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FOR ALL IN A FAST CHANGING WORLD

Use of tools to assess sustainability in the WASH sector

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Premature failure of water, sanitation, and hygiene (WASH) infrastructure and decreasing quality of service has resulted in emphasis of principals of sustainability amongst development partners and the investment into the development of tools to help understand and improve WASH services. Currently there are twenty-five tools with clear content and methodology for understanding, measuring, or predicting sustainability. These sustainability tools have been applied 92 times in 52 countries most commonly addressing the technical, institutional, and management areas that affect sustainability. An online survey of the demand for sustainability tools and the results of a desk review of the supply of sustainability tools highlight a gap that exists. Currently there is a need and demand for tools that can be utilized across all project life-cycles and beyond. There is a need for tools which address issues that are specific to sanitation and hygiene and peri-urban or urban areas.

Background

Over the past few decades, increases in access to water, sanitation and hygiene (WASH) services have been accompanied by a worrying trend of premature failure of existing infrastructure. Non-functionality rates for handpumps in Africa have been found to be, on average, 30 to 40% (RWSN, 2009). In addition to high non-functionality, many communities must endure a reduction in the quality, accessibility, reliability, availability, or affordability of WASH services. Premature failure of infrastructure along with the "slippage" in service levels has equated to an investment loss of between $US1.2 and $US1.3 billion over the past 20 years in Sub-Saharan Africa alone (Harvey, 2007). This fact combined with the global economic crisis has put increased scrutiny on aid budgets.

The persistent challenges around long-term functionality and poor service provision combined with a need to ensure value for money, have motivated a number of development actors to focus more on ensuring sustainability of their investments in the WASH sector. These actions are based upon the recognition that the underlying cause of premature breakdowns and poor service levels stems from an unbalanced focus on building infrastructure, rather than on ensuring the provision of sustainable WASH services provided by that infrastructure. The provision of sustainable water or sanitation services requires that both the hardware (e.g. pumps, pipes) are well-designed and functioning, and also that the appropriate software elements (e.g. adequate financing, competent management, long-term support) and overall enabling environment are in place.

Development partners as well as national governments have made significant investments into resources which can be utilized to predict or assess sustainability and the multiple dimensions related to sustainability. These resources or "tools" range in their complexity, scope, scalability, and application cost. As part of the Triple-S Initiative (sustainable services at scale) the demand for sustainability tools was identified and the "supply" of existing tools was evaluated. The demand for sustainability tools was assessed through a brief online survey, while the supply of existing sustainability tools was assessed through a desk review of tools currently in use in the WASH sector. This paper presents the results of both activities. It compliments an earlier paper that focused on five tools used by development partners to assess programmatic sustainability (Boulenouar et al., 2013).

Methods

The demand for sustainability tools was assessed through a short online survey that was available from December 11th, 2013 until March 11th, 2014. Respondents were recruited via email and through postings on the websites of the IRC- International Water and Sanitation Centre, SustainableWASH.org, and the Triple-S Initiative. The survey consisted of fourteen multiple choice and fill-in-the-blank questions. Participation was voluntary, respondents could remain anonymous and all questions on the survey were optional.

The supply of sustainability tools was assessed through a desk review of sustainability literature. Four criteria were used to define "sustainability tools" in this desk review. These criteria were selected so that the outputs of the desk review would be most beneficial to WASH stakeholders including: government, donors, implementing organisations, researchers, and the users. The four criteria listed below are described in more detail in the remainder of this section.

1. Track record which includes being applied in the WASH sector
2. Content which is specific
3. Methodology which is clear and reproducible
4. Output which is easy to interpret

First, to be considered, the tool had to be applied, on at least one occasion, in the WASH sector. The second criterion is that the tool has specific content such as a checklist of questions, a set of indicators and sub-indicators, a matrix of observations, etc. The content is collectively referred to as a "framework." The third criterion is that the tool has a clear and reproducible methodology for collecting, cleaning, analyzing, and interpreting the data that is required for the framework. The methodology can range from a very simple and straight-forward series of steps, to a "checklist" planning exercise, or to a very complicated process required for performing a monitoring and evaluation study (e.g. statistical design and sampling protocols). The fourth and final criterion is that each tool, as part of its methodology, has an element of analysis that results in the synthesis of a unique output. This output must be easily interpreted by the appropriate stakeholder audience.

Using these four criteria, a number of different sustainability related resources were eliminated from consideration. Excluded were literature or documents which do not have specific questions or observations; this included applications which provide the means for collecting data, but are not prescriptive with regard to content (e.g. data platforms). Also excluded were resources that present case studies or one-off sustainability measuring exercises with methodologies that are highly context specific and do not make considerations for application to other areas. Although it is possible to glean information from these documents and apply the lessons learned to similar contexts, there are inherent limitations to the scalability of these tools as presented. Those documents which did not synthesize the collected data or which cannot be interpreted without very specialized knowledge were also excluded. For a complete list of all the resources considered in this desk review, contact the authors.

Findings

Online survey

Ninety-two individuals responded to the online survey. These individuals represented: non-governmental organizations (64%), private sector (14%), research institutions (12%) and donors and government (less than 6% each). Out of all the respondents, 78% have used a sustainability tool in their work. Of those using tools, the most common tools are those used for assessing the sustainability of projects or programs. Sixty-five percent of respondents use these types of tools. Additionally, 48% are using tools for performing life-cycle cost assessments and 45% for conducting institutional capacity assessments.

Most of the organizations represented in the survey produce their own sustainability tools. Sixty-three percent of respondents said that they use tools that are internally developed. However for those organizations who are using external tools, the majority are borrowing tools developed by other NGOs (38%) or from civil society networks (20%) such as the Rural Water Supply Network, AGUASAN, or the Dutch WASH Alliance. The remaining come from multi-lateral donors (16%) such as WSP and World Bank, the United Nations (8%), academic institutions (6%), or has been custom-made (6%). Only 6% of the organizations represented in the survey use sustainability tools that have been developed by the national government of developing countries.

Respondents were asked how satisfied they are with the existing tools. Considering only those individuals who responded that the tools they currently use only meet "some" or "few" of their organizations' objectives, the highest demand for new tools (58% of respondents) was for a planning tool which can be linked to monitoring. Respondents wanted a tool that can be used during the planning phase to predict sustainability and that also can be utilized during implementation and link with monitoring activities. In other words a tool that is useful across the life-cycle stages. The second highest demand (50% of respondents) is for organizational self-assessment tools which can gauge the readiness or capacity of an organization to carry out its functions with regard to WASH services. Of the ninety-two respondents, eighty-four expressed interest in accessing new tools to ensure greater sustainability of WASH services.

Desk review

A total of 191 different resources were identified that met the first criteria as being used to predict or measure sustainability in the WASH sector. Of these only twenty-five met all four criteria used to define a WASH sustainability "tool" used in this research. These tools, developed by donors, implementing organizations, and action-research/consulting firms have been applied at least ninety-two times in fifty-two countries. Nearly half of the tools were developed and/or applied in Africa (see Figure1a). Despite the extensive use of tools, nearly all of the tools considered have been developed in the last decade and have been applied a limited number of times, with only five tools having been applied nine times or more (see Figure 1b).

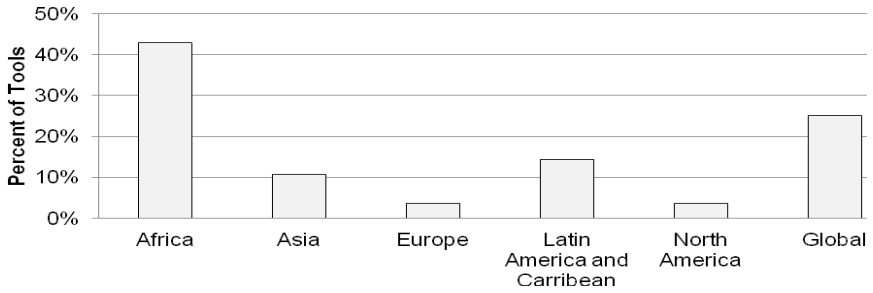

Figure 1a. Geographic focus of sustainability tools

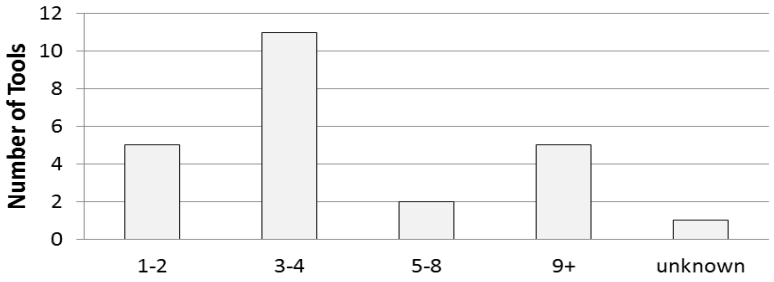

Figure 1b. Frequency histogram of the number of times that the tools have been applied

Taxonomy of the tools

Not surprisingly the target audience of the reviewed sustainability tools was, most commonly, implementing organisations (37%). This was followed by: donors (23%), national government (19%), local government (8%), service providers (8%), and finally for use by communities (6%). Most of the sustainability tools have projects or programs as the subject of the analysis. However, a number of tools can be applied generally to the WASH sector or to specific organizations, technologies, or even geographic areas (e.g. communities, water basins). Figure 2a shows the subjects of the sustainability tools considered in this desk review.

This desk review did not focus exclusively on project related tools, however all 24 tools selected have been utilized in relation to past, present, or future activities that occurred as part of a project or program. Therefore it is beneficial to understand at which project life-cycle stage the reviewed tools can be utilized. The life-cycles stages were defined using the standard five project management stages as defined by ISO 21500:2012, with one modification. The ISO stages include: initiating, planning, implementing, controlling, and closing. In consideration of the tools which are applied outside a project context, the "closing" stage includes any/all time after the cessation of intervention activities (i.e. "long-term").

Tools that are useful for the initiating stage include sector-wide assessment tools or those that provide information that inform feasibility studies. Planning stage tools provide more specific insight that would be relevant to developing project or programme strategies (e.g. guidance on technology or the service delivery approach). Any tool which can be used for on-going project monitoring would fall within the implementing stage. All tools that can be used for the purposes of evaluating or assessing an existing project or intervention falls in the "controlling" life-cycle stage. Finally all those tools which can be used for post-project assessment or are applied completely outside a project context are considered in the final category. Each tool was evaluated, using the available literature, to determine at which life-cycle stage or stages the tool is best utilized. The results are shown in figure 2b.

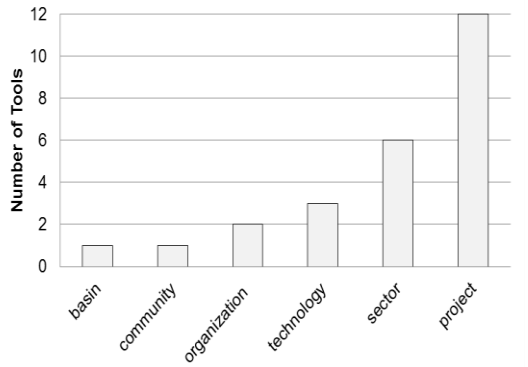

Figure 2a. Subject of analysis of the sustainability tools

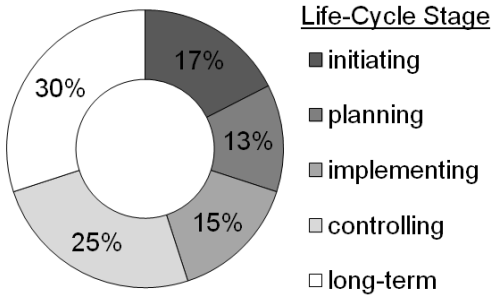

Figure2b. Life-cycle stage

Frameworks of the tools

The content or framework of each tool was reviewed in detail. Most tools have a hierarchy of components and utilize different nomenclature for each level (e.g. factors, dimensions, pillars, etc); however for clarity purposes a nomenclature was developed for this desk review. The components of the first level were called "areas" of sustainability and the components of the second level (next level down) were called "indicators" of sustainability. Where present, the third and fourth levels were called "sub-indicators" and "questions" respectively. The contents of each tool were disaggregated by level and entered into a database. Only the area and indicator analyses are presented in this paper.

The sustainability areas were subsequently coded in a two-step process with the first step being "descriptive coding" to identify key concepts and the second steps involving categorizing or grouping the codes. This process follows accepted qualitative analysis techniques (Loftland and Loftland, 2006). Five categories emerged from the coding: technical, institutional or management, financial, environment, and socio-cultural. Similar categories have been identified elsewhere (UN, 1995). Of the sustainability areas for the twenty-five tools reviewed, the most common area of sustainability was institutional or management (34%) followed closely by technical related areas (29%). Less common are financial (15%), environment (12%), and socio-cultural areas (10%).

Sustainability indicators were evaluated to look at what, if any, location they targeted (e.g. rural, peri-urban, urban, or general). This analysis showed that there is a clear emphasis on rural areas. Sixty-three percent of the sustainability indicators are specifically designed for application in a rural context. Thirty-six percent of indicators are generic (i.e. could be applied in a rural, peri-urban, or urban context) and only 1% of indicators are specifically designed to address peri-urban or urban conditions. Most of the indicators

generically target the WASH sector (38%), however from Table 1 it is clear that water is emphasized over hygiene or sanitation. This is consistent with previous observations (Black and Fawcett, 2008).

For each indicator it was possible to identify the level or levels at which data was collected. The three levels include: national, decentralized, and service level. Indicators that have a national level of inquiry would be those that address national policy or regulatory documents, or solicit data from stakeholders at the national or regional level (e.g. representatives of national ministries). Indicators which have a decentralized level of inquiry would be those that engage stakeholders or gather policy information from the lower administrative levels (e.g. county, district, municipality, etc). Service level is the level at which the WASH service is provided. Table 1 demonstrates that the majority of indicators contained in the twenty-five sustainability tools reviewed, have a level of inquiry at the service level. These indicators collect information from service providers, beneficiaries, or users in the neighbourhoods, communities, villages, or households where the WASH services are provided.

Table 1. Indicators of sustainability disaggregated by sector and level of inquiry

Indicators by Sector	Percent	Indicators by level of inquiry	Percent
Water	32%	National	22%
Sanitation	22%	Decentralized	12%
Hygiene	4%	Service/Community	61%
Water and Sanitation	4%	Unknown	3%
Water, sanitation, and hygiene (WASH)	38%	Not applicable	2%

Methodologies of the tools

Of the twenty-five tools, nine tools incorporate both primary and secondary data sources, while fifteen tools utilize exclusively primary data, and only one tool utilizes exclusively secondary data. Most of the tools are applied by implementing organisations (n=14) and only five of the tools are supposed to be applied by independent 3rd party organisations. The frequency of application of tools varied: one-time application (n=4), annually (n=9), every 3 to 5 years (n=-3), and as needed (n=3). Six tools did not specify the frequency with which they should be applied.

The reviewed tools include a wide range of methodologies and data collection techniques such as: focus group discussions, technical inspections, desk studies, and key-informant interviews. As a result, the cost and level of effort ranges widely amongst the tools reviewed. Data on the costs of application was only available for four tools. The data obtained from the organizations that developed these tools shows that costs ranged from $5,000 to $65,000 per application. To have a better understanding of the level of effort, the tools were arranged into three categories (e.g. high, middle, low) based upon the type of data collected, data collection techniques used, and the overall level of the detail of the framework. In the high category are tools which have a complicated sample procedure and collect household level data in multiple communities through a detailed process that takes at least a few months. In the middle category are those tools which might collect data from multiple stakeholders at different levels, but are limited to a timeframe of a few months. The lowest category are those tools which are self assessments, desk -based exercises, or collect information from a limited number of stakeholders in very condensed period.

Analysis and output of the tools

All the tools considered in this review utilized a straight forward analysis procedure, whereby the scores for each level of the framework were aggregated to the subsequent higher level and either presented as a total or percent. Weighting factors for the different levels (i.e. area or indicator) was only utilized for three of the twenty-five tools. In two cases the values used for weighting were determined by participatory processes with the stakeholders. In one case the weighting factors were derived though complicated statistical analyses techniques. Most tools presented the results graphically through a bar chart or radar diagram. Six of the tools used a traffic light scheme to benchmark the results (red= low scores, yellow = middle scores, green = high scores).

Conclusions

Representatives from fifty-four WASH organizations responded to an online survey on their use of and demand for sustainability tools; 78% of respondents are currently using tools, and 92% are interested in new tools to help ensure greater sustainability of WASH services. There is a demand for tools that can link project planning to project monitoring efforts. To date the sustainability tools developed and in use in the WASH sector have been developed for and applied by implementing organizations, most commonly in Africa. Very few tools have been applied more than a handful of times, and no tool has achieved a significant scale of application. Existing tools tend to focus on the water and rural sub-sectors, and collect data on technical and management or institutional areas at the community level. The results of the online demand survey and the desk review demonstrate that new tools should be developed that can inform and be applied during all life-cycle stages. These tools should include indicators which are specific to sanitation and hygiene interventions and appropriate for urban and peri-urban areas.

Acknowledgements

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