Problem analysis handpump sustainability

According to the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (WHO/UNICEF, 2012), worldwide approximately 780 million people use unimproved water sources for drinking water. Apart from Oceania (where data is limited), Sub-Saharan Africa is the region with the lowest percentage of people with improved drinking water sources. On average this percentage is 61, but for urban areas it is 83 and for rural areas 49. The lack of improved water supplies in rural areas of Sub-Saharan Africa has motivated governments, non-governmental organization and other entities to highly invest in this sector. In the last few decades wells and boreholes with handpumps are promoted as the most viable option for rural water supply in many developing countries and have become the principal technology (Harvey & Reed, 2004).

However, after implementation, many handpumps stop functioning within a few years or less. This low post-construction sustainability of handpumps is a much described problem in literature. For PRACTICA Foundation it means that a lot of support is given for the construction of wells and boreholes, which are not in use anymore after a short period. In order to work on improvements of this situation, first of all the problems need to be well understood. Therefore, a literature review has been conducted and input is asked from local partner organizations.

Used information sources for the literature review are:

- WEDC (*Water, Engineering and Development Centre), Loughborough University, UK;*
- RWSN (Rural Water Supply Network), Switzerland;
- IRC (International Water and Sanitation Centre), The Netherlands;
- World Bank;
- Google; and
- ScienceDirect.

Used keywords are: handpumps, community handpumps, community management, sustainability and rural water supply. In total eleven case studies (in ten different African countries) and three expert studies are reviewed. It is acknowledged that the literature review does not give a complete overview of all existing case studies related to hand pump sustainability. When more time is taken for searching on the internet and checking at other organizations, it is likely that more case studies can be found.

The table below gives an overview of the results of the literature review on problems related to the sustainability of community managed handpumps. The problems are given in the order of number of times mentioned in the reviewed studies.

	#	1. User payments	2. Follow-up support	3. Spare parts	4. Participation	5. Other
Ghana (Harvey, et al., 2002)	10		No support for monitoring, community liaison and spare parts provision	Spare parts provision not profitable	No participation in implementation	Low user satisfaction
Kenya (Harvey, et al., 2003)	6	Misappropriation of funds	No support for technical backstopping and spare parts	Poor availability of spares and equipment		
Malawi (Kalulu, et al., 2012)	30	No regular contributions for O&M	No follow-up by government workers			No preventive maintenance
Mali (Jones, 2010)	3	Insufficient payment for O&M				
Mozambique (Godfrey, et al., 2009)	52	Lack of community capacity to manage financial contributions for O&M		Poor spare parts availability		
Mozambique (CARE, 2012)	103		No follow-up by implementers	Bad supply chain for spare parts		WCs without regular meetings, diversity and maintenance training No village level understanding of government water policy No accountability for policy compliance
Sudan (Bönda, 2006)	344	Misappropriation of funds by community members		Reluctance from State Water Corporation to assist communities with access to spare parts	Community no direct say in running affairs	Lack of incentives/motivation for the trained mechanics Sabotage by people who are against existence of handpumps
Swaziland (Peter & Nkambule, 2012)	15	Lack of willingness to contribute funds			Non-involvement in decision making	Lack of cooperation local leaders and the users committee Long fetching time Absence of users committee
Tanzania (WaterAid, 2009)	38	Poor financial management – weak revenue collection				
Uganda (Harvey, 2003)	3	No funds available for maintenance				
Zambia (WaterAid, 2012)	23	Inability of communities to raise sufficient money to pay for repairs	No on-going support to WPCs for managerial and administrative skills			WPCs do not fulfil their tasks and responsibilities, voluntary, altruism not enough motivation
WaterAid / IRC (Carter, et al., 2010)		*Financial contribution for community unacceptable, unaffordable or impracticable*	*Communities never felt ownership and government does also not take care*		*Communities have never been convinced of desirability of new water sources*	*Community committees lost interest or trained people moved away* *Bad construction quality and reliability of water supply*
WEDC (Parry-Jones, et al., 2001)	*10*	*No cost recovery for maintenance*	*No ongoing training and support*		*No choice of technology*	*No preventive maintenance* *Use of alternative sources*
World Bank (Lockwood, et al., 2010)		*No adequate tariff for recurrent costs*	*No external follow-up support*			

Users' payments
The most often mentioned problem is related to the users' payments. Within community management users are expected to collect money, at least for the regular maintenance, but almost all studies mention problems with these payments. The contributions are not enough to pay for the O&M. Case studies mention more specific the inability of committees to raise and manage the money, the misappropriation of funds and a lack of willingness to pay.

Follow-up support
The second factor is the follow-up support by either the government or NGOs. This support is needed for monitoring, community liaison, spare parts provision, technical training and training on managerial and administrative skills of water committees.

Spare parts
Five case studies mention problems related to spare parts. Spare parts are not easily available. One study mentions that the government does not assist in the spare parts provision. Another study mentions that the existence of different handpump types makes it difficult to set up a profitable spare parts provision.

Participation
Another factor is the participation of the community, during the implementation and also later on. Case studies mention a lack of participation as a cause for a lower sustainability. Some communities were never convinced of the desirability of new water sources and they did not have a say in decision making.

Other
A part of the other factors are related to the functioning of the water point committees (WPCs). They do not meet regularly, they are not divers enough (different kind of people from the community), they have not received maintenance training, they do not cooperate enough with local leaders, do not exist anymore, lost interest or moved away. One study states that the WPCs do not fulfil their tasks and responsibilities because everything is voluntary and only altruism is not enough motivation. Less often mentioned factors are: low user satisfaction, no preventive maintenance, no village level understanding of government water policy, no accountability for policy compliance, lack of incentives/motivation for trained mechanics, sabotage by people who are against the existence of handpumps, long fetching time, bad construction quality, bad reliability of water supply and the use of alternative sources.

Summary
The problems with the users' payments are related to the users' willingness to pay, but also to the capacity of the committee to manage the finances. This capacity is again dependent on the follow-up support they get and the lack of motivation for the committee members. In summary two main problems can be divided: money collection and spare parts availability.

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