

SMF/SI Guide

Sustainability Monitoring Framework and Sustainability Index

Version 3.0

by IRC International Water and Sanitation Centre

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This document describes the Sustainability Monitoring Framework (SMF) including its sustainability index (SI) developed for the Dutch WASH Alliance (DWA).



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1. Introduction and purpose SMF/SI

The Dutch WASH Alliance is a collaboration between various Dutch not-for-profit organisations active in the Water, Sanitation and Hygiene (WASH) sector. One of the main aspects the DWA is concerned with is the sustainability of the projects and services it supports. IRC International Water and Sanitation Centre based in The Hague was asked to develop simple indicators allowing the DWA to measure the sustainability of the DWA-implemented WASH systems and services. The collaboration between IRC and DWA and the result of assessments on monitoring (including sustainability) by the local DWA partners and the WASH sector at large in the two selected DWA countries, Uganda and Ghana, has led to the development of this sustainability monitoring framework (SMF). The approach on SMF allows for embedding sustainability monitoring in the DWA projects and the countries rather than merely measuring it. The SMF also includes a Sustainability Index (SI) as relative measure for sustainability rather than an absolute measure of sustainability.

Clearly, this SMF needs to be linked to the Theory-of-Change process¹ and the Outcome Mapping², both adopted by the DWA. For the Uganda context the report on the Outcome Mapping workshop is very relevant³. The sustainability factors need to be viewed as pre-conditions for change and the assumptions for change as contextual factors.

We see five applications of the SMF/SI in the DWA programme and beyond. The SMF/SI,

1. Could help to unpack the complexity of sustainability at system/service delivery level or project level and even at district level
2. Could help to assist in project design towards a sustainable WASH service delivery. The SI result indicates the gaps (the "0"s) in requirements. These gaps need to be addressed in a project re-design. Important to note that actually the sustainability requirements do not have to be all delivered/maintained by just one sector organization/institutions. Also at local level various actors need to play their role(s). The SI-0 (at the start of the project) is a kind of baseline on the likelihood of WASH service sustainability
3. Will help to measure progress towards achieving sustainable water or sanitation services, or hygiene practices. This longitudinal progress pictures the trend with for instance one- or two-year intervals. These SI-1, SI-2, SI-3 (SI-n) results give pointers on which requirement to address and act upon to improve the likelihood of sustainability.
4. Could, if done after the project period, assist a project evaluation on its sustainability criteria
5. Could inform the district authorities through this SI-series and guide them on their achievements towards sustainability in WASH service delivery. The SMF/SI results

¹Theory of Change within the Programmatic Approach and Program Development by Hettie Walters (ICCO), May 2012

² Briefing Note for PME Group on Outcome Mapping Workshop, Uganda 30 Oct-1 Nov 2012

³ Strategic Planning and Monitoring of Behavior Change. Smiling in the Dark: How to plan and monitor for behavioral change within WASH Actors in Uganda. DWA Workshop report 30 Oct- 1 Nov 2012 by Erik van de Giessen (Simavi); workshop facilitated by Maurits Servaas (ICCO) and Erik van de Giessen (Simavi)

would also help the district authorities which actions to initiate and focus/prioritise on in the coming period towards achieving sustainability.

Where does this SMF/SI tool fit in the spectrum of monitoring tools?

Smits et al.¹ made an overview of monitoring tools and experiences in preparation of the Monitoring Sustainable WASH Service Delivery Symposium (9-11 April 2013, Addis Ababa). They identified five main monitoring areas as illustrated in the figure below.

Project monitoring relates to implementation relates to project “Inputs” and ‘Outputs”. This is a common monitoring area of implementing projects.

Performance monitoring relates to “Outcomes”: do the project outputs result in the delivery of a service as planned? This goes beyond functionality. ‘Outcomes” are often also called results, and are often monitored in a development project context, also in the DWA in the result chain.

The SMF/SI is a tool that links the “Throughput” with the “Outcomes”: are all the requirements present including the enabling environment (policy, strategy, capacities, attitudes, behaviours etc.) needed to ensure a sustainable service? Having met all the requirements does not necessarily ensure a sustainable WASH service, although it is likely that it will be. Therefore, we say: the SMF/SI measures the likelihood of a sustainable WASH service or hygiene behaviour.

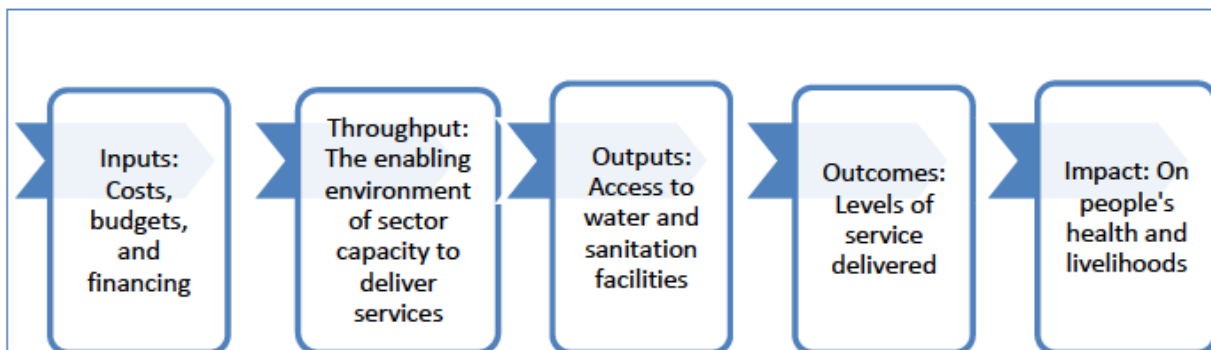


Figure 1: Areas of monitoring source⁴

Another valuable tool assisting the project design project design is the WASHTech⁵ Technology Applicability Framework, TAF. This TAF tool helps projects and local governments to validate pre-selected WASH technologies on their expectation to deliver a sustainable WASH service in a specific local context. The TAF identifies blockages that hinder the achievement of a sustainable service and suggests action to improve or advice to choose another WASH technology.

⁴ source Smits et al. (2013) Background paper for “Monitoring Sustainable WASH Service Delivery Symposium” (9-11 April 2013, Addis Ababa) IRC International Water and Sanitation Centre, The Hague, The Netherlands, 2013, viewed January 2014 <http://www.irc.nl/page/77981>

⁵ WASHTech information on www.washtechologies.net

2. Sustainability

A generally accepted definition: a WASH development programme is sustainable “when it is capable of supplying an appropriate level of benefits during an extensive time period after the withdrawal of all forms of support from the external agency”⁶.

To make this more concrete we refer to building blocks towards sustainable rural water service delivery approach as formulated by Lockwood and Smits⁷

Building blocks towards more sustainable service delivery	
Professionalisation of community management	Community management must be properly embedded in, and supported by, policy, legal and regulatory frameworks and support services, both at national and local levels; in order to become more effective community-based management entities must be legally recognised.
Increased recognition and promotion of alternative service provider options	There is a range of different management options beyond community-based management – including local private operators – that can better support different service levels, technology and types of settlements; these should be described and set out in clear Service Delivery Models which are well disseminated.
Sustainability indicators and targets	Monitoring and target indicators should move beyond systems built and ‘beneficiaries’ served and include benchmarking against the services delivered and the performance of service providers.
Post-construction support to service providers	Most community-based management and local private operators cannot manage on their own; there is a need for structured systems of support that are properly funded to back-up and monitor these service providers; in many cases it is local government that will take on this responsibility.
Capacity support to decentralised government (to the service authorities)	Many local governments will require help and support if they are going to fulfil their role in guaranteeing services; ongoing capacity support programmes covering key functions in the life-cycle of rural water supply services, including management, procurement and contracting are needed and must be paid for.
Learning and sharing of experience	Learning and knowledge management is an important element of any mature sector; this should not rely on <i>ad hoc</i> support, but become an integral part of sector capacity and be properly funded both at national and decentralised levels.
Planning for asset management	One of the main weaknesses of rural water provision has been the lack of proper asset management; systematic planning, inventory updates and financial forecasting should be introduced; ownership of assets must be better defined so as to allow for delegated contracting, where appropriate.
Financial planning frameworks to cover all life-cycle costs	Sector financial frameworks must be expanded beyond the basics of capital investments and minor operation and maintenance costs; all life-cycle costs must be accounted for, especially major capital maintenance expenditure, and direct and indirect support costs.
Regulation of rural services and service providers	Service provision – and the performance of service providers of all types – should eventually be regulated, even where this is done with a ‘light touch’ system. Any attempts to establish regulation should apply appropriate performance criteria and not be overly punitive for fledgling rural operators.

⁶ source: Organisation for Economic Cooperation and Development /DAC 1998 in CINARA/ IRC/ WSP, 1997

⁷ Lockwood and Smits (2011). Supporting Rural Water Supply. Moving towards a Service Delivery Approach, IRC International Water and Sanitation Centre and Aguaconsult

The DWA approaches sustainability from five dimensions, together called FIETS. This FIETS approach is described in the text box below; source <http://www.washalliance.nl/fiets-strategy/>, where also a detailed description is given on each dimension.

FIETS approach

How does it work?

The focus of the WASH Alliance programme is to create results that are able to sustain themselves. Therefore, sustainability is the leading principle within our approach. We believe WASH services only endure on the long term and can be managed locally when we take into account five sustainability areas: financial, institutional, environmental, technical and social (FIETS). These five key areas of sustainability need to be addressed in order to achieve this. We call this our FIETS approach.

The FIETS sustainability dimensions are illustrated by the five symbols in the figure below:



Figure 2: The five FIETS sustainability dimensions (DWA): Financial, Institutional, Environmental, Technical and Social

The difference between a sustainable and non-sustainable water service has been clearly illustrated by the Triple-S project⁸ in two diagrams (see figure below). The first diagram shows an implementation-oriented approach with steeply dropping service level soon after the end of the project. The second one illustrates a service delivery approach with planned investments for operation, maintenance and replacement resulting in lasting water services level.

⁸ <http://www.waterservicesthatlast.org>

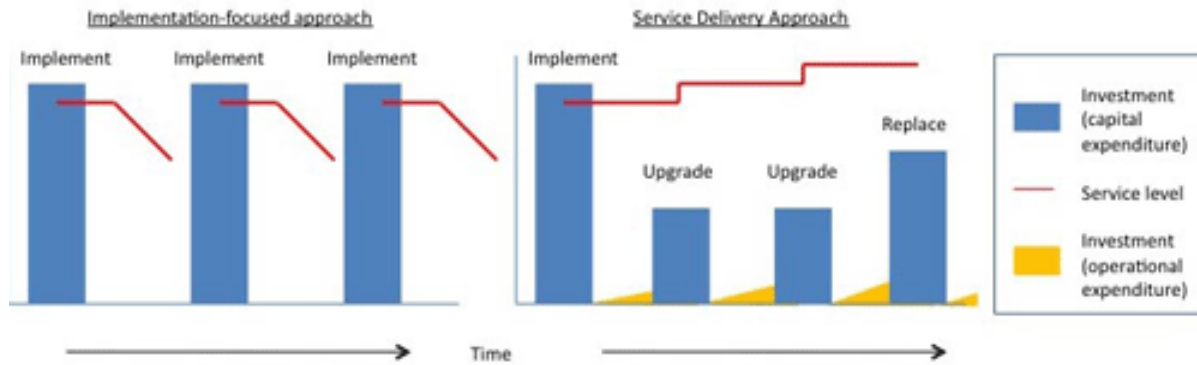


Figure 3: Comparison of service levels under implementation-focused approach and service delivery approach source: http://www.waterservicesthatlast.org/resources/concepts_tools/service_delivery_approach

2.1. Describing WASH Sustainability in local context

In this SMF/SI we put a focus on the sustainability of three WASH areas while recognising that the SMF/SI is also applicable to other WASH and IWRM areas. The three thematic WASH areas are:

1. Rural water service delivery
2. Rural household sanitation facilities
3. Hygiene and sanitation practices of rural families and its members

To achieve real sustainability a number of requirements need to be met. These requirements are ‘owned’, meaning need to be met, by various stakeholders. Some requirements are fully controlled by the users of the water service, the consumers, for instance, their preparedness to pay and their actual payment of the water charges. The attitude to wash hands or use a latrine is fully in the hands of the individual person. Other requirements depend on local private sector,

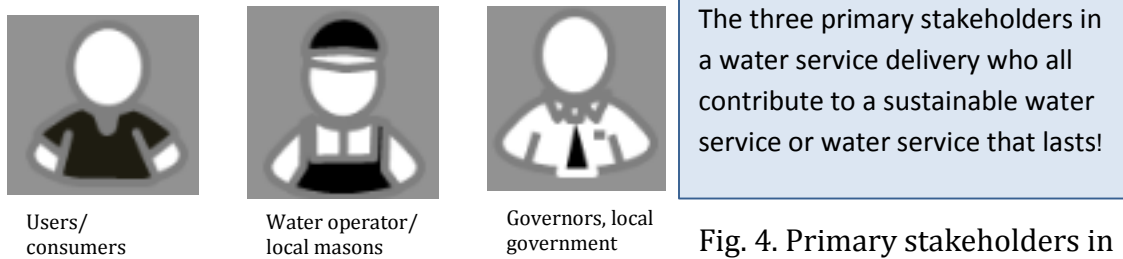


Fig. 4. Primary stakeholders in rural water service delivery

e.g., local latrine builders, masons. The water operators control other specific requirements that need to be in place in achieving water service sustainability, while governors (boards) of a water service have to make sure certain conditions (requirements) are in place to ensure a sustainable water service. A selection (not all!) of sustainability requirements for rural water service is shown in the table below.

Table: example of some Sustainability Requirements for Rural Water Service

Level	Some (example) Sustainability Requirements for Rural Water Service
Consumers	Consumers receive performance and financial reports from WSP
Consumers	Consumers are able to meet their obligations towards the WSP
Consumers	Consumers do pay the agreed tariff
WSP/operator	WSP made clear agreements on service levels and tariffs
WSP/operator	WSP communicates to consumers in reports on service performance and financial accountability, at least every 12 months
WSP/operator	WSP implements a comprehensive schedule for O&M functionality
WSP/operator	WSP has financial/admin staff with adequate competence
WSA/governor	WSA has contract with WSP with clear roles & responsibilities
WSA/governor	WSA carries out 6monthly accountability audit (financial, social) of WSP
WSA/governor	WSA has mitigation measures in case of below standard accountability of WSP

For each of the three selected thematic areas, lists with sustainability requirements have been made. These create the basis for the sustainability questions.

The Triple-S project illustrated the basic roles and responsibilities of the various levels in a ‘sphere’ diagram, see figure below.

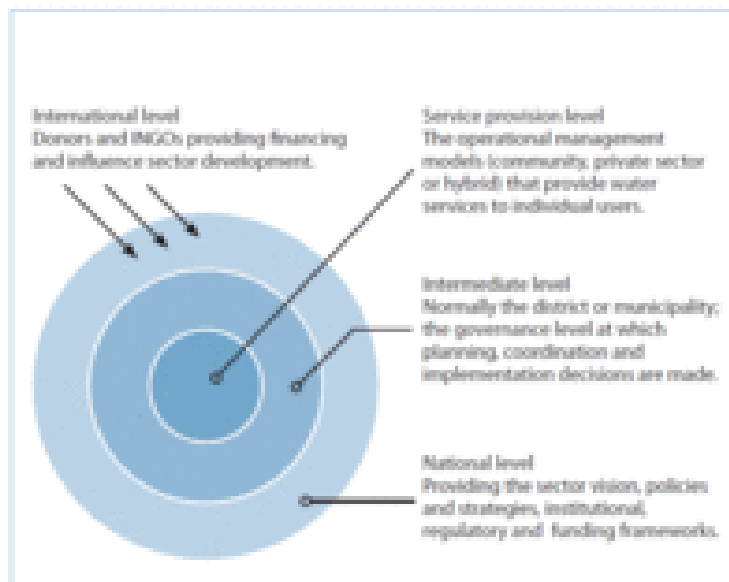


Figure 5: **Roles and responsibilities within a service delivery approach**, source: http://www.waterservicesthatlast.org/resources/concepts_tools/service_delivery_approach

Therefore, the sustainability paradigm is applicable to all WASH stakeholders. It should be high on the agenda of all involved stakeholders, from the national government and development partners via local politicians and technocrats to village-based private sector and households. The role of the Development Partner, in this case the DWA, is to assist and support the stakeholders that all contribute to the achievement of sustainability of WASH, also after the exit of the DWA project.

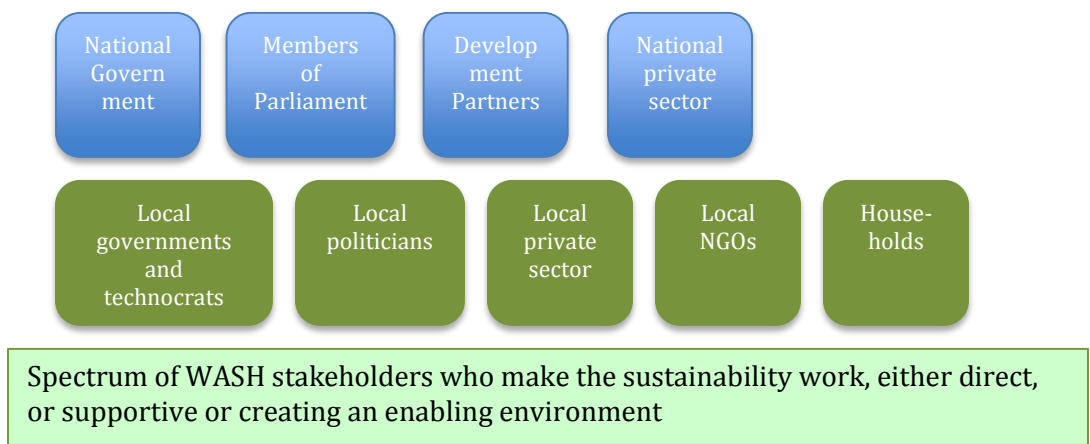


Figure 6: WASH stakeholders at national and local level

In the countries and districts/regions the DWA is active, stakeholders may already have done a lot on WASH sustainability, as this paradigm existed before 2011. The role of DWA is to further contribute to this achievement of sustainability of water service, sanitation facilities and hygiene practices. This equally applies to the sustainability of other DWA services and situations, e.g. peri-urban solid waste collection, water availability for domestic and productive purposes, wetlands. In this Guide, we focus on the rural and *rurban*⁹ WASH. Moreover, the SMF/SI is equally applicable to non-WASH services or situations.

In the formulation of the DWA projects at local level (before 2011), specific sustainability requirements may have been focused on, for instance capacity building of water operators, motivation and capacity of communities to construct latrine facilities, promotion of hand washing at critical times. These agreed activities will lead to outcomes that were found weak or not present at the time of project formulation while required to achieve sustainability on WASH. The DWA project also formulated a Theory of Change around these project outcomes.

It is clear that these DWA project outcomes at local level and programme outcomes at country and international level are not the only requirements to achieving sustainability. Other efforts by local government, private sector, development partners, and last but not least, the communities, the households and the individuals will probably have made earlier steps towards achieving WASH sustainability. We assume, the project formulation took those earlier efforts into account.

The success of the local DWA project and that at the country and international level can only be measured against these formulated and agreed outcomes. But having achieved the project/programme outcomes does not fully guarantee that the sustainability of WASH has been met. The tasks ahead towards sustainability, at the time of the project formulation may have been too big for the project. Therefore, DWA may or may not have coordinated its inputs and planned outcomes with the local government or other development partners. Ideally, the sum of all past and present, and perhaps planned future, actions should lead to sustainable WASH services.

⁹ *rurban* in this context means urban or small town situations where the periphery has more the characteristics of a rural area than of a densely built and populated urban area or slum. In Uganda, rural growth centres are typical *rurban* settings.

Based on the above, the purpose of the SMF/SI is to measure the *prevailing likelihood of sustainability of the water service, sanitation facility or hygiene practices*. This likelihood is measured against a set of basic requirements that really need to be in place to achieve sustainability. The resulting Sustainability Index ranges from 0 to 1, with the score of 1 (one) representing the finding that all requirements are met, while 0 (zero) indicating none of the requirements are met. WASH service, facilities and behaviours that score 1 are likely to be sustainable, that is at least all requirements are in place; nevertheless, the actual WASH service performance may still score below the desired level because practices may not follow knowledge and attitudes.

Obviously, the most difficult part is to identify and formulate these requirements that make a reliable and complete set to measure the likelihood of sustainability. Also if we recognise that the requirements are at various levels. In the SMF/SI the particular level are (i) the household/consumer level, (ii) the provider, water operator level; and (iii) the facilitator and governance level. We developed three sets with fundamental questions on requirements that *must* be met to achieve sustainable services in the three thematic WASH areas. At the household/consumer level, the questions need to be asked to a number of households/consumers and a benchmark (or threshold) has been set on the percentage of positive answers to get a score 1 (one). We believe that only the national level can - in a participatory approach - change these benchmarks to keep an overall coherence in the way different areas are assessed.

Measuring sustainability means that the tool to measure sustainability, the DWA SMF in this case, *needs to be sustainable itself by enabling the framework to adapt itself to specific country and system context and over time*. The requirement for an adaptive framework made that the DWA SMF became more than a questionnaire and an analytical tool. The SMF showed to be also a guide in a process that unpacks and clarifies the sustainability dimensions in a reflective structure.



2.2. Unpacking sustainability in the context of WASH projects

This SMF will unpack this overall sustainability in more manageable units. We will look at a limited number of dimensions, which deemed the most important in the DWA or any other WASH project context. The dimensions looked at in SMF are discussed below.

2.2.1. First dimension: FIETS principles

The Dutch WASH Alliance developed the FIETS principles. FIETS stand for the [Financial](#), [Institutional](#), [Environmental](#), [Technical](#), and [Social](#) aspects of system/service sustainability¹⁰.



Figure 7: The five FIETS sustainability dimensions

2.2.2. Second dimension: the fields of project activity

The DWA is active in WASH, which basically comprises (drinking-) water, sanitation and hygiene. In reality some partners are also involved in activities such as solid waste, water

¹⁰ More [general information](http://www.washalliance.nl/fiets-strategy/) on the FIETS indicator on <http://www.washalliance.nl/fiets-strategy/>

resource management and agriculture. While the current framework focus mainly on the first three fields mentioned, namely water, sanitation and hygiene, the SMF has the possibility to add other dimensions if required.

This present SMF/SI focuses on the three thematic WASH areas as listed and illustrated below:

1. Rural water service delivery
2. Rural household sanitation facilities
3. Hygiene and sanitation practices of rural families and its members



Figure 8: the three selected WASH areas for SMF illustrated

2.2.3. Third dimension: Administrative level of intervention, outcome or impact

Government or local authorities have a central role to play in the sustainability of services towards their citizens. This is why DWA projects closely cooperate with local authorities. Various aspects of sustainability are experienced or need to be addressed at different administrative levels within a country. The types of administrative (institutional) levels assumed by the present SMF are part of a strongly decentralized water and sanitation structure as this is currently considered the most sustainable approach to service delivery. In the current framework we distinguish three levels for water, sanitation and hygiene.

For rural water service these three levels are:

- 1 Users/consumer at village or community level (also called Community-of-Users)
- 2 Operation and management level also referred to as the Water Service Provider, and
- 3 Governing and contracting level also referred to as the Water Service Authority.

Of course, in different settings and using different water technologies/systems, the water service provider and water service authority may have different entity names; then those need to be used.

For rural household sanitation facilities these levels are:

- 1 Family or households level as we focus on household facilities

- 2 Village level with artisans (mason or builders), village institutions including the community, and
- 3 District and national level, because of policy, strategy, financing and support institutions.

For rural hygiene practices these levels are:

- 1 Family or households level as we focus on individual and family practices
- 2 Village level with cultural aspects, village institutions, and its water systems, and
- 3 District, because of its advocacy and support institutions.

The terminology (naming) of these administrative and institutions need to be adapted to fit the local context.

2.2.4. Fourth and fifth dimensions: time and location

Two more dimensions could be added, and are particularly of interest for local governments and larger programmes to compare sustainability (SI) progress over time (e.g., every or every other year) and by location or administrative area. These dimensions are:

1. Time dimension
2. Area dimension (geographical location)

2.2.5. Visualising the three dimensions

The three dimensions could be visualised in a box shape in which each plane contains a different aspect related to sustainability. For example environmental issues of water service at the governing level (Figure 9) would be one cell on which one could focus making the whole large sustainability box more manageable.

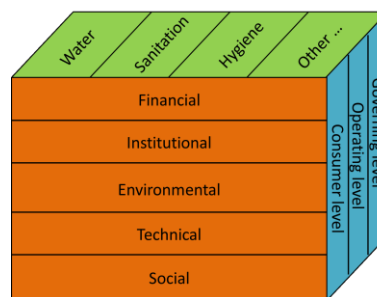


Figure 9: FIETS principles, administrative levels and content areas

Each of these cells has issues, approaches, capacities, knowledge & attitudes, which reflect on sustainability.

In practice the three (or more) WASH-related content areas, could best be viewed and measured separately. Rural water service has limited interactions and relationship with rural household sanitation facilities. They stand largely on their own, making the three-dimensional a two dimensional matrix.

	Consumer/ user/house hold	Operator/ village	Governor/ district
Financial			
Institutional			
Environmental			
Technical			
Social			

Figure 10: FIETS and administrative levels

Indeed, rural household sanitation facilities have several interactions and relations with hygiene and sanitation practices by individual or family. This interrelation can easily be covered by including specific questions on the household latrine in the hygiene practice questionnaire.

3. The Sustainability Index (SI)

The SMF will embrace as much as possible the complexity of sustainability taking into account the wide range of activities. The SMF will also ensure that the measures are relatively easy to interpret to assess progress and guide possible action.

Therefore, the Sustainability Index (SI) is a relative score, not an absolute measure of sustainability, allowing measuring changes over the time.

How to manage the time and area dimensions?

In principle this is an easy comparison as these have only one characteristic each: time (e.g. year) and area or location. The comparison can be done in a spreadsheet or table or graphs, plotting the SI scores overall or per FIETS component or overall per theme (W-S-H) against the specific years and/or the areas). See (fictitious) examples in table below.

	Overall SI score on Hygiene Practices				
Villages	Aug-2013	July-2014	Aug-2015	Sept-2016	Aug-2017
Agwoko	0.40	0.38	0.45	0.60	0.85
Lagot	0.32	0.40	0.45	0.43	0.65
Yepa B	0.51	0.55	0.68	0.82	0.92
Loi Agolo	0.25	0.20	0.26	0.35	0.38

	Overall SI score on water service delivery for Gulu district				
	Aug-2013	July-2014	Aug-2015	Sept-2016	Aug-2017
Financial	0.20	0.25	0.40	0.60	0.85
Institutional	0.42	0.45	0.40	0.75	0.90
Environmental	0.00	0.15	0.30	0.60	0.65
Technical	0.40	0.40	0.45	0.40	0.60
Social	0.80	0.75	0.85	0.95	1.0

	SI scores in August 2013				
Villages	F	I	E	T	S
Agwoko	0.40	0.38	0.10	0.60	0.68
Lagot	0.32	0.40	0.00	0.43	0.40
Yepa B	0.51	0.55	0.25	0.82	0.62
Loi Agolo	0.25	0.20	0.28	0.35	0.38

Figure 11: examples of reporting SI scores by time, location/area and FIETS levels

3.1. How is the DWA Sustainability Index measured?

At the core of the index is a matrix of questions, which describes various aspects of sustainability. They are formulated in such a way that they result in a yes or no answer. The questions address specific sustainability requirements at the consumer/user/ household, the operator/village level and the governing/district level. Each answer has a Means of Verification with indicated sources. An example of such a questionnaire is shown in the figure below.

Level	Some (example) Sustainability Questions for Rural Water Service	Means of Verification	Benchmark	Sources of Verification
Consumers	Do you as user receive information, or did you see reports from the Provider/operator/Management Committee or were you informed in another way (e.g. meeting) about the technical performance (e.g., breakdowns, water quality) and financial issues (e.g., income and expenditures) related to the water service?			
Consumers	Do you meet your obligations as consumer to the Provider/Operator/Management Committee, that means: do you pay your monthly water charges; do you assist in cleaning area around water point; do you handle the tap with care (?); others			
Consumers	Do you pay your monthly charges (or water bill) every month to the WSP/Operator/Management Committee?			
WSP/operator	Did you as Provider (or Water Management Committee) make clear agreements on service levels and tariffs with consumers (or community/committee of users)? Please show Agreement.			
WSP/operator	Do you as Provider communicate to consumers in reports on technical service performance (water quality, breakdowns, downtime and financial accountability, at least every 12 months)?			
WSP/operator	Do you as Provider implement a schedule for regular O&M?			
WSP/operator	Do you as Provider have financial/admin staff with adequate competence to financially manage the water service?			
WSA/governor	Does the contract with Provider have clear roles & responsibilities?			
WSA/governor	Does Water Authority carry out 6-monthly accountability audits?			
WSA/governor	Does Water Authority have mitigation measures (sanctions) when Provider performs below agreed accountability standards as per contract?			

Figure 12: Example of questionnaire (part of actual water service questionnaire)

The number of questions and the formulation of the questions should not be open for adjustment. This will enable comparing SIs of various organisations and geographical areas. Naming of institutions can be contextualized, e.g., if the operator (water service provider) is a Village Water Management Committee, then that can be changed in text or interviewers are informed on that. The list of questions is fixed with the only possible addition of questions to cater for local situation. This set of questions needs a good discussion with interviewers and sector staff. This discussion will come after 'sustainability' has been discussed and unpacked.

The questions for the operator/village level and the governing/district level are asked to one or two persons. The result is a straight yes or no. For the consumer/user/ household level, more

than one consumer/user/ household needs to be asked the question to get a representative answer to the specific question. Therefore, a survey with a sample of at least 15 consumers, users or households to be interviewed needs to be planned. These interviewees will give different answers, some score a “1” and some will score a “0”. The individual scores need to be aggregated to a final score on the basis of equal weight for each answer. If for instance 8 out of 15 score “1” then the positive score is $8/15 \times 100 = 53\%$.

For each question a threshold value needs to be agreed upon, should 60, 70 or 80, or even 90% score “1” to give the answer a positive score? Actually this benchmark very much depends on the requirements: what is really a score required to make the service sustainable. For instance, the requirement for sustainable water services “*Consumers pay their monthly water charges*” that needs a high score to be positive. A water service cannot continue if only 60% of the consumers pay. For now, most of the benchmarks (thresholds) have been set at 80%. The benchmarks cannot be changed to a lower value just to get higher SI scores, and seemingly do well in the *likelihood of sustainable services*. It is recommended that these values should not be changed at decentralised level, this to avoid political and personal interference. These threshold values are also an issue for attention at national level.

In most cases the answers involve primary data collection.

However also secondary data can be used. This may apply to data that have been collected in another context in the village or scheme being surveyed. For instance, the information whether the population and specifically women were involved in the planning and decision-making of the water service is a datum that will not change over time, so that question does not need to be asked again. Unless there have been technological or service level changes.

3.2. Frequency of applying the SMF/SI

The SI measures the *likelihood of sustainable WASH service delivery*. The SI can give important information on the achievement and absence of requirements towards sustainable services. It may therefore be a base on which further actions are being formulated. Compared to monitoring project progress (inputs & outputs) and WASH service performance (outcome) monitoring, this SI needs to be measured less frequently. An SI application frequency of once a year or every other year would usually do as the requirements do not change that quickly.

3.3. The Sustainability Index and the Reliability Score

‘Not relevant’ (score “-“) questions are ignored in the calculations. The relation between the answered positive (in green) and negative (in red) answers (A+B) and the unanswered or ‘not available’ (score “NA”) questions in blue (C) give us the reliability score.

The Sustainability Index is the quotient of the positive answers over the positive and sum of the positive and the negative questions, see figure below.

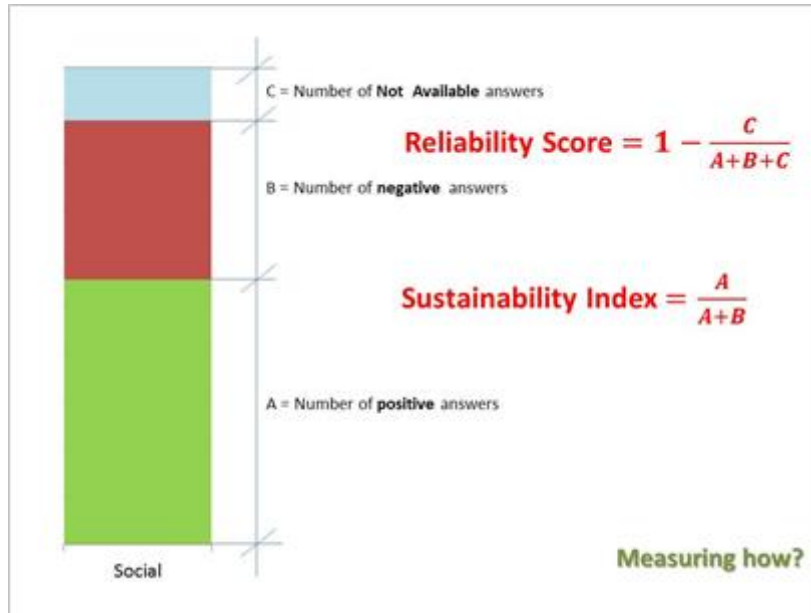


Figure 13: Sustainability Index and Reliability Score calculation

An example of a final aggregated SI result per FIETS dimension is shown in the figure below.

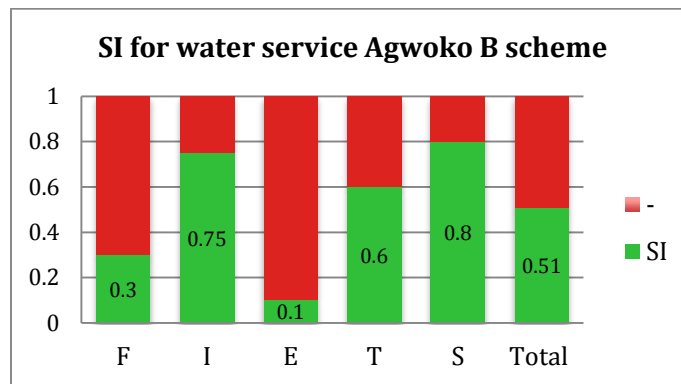


Figure 14: Example of Sustainability Index

4. Data entry and data management

4.1. The use of smartphone and FLOW

The field-testing in Uganda used smartphones and FLOW. See also <http://akvo.org/products/akvoflow/>. Basically, the survey questionnaires are loaded on the smartphones using the Field Level Operational FLOW programme. The survey teams use the smartphones to ask the questions and enter the answers. Even when there is no Internet connection, FLOW can be used. The collected data are uploaded to the programme dashboard as soon as there is mobile connection.



The advantage of collecting survey information with smartphones is that the information becomes quicker available and that there are less errors added to the data during transcription of the data from paper to the computer.

For the moment the data still needs to be analysed and the result added to the sustainability index but in future this process can be automated as described below.

4.2. Data management

Looking at all aspects of sustainability invariably leaves you with much data to be handled. The field-testing showed the complexity of the data management. Therefore, the data will in future be managed in an online programme. Apart from facilitating the data management and analysis such on-line storage will avoid data being stored in various places, which makes them not always available for future use. On-line storage also allow for keeping historical data over many years facilitating analysis over time, which is probably the biggest strength of such a system.

Basically the data obtained from the survey is managed in an on-line database like the spreadsheet used in the pilot. The result of the surveys is linked to the relevant questions in the sustainability index and gives a value based on the benchmark levels and conditions determined in the sustainability index. The data management programme processes the uploaded survey data and its predefined relation with the sustainability index. The results are the Sustainability Index values per FIETS, per location and for that collection date. The collected data can be aggregated by organisation (DWA partner) or the administrative area (sub-district, district, region). In annex 1 are some descriptions and screen shots of what could be the data management programme.

The results also show which requirements scored 0 or 1, so that follow up actions can be discussed and carried out to further improve the SI.

4.3. Validity of Data

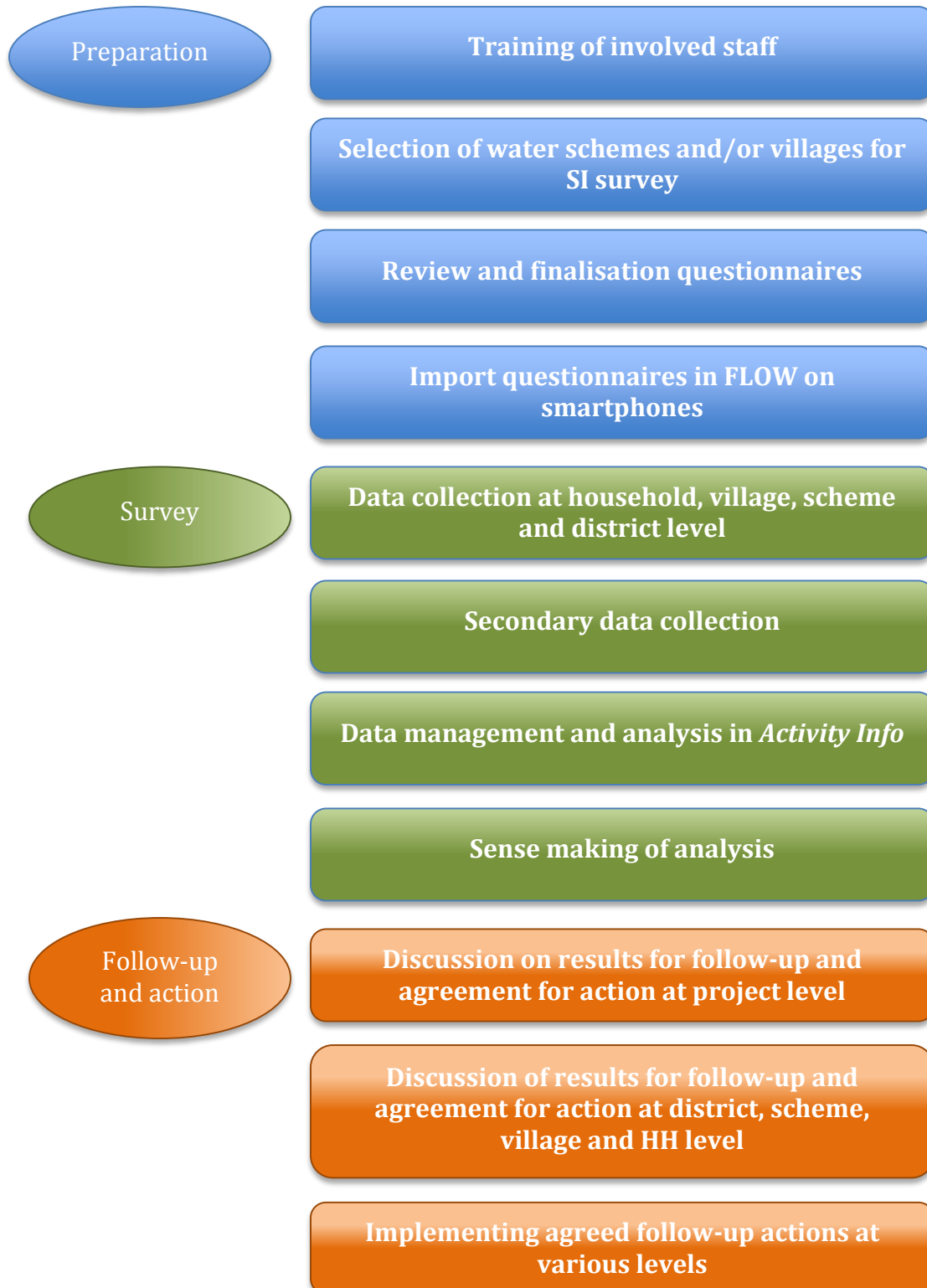
In the proposed data management system the requirements, the parameters, get a validity period.

Parameters/requirements such as ‘Community-of-Users was involved in planning’ do not change until new changes on service or technology are being planned. The validity of this information collected remains valid until that moment of change. Other parameters such as policy and strategy will not change that often, perhaps once every five years or so. The validity of such parameters [in years] is therefore determined by the year the parameter was developed minus the years that passed since then.

When a new SI survey is being planned and administered, the data management system will only ask for data on requirements/parameters that are not valid anymore, that is, of which the expiry date has passed. This data validity is an interesting option as it helps to reduce the number of questions to be asked in following SI surveys.

5. The Process of applying the SI

The SMF and SI process includes the following steps:



6. Use of SMF/SI in project, programme, scheme or local government

The five main uses or applications of the SMF/SI have been listed and explained in the Introduction; in summary:

1. To unpack the complexity of sustainability
2. To assist in project design towards a sustainable WASH service delivery
3. To measure progress towards achieving sustainable WASH services and practices
4. To assist a project evaluation on its sustainability criteria
5. To inform the district authorities on their achievements towards sustainability in WASH service delivery.

The SMF process is a suitable tool to be part of regular project or programme planning and implementation process. The SI results might serve the project and programme management: they have defined outcomes, result chains and/or a Theory of Change structure. It may also help the scheme management and the local government authorities to have the blockages to sustainability identified for action.

The diagram below illustrates in a few steps the DWA Programme process.

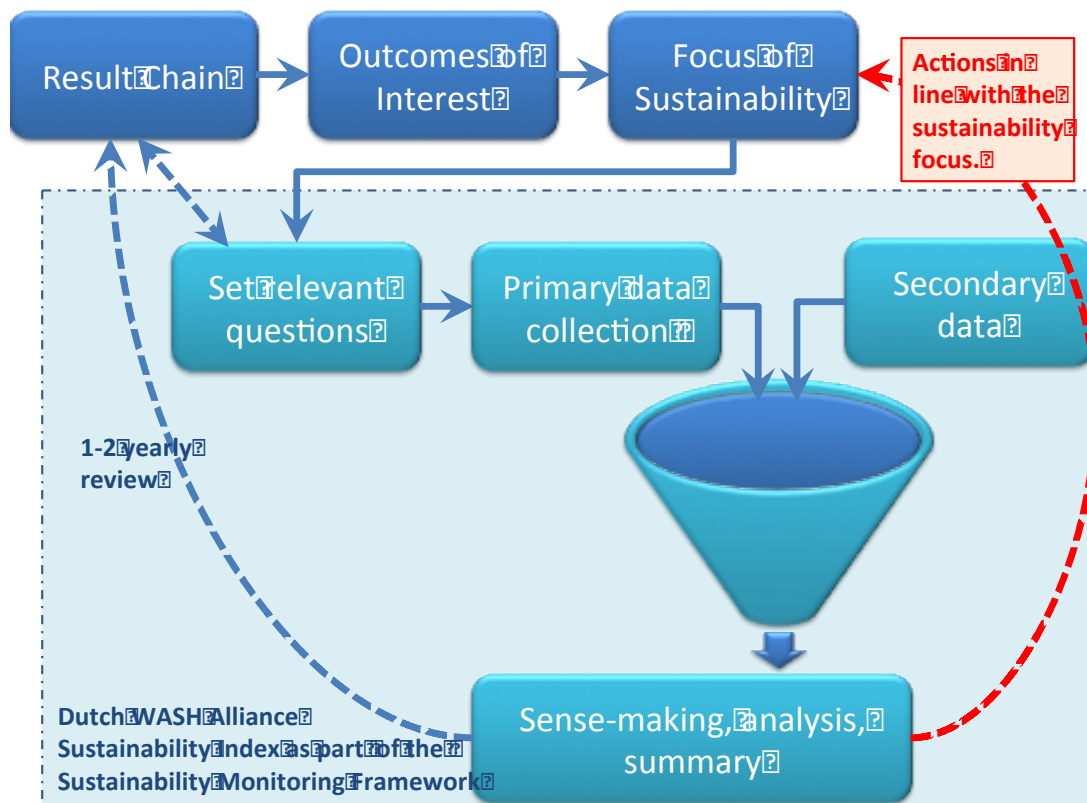


Figure 15: SMF/SI in a DWA programme process

Annex 1.

SMF Data Management – an example

SMF Data Management

An example of the Water spreadsheet is shown in Figure 1.

	A	B	C	D	E	F	G	H	I	J	K	L
	Questions	Means of Verification	Country	Community	F	I	E	T	S	Consumers' level	Operating level	Governing level
1	Consumers (Community-of-users) (all groups; equity) are (or have been) involved in planning particularly in decision-making on technology and service level.	sample n>15 families of Community-of-Users (CoU) and >80% give positive response = needs benchmarking			-		-	-	-	1	-	-
2	Women (from various socio-economic groups) are (or have been) involved in planning particularly in decision-making on technology and service level.	sample n>15 adult women and >80% give positive response = needs benchmarking										
3	Consumers (Community-of-users) are (or have been) informed and agree (meaning they said to be able & willing to pay water tariff) on the financial implications of the technology chosen and service level agreed (tariff is to cover OpEx, CapManEx (? or part?)). ... = as per government policy and regulation) [measure a sample or ask CoU - benchmark at for instance >80%]	sample n>15 families in CoU and >80% give positive response = needs benchmarking			-		-	-	-	1	-	-
4	The poorest quintile of consumers are (or have been) informed and agree (meaning they said to be able & willing to pay water tariff) on the financial implications of the technology chosen and service level agreed (tariff is to cover OpEx, CapManEx (? or part?)). ... = as per government policy and regulation)	sample n>15 poorest families (info from village government) >80% - benchmark										
5	Consumers (Community-of-users) do understand the rights & roles as stated in Agreement with Service Provider and with Water Service Authority	sample n>15 families or CoU and measure through: # sampled consumers can mention at least 2 (?) rights and at least 2 (?) roles - benchmark number!			-		-	-	-	1	-	-
6	Consumers (Community-of-users) receive performance and financial reports from WSP at least once every 6 months	three reports from last 18 months physically seen			-		-	-	-	1	-	-
7	Consumers (Community-of-users) can send complaints on water service to WSP; (there is a system - known by the consumers- to get complaints to WSP)	sample n>15 families of CoU and >80% give positive response = needs benchmarking			-		-	-	-	1	-	-
8	Consumers (Community-of-users) indicate that their complaints are being followed up effectively and satisfactorily	sample n>15 families of CoU and >80% give positive response = satisfied with follow-up by WSP -- needs benchmarking			-		-	-	-	1	-	-
9	Consumers (Community-of-users) are able to meet their obligations towards	sample n>15 families of CoU and >80% give positive response =			-		-	-	-	1	-	-

Figure 1: Data collection spreadsheet prototype

All the information above is necessary for calculating the Sustainability Index (Figure 2).

Calculating the sustainability index

The calculation of the index is as shown in Figure 3. 'Not relevant' (NR) questions are ignored in the calculations. The relation between the answered positive (in green) and negative (in red) questions (A+B) and the unanswered or 'not available' questions in blue (C) give us the reliability score. The reliability of the sustainability index compared to the information enriches the information. The absolute number of questions asked (n) is also mentioned as it gives an idea of the number of aspects looked at in the index. All *this* is indicative as some information can be based on aggregated data but it allows a person looking at the data to see where more information should be collected to make the index on a particular topic more reliable.

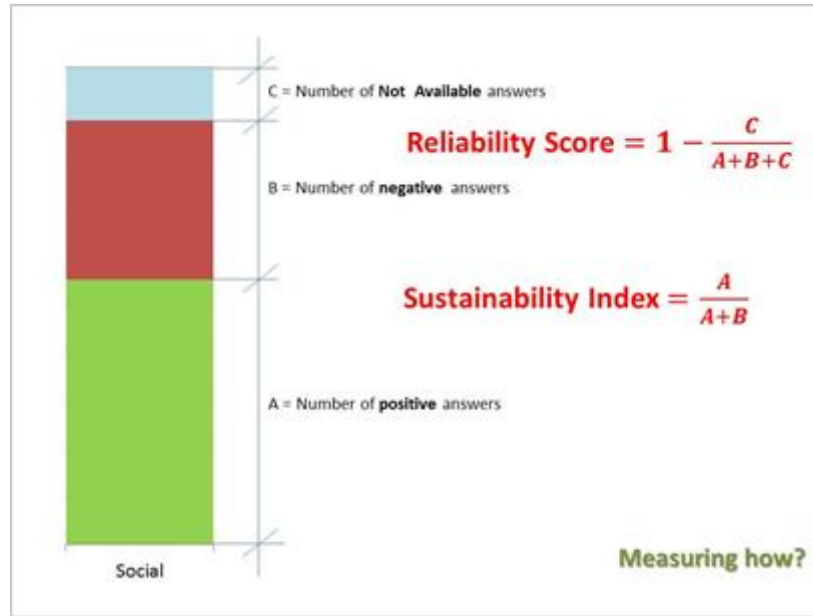


Figure 2: Sustainability Index calculation

Interpreting the results

The view below is the most complete view of information. It gives an overview of various response categories for each question. The result of above approach is an overall sustainability index, which can be disaggregated by focussing on a specific FIETS principle, or focussing on a specific administrative level. The disaggregated sustainability index is presented in Figure 3 below, which allows DWA and its partners to quickly establish if intervention is giving expected results and in which areas.

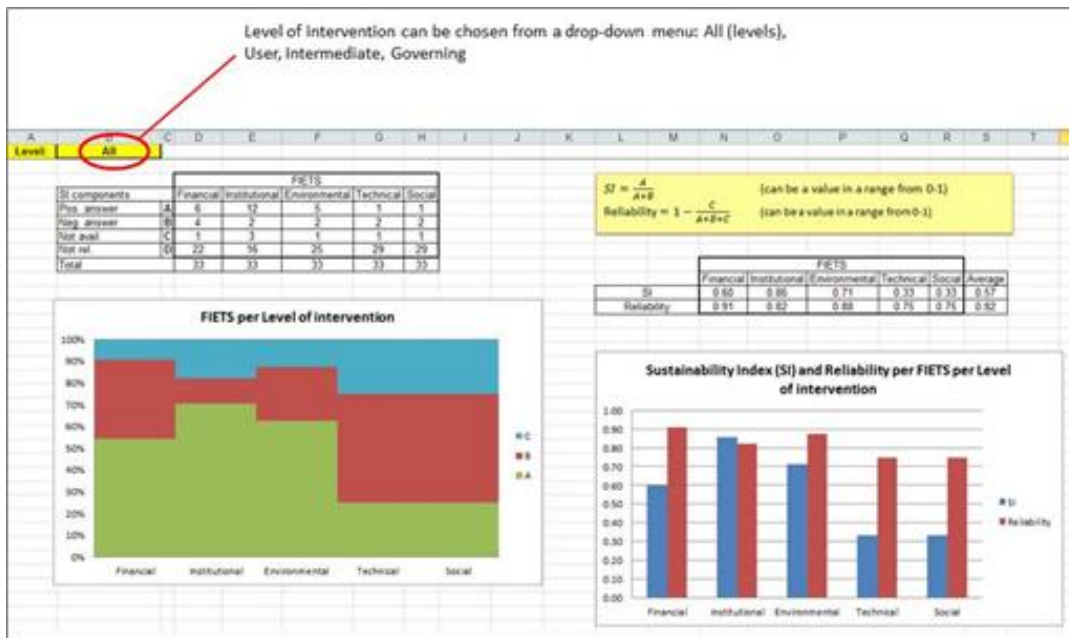


Figure 3: Disaggregated sustainability index (Consumers' level)

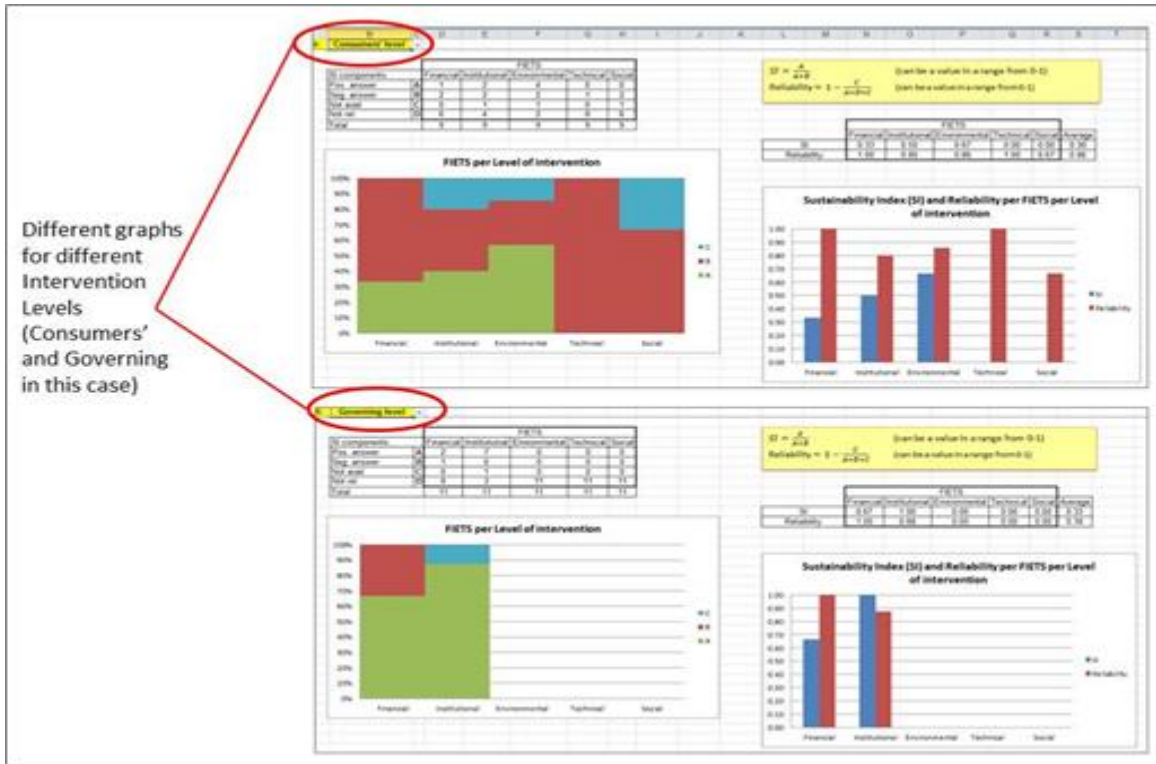


Figure 4: Example of disaggregated sustainability index (Governing level)

Figure 3 and 4 show various visualisations on aggregation and disaggregation. A simpler version in Figure 5 only shows the positive and negative answers with the values of the Reliability Score (RS).

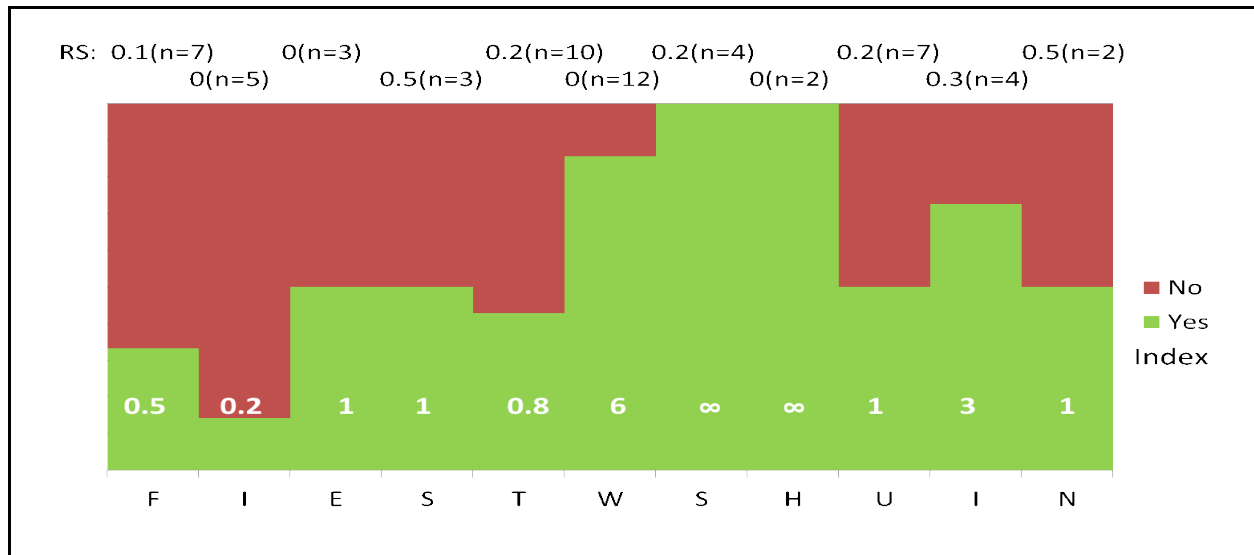


Figure 5: Simple visualisation with index, reliability score