

Therefore, in the view of Grundfos LIFELINK, access to clean water is not only about providing a few liters a day for domestic purposes – it is also about having a sufficient and reliable supply of water all year round to enable the communities to plan ahead and start developing a better future.

Environmental impact

A cornerstone of the Grundfos LIFELINK concept is that the pump must be driven by solar energy or alternatively wind energy. Not only is this a renewable energy source, but also, contrary to diesel or electricity, a very reliable energy source in developing countries. Compared to a water system run on a diesel generator, the LIFELINK system saves a large amount of carbon dioxide each year.

With the ongoing changes in climate patterns and the increasing threat of drought in many areas, water projects based on surface water cannot provide a reliable source of water in these areas. The serious drought situation in Eastern Africa in 2011 has made this situation even clearer. This leaves groundwater as a good option for future supply of water in arid areas. At the same time, the payment for water and the accurate dosing from the tapping system eliminates waste of the valuable natural resource.

Lessons learned

The main lessons learned for Grundfos LIFELINK after three years of operation on the ground are:

1. There is no 'one size fits all' approach to delivering infrastructure in developing countries, but a need for flexibility and adjustment in both product offering and business models.
2. High-tech innovative solutions can and should be applied to improve the living conditions of the world's poor and create sustainable development.
3. There is a great need for efficient and effective action from stakeholders across sectors to solve the challenge of access to water – and business has a key role to play as provider of innovative solutions and sustainable models.

4. Doing business on the ground in developing countries demands native capability, more social skills in the team, and a will to get involved and go beyond business as usual.
5. Good partnerships are needed along the value chain, but not always easy to find and develop. Cross-sector partnerships require a good deal of understanding and learning from both sides.
6. Providing business based solutions for sustainable water supply in developing countries not only demands innovative technology but also demands advocacy amongst the established players in the field to change the existing mindset and practice.
7. Contrary to most experience in the development sector Grundfos LIFELINK has proved that it is indeed possible to provide a sustainable, self-financing, and transparent model for management and maintenance of water projects, even in remote rural areas.

Scaling up

Based on the first three years of operation in Kenya, Grundfos LIFELINK has now consolidated operations and is ready to expand and scale up across Africa and Asia. The next countries on the LIFELINK map will be Uganda, Malawi and Tanzania, followed by other countries in Africa.

From 2012 onward operations will also start in Asia, beginning with Indonesia, India, and Thailand.

For more information please visit: <http://www.grundfoslifelink.com>

A [3-minute video](#) on Grundfos LIFELINK is also available online