

Using the Technology Applicability Framework (TAF) to improve sustainability of rural WASH supplies in Nicaragua

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Abstract/ Summary

Developed and trialled by a consortium of partners between 2011 and 2013, the rationale of the Technology Applicability Framework (TAF) stems from an understanding that often water and sanitation technologies introduced are not sustainable in a given context (Olschewski and Casey, 2013). The framework, by providing a participatory process that examines a number of conditions in a given context from three perspectives (i. users/buyers, ii. manufacturers/suppliers and iii. regulators/investors/facilitators), aims to help identify which innovations are good and how to take them to scale sustainably. This paper captures the practical experiences of employing the TAF in WaterAid’s Country Programme in Nicaragua. Initially employed to understand more about the Inodoro Ecologico Popular (a pour flush toilet) the TAF has been successfully used to examine three different technologies and is being integrated into broader programme design and monitoring and evaluation processes.

Introduction

Since 2012, WaterAid’s Country Programme in Nicaragua has been applying the TAF, primarily in the remote North Atlantic Autonomous Region. Identified as a robust decision tool that helps determine the match or mismatch of contextual conditions with a certain technology being considered and the key requirements for successful introduction, the framework was initially used to increase understanding of the strengths, weaknesses and potential of the Inodoro Ecologico Popular pour flush toilet. Having since been adopted to assess two other technologies - the rope pump and bio-sand filters - as well as being integrated into programme design, monitoring and evaluation processes, the TAF continues to be an invaluable tool that triggers dialogue between all actors including those at the local and national level.

As the drive to develop innovative and potentially cheaper, more adapted, appropriate and better sustained WASH technologies to serve the poorest is expected to accelerate, so too must the ability to assess the need for a certain technology, the context in which it is to be applied in and the challenges that may be faced. Without such analysis, even so-called ‘appropriate’ technologies will continue to fail, when the expectations of the users are not met and determining factors to sustain the technology are lacking.

Developed by a consortium of partners, including WaterAid, the International Water and Sanitation Centre (IRC), the Swiss Centre for Appropriate Technology (SKAT), Training, Research and Networking for Development (TREND), the Kwame Nkrumah University of Science and Technology (KNUST),

Water and Sanitation for Africa (WSA), the Network for Water and Sanitation (Netwas), the Appropriate Technology Centre Uganda and Cranfield University, the TAF was trialled in Burkina Faso, Ghana and Uganda from 2011 to 2013, examining the suitability of 13 different technologies. Since then, in addition to Nicaragua, it has been used in Tanzania, South Sudan, Afghanistan, Kenya, DRC, India and identified as a useful tool in Colombia.

Context, aims and activities undertaken

In 2012, WaterAid Nicaragua started to apply the TAF in a remote area in the North-east region of the country. The TAF was chosen for the following reasons:

1. It is easy and low cost to apply
2. It is easy to understand and promotes multi-sector engagement
3. It can be adapted and applied to a wide range of technologies.

Initially the aim was to use the framework to have an open discussion about a pour flush toilet option that had been promoted nationally as a sanitation solution in 1997. Following a donor-led survey that drew attention to the weaknesses of the ‘Inodoro Ecologico Popular’, the toilet fell into disfavour and the project was deemed a failure, leading to a high degree of paralysis in the sanitation sector. However, despite these weaknesses, WaterAid Nicaragua had recognised that certain aspects of the technology were positive, especially relating to its social acceptability. The TAF emerged as a useful tool to question where exactly the weaknesses lay and how they could be remedied.

The TAF has since been carried out for other technologies including bio-sand filters and rope pumps, to analyse the approaches or decisions that are being made throughout the implementation process. WaterAid Nicaragua is striving to institutionalise the framework further, into programme design and monitoring and evaluation processes. For example, the TAF is being used in new municipalities to draw together communities, government representatives and service providers to discuss the potential and certain elements (such as water treatment options) and gravity fed water systems. It will be carried out once a year to evaluate progress and scope out the possibility for a municipal wide approach.

The TAF promotes bringing together the perspectives of three groups: (i) users/buyers (ii) manufacturers/suppliers, and (iii) regulators/investors/facilitators. To achieve this, in each case WaterAid holds three separate half day sessions which cumulate in a final session with all participants to discuss the findings and recommendations together.

Generally each group is made up of six to ten people. The users tend to be the largest group, with around ten people. To reflect the groups’ heterogeneity, often male/female or young/old subgroups are created. The group of regulators (which, in Nicaragua has included representatives from the municipal government WASH units, delegates from the Ministry of Health, the Social Investment Fund Programme (FISE) or representatives from the Ministry of Education at the municipal and regional levels) tend to involve six to eight people. WaterAid found that, when different components and materials make up a technology, defining a group of suppliers becomes problematic. In the case of many technologies, such as the pour flush toilet and the bio-sand filters, the number of genuine private-sector suppliers has been limited. Currently local NGOs aiming to create an enabling environment for private sector suppliers to establish themselves fulfil the role of supplier. With independent small businesses manufacturing and supplying rope pumps, it is easier to find private sector suppliers.

The sessions rely on a group of facilitators to guide the discussions. Usually three or four facilitators attend each TAF session having received training on the process in advance. This is in order to facilitate each focus group (i.e. women, men, youth) simultaneously and to ensure the facilitation of the whole process. Each group discusses 18 indicators, including the financial, social, institutional, legal, environmental, technical and capacity conditions in a given context which are crucial for sustainability. Each of these indicators receives a score (based on the technology’s positive, negative or potential impact) which is recorded on a poster. The facilitators are trained to be attentive to other, smaller but important

observations that emerge out of the specific questions. In some cases answers to these secondary questions could be critical to the evaluation so they are often scored too.

The cost of the TAF is essentially limited to the focus group sessions so the process is very cost effective. All participation is voluntary so the costs are mainly implicated in the transport to and from the session location or to the field if necessary.

Main results and lessons learnt

Although there are similar frameworks for analysing sustainability, they are often desk-based and rarely present a dynamic mechanism for participative engagement. A key benefit of the TAF therefore, is its capacity to create a space for the voices of different actors to listen, be heard and to recognise roles- both theirs and others. These aspects have come to light in various ways.

The process has highlighted that when environmental and financial issues arise relating to different technologies there is a lack of knowledge on regulatory standards, especially among government delegations. Three examples of where knowledge of the established legal frameworks and standards were lacking include:

1. Health regulations regarding the handling, extraction and final disposal of fecal sludge
2. Drinking water quality parameters in relation to household water treatment technologies, such as biosand filters
3. Well drilling permits and concessions.

Consequently, it has become clear that reviewing and refreshing knowledge on these areas is necessary. The WaterAid team itself has recognised that they need to understand these protocols and legal frameworks, so now ensure that they discuss an innovation or decision with a representative from the national level or review it with the agencies that manage the frameworks. In addition, they have noted the importance of strengthening knowledge in the field of financial aspects, including monitoring the lifecycle costs of a technology- crucial to achieve sustainability.

In such a way, the TAF helps break down barriers between different groups. In Nicaragua, it was realised that suppliers often do not receive feedback on the quality or satisfaction of their products from end-users. At the same time, users often do not have a platform to share their experiences of a product, or willingness to do so, especially when a product has been subsidized. This disconnect is apparent when technologies have been installed by third parties and not the supplier. The rope pumps, for example, were installed by local mechanics after being sold to intermediaries. The supplier would be unaware of any weaknesses in installation but the market for their product would be affected as users, unsatisfied by the end product would be discouraged to purchase the technology themselves again. In this way, the TAF has highlighted that while on the technology side, there are a large number of high quality options, weaknesses are apparent relating to maintenance duties, responsibilities and knowledge of the costs of replacement parts.

With regards to the technology itself, the TAF helps draw attention to aspects of the design or components that would otherwise remain unapparent. Examples include a component of the bio-sand filters that in some cases attracted ants, or fibreglass liners for pit latrines that drove worms to the surface. With the supplier or provider oblivious to these impacts, the TAF became critical to improving the service.

The TAF creates a space for communities to express to the government their demands that go beyond the implementation model. For example, in the case of the pour flush toilets, it became apparent that there were segments of the community that did not have the financial resources to access the technology, despite subsidies being available. During the final discussion session, the community was able to speak directly to government representatives, drawing on rights based frameworks and could bypass the NGO as an intermediary. This was an outcome that could not have been predicted. This also demonstrates the potential when people use concrete issues (e.g. the appraisal of technologies) to confidently bring out

concerns around service levels, rights, responsibilities and inequalities.

Lastly, the TAF has resulted in very tangible changes in the approaches of partner organisations. In the case of the bio-sand filters, the partner that was supplying this technology as the only option, realised that there were various financial challenges and consequentially chose to expand their product line to include other technologies. As a result of the TAF, this partner also established a successful revolving fund and a no subsidy scheme. They continue to use the framework to address various issues and to increase the awareness of users to use and maintain the products correctly.

WaterAid Nicaragua are now working to build the TAF framework into their broader monitoring and evaluation processes. They aim to apply the TAF at the beginning of a project to identify the contextual weaknesses that threaten the sustainability of a certain technology options and service models, then reapply it on a periodic basis to see where progress is being made and if the intervention is working or not. They are seeking ways to further integrate the approach into programme design and have identified two new projects- gravity-fed water systems in a new municipality in Nicaragua and in La Guajira, Colombia - where the framework will be used from the start.

Conclusions and recommendations

To achieve universal access by 2030, it is vital to approach WASH interventions holistically, understanding the complex financial, social and environmental aspects from a number of different perspectives. Without such analysis, even so-called ‘appropriate’ technologies will continue to fail, when the expectations of the users are not met and determining factors to sustain the technology are lacking. Experiences of the TAF in Nicaragua highlights the benefits of applying an approach that creates a neutral space to generate this information.

This year (2016), WaterAid Nicaragua will be establishing a SMART centre for technologies near Managua. The aim for the centre is to gather small scale, affordable and repairable technologies to be complemented with inputs from the private sector, the government and regulatory bodies. Each stakeholder would be urged to apply the TAF to understand the potential for a technology before implementation in a specific context. This illustrates the growing popularity of the TAF framework as a valuable tool to improve the lifespan of an innovation.

Arising from feedback from the process, one recommendation has been to develop a simple, digital application to create a report on the sessions to quickly demonstrate the results. Ideally, this could be used to create an online platform to capture experiences from all over the world, relating to a number of different technologies so identify wider trends, general weakness or how certain problems have been solved.

References

Olschewski, A. and Casey, V. (2013). *Technology Applicability Framework and Guidance to Technology Introduction (Research Report)*. SKAT Foundation, Switzerland.