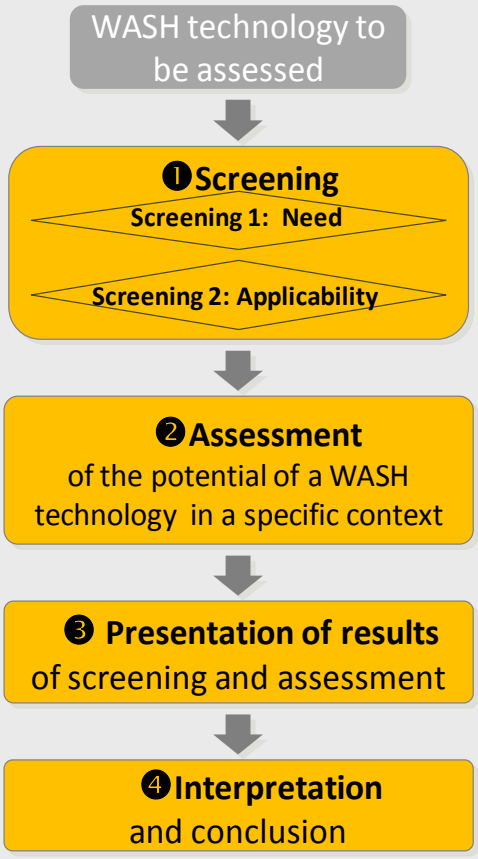
Technology Applicability Framework (TAF) **Manual**

November 2013



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Water, Sanitation and Hygiene Technologies (WASHTech) is a project of the European Commission's 7th Framework Programme in Africa

How to use this manual?

Research Report

The application of the Technology Applicability Framework (TAF) is based on the TAF methodology described in the **Research Report** (September 2013).

Manual

This **manual** (TAF Manual) will guide the TAF user through the four steps of the assessment one by one. The numbering ❶, ❷, ❸ or ❹ is always related to the respective step of the TAF. All information needed to apply the TAF is available in this manual and in the annexes.

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Version

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WASHTech

The Technology Applicability Framework (TAF) has been developed within the **WASHTech** project, which is a 3 year FP7/EU funded action research project. The consortium consists of IRC International Water and Sanitation Centre, WaterAid in UK, Ghana, Burkina Faso and Uganda; Cranfield University; Skat Foundation; WSA; TREND; KNUST and NETWAS Uganda.

The TAF has been tested in 18 assessments of 13 WASH technologies in three countries (Uganda, Burkina Faso and Ghana) in three rounds. In the process of testing of the TAF all partners have contributed substantially to its further development and of its methodology.

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The TAF Manual, related WASHTech documents and updates of documents can be accessed through: www.washtechnologies.net.

Glossary

Terminology used in WASHTech

To fully support the application of the TAF, a proper understanding of terms and terminology is needed:

Actor: Type of stakeholder, e.g. user of technology, national government, local NGOs or private sector.

Context: Describes the geographic and socio-economic situation the technology is being introduced in.

Cost Model: The way capital expenditure (CapEx) and operation and maintenance costs (OpEx) are covered and specific roles in a technology introduction process are distributed. E.g. a market based approach is a cost model in which no subsidies are provided at all.

Host: Government institution at national level in charge of following up the use of the TAF; appointed by Ministry responsible for Water and Sanitation.

Innovation: A process to develop or introduce something new.

Introduction: Describes measures and the process to take a new technology to scale. The introduction process is often rather unsystematic. The guide for the Technology Introduction Process (TIP) is a guidance document to offer a systematic description of the introduction process.

Invention: Is a new device, method or process. The invention phase is when the invention happens.

Product: Is the combination of elements composed of the technology itself and other marketing elements, such as its price and the promotion or the place.

Roles: Describes a specific set of tasks an actor should undertake, e.g. regulation is the role of government.

Sustainability dimension: Six areas which are key for sustainability: social ,economic, environmental, organisational - institutional - legal, skills and knowhow and technological.

Tasks: Specific activities an actor should accomplish according to his or her role.

Technology: Single component or a combination of technical components, which are used to serve a specific purpose. Technologies might work as standalone technologies or compose a system.

In WASHTech the term technology is also used for a product, which is the combination of technical and marketing elements.

Uptake: The act of taking up or accepting something on offer, or the rate of this. E.g. the uptake of the rope pump in the first two years of its introduction in a district was 100 units.

Overview: TAF

What is the TAF for?

The Technology Applicability Framework (TAF) is a decision support tool on the applicability, scalability and sustainability of a specific WASH technology to provide lasting services in a specific context and on the readiness for its introduction. The TAF can be used to

- start discussion, documentation and sharing experiences about a WASH technology and approaches to scale up this technology
- assess the potential of a specific technology with respect to applicability, scalability, sustainability and uptake in a specific context,
- assess readiness of a sector to scale up this technology including identification of potential measures for improving uptake,
- monitor performance of technology and its introduction process.

When to apply the TAF?

The TAF should be applied when a technology is being piloted. It can also be used to support monitoring and evaluation of progress and performance of technology introduction processes.

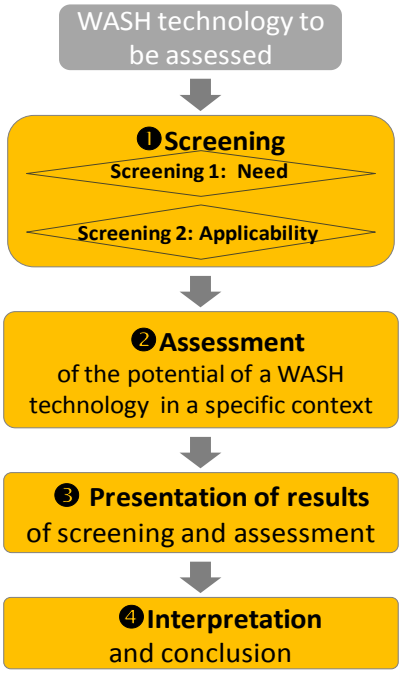
How does it work?

The TAF is designed as a **participatory** tool. It is applied using a stepwise **process**. It uses specific questionnaires for screening and field questionnaires for the assessment. Information needed are collected through **desk studies** and **field visits**. All relevant actors are involved in the collection of data and in the generation and discussion of results. This allows all actors, including representatives from national and local government and users of the technology such as communities, to bring in their perspectives and views and to hear the opinions of other actors.

Where are the limits?

The TAF is designed to assess a single WASH **technology** (e.g. a pump or UDDT) which is or will be used to provide **WASH services** in a district or region. The TAF can also be used to assess complex **systems** such as a piped supply with tanks, pipes and taps. However ,prior to the TAF assessment of a system, the **boundaries for the assessment** have to be defined. Field visits are used to verify the context and boundaries of each TAF application. The TAF is designed as an assessment tool for a single WASH technology in a specific context, not as a selection tool which selects between various technologies.

Four steps in the TAF assessment



The assessment within the TAF follows a procedure with four steps:

The TAF process starts with a screening in step ❶. The screening focuses on two key questions:

- Is there a need for this technology?
- Is the technology at all feasible in this region?

If the screening is positive, the technology will be comprehensively assessed using 18 indicators (see annex 1) in step ❷.

In step ❸ the results are collected and presented.

In step ❹ all results are comprehensively interpreted.

Overview: TAF methodology

This TAF Manual provides recommendations on how to apply the TAF in practice. It is the responsibility of the host of the TAF with support from a study team to contextualize the templates to the specific needs and context. To apply the TAF a stepwise process is recommended:

Stepwise procedure for application of the TAF

Preparation	**1. Analysis of the objective of the assessment** (e.g. which technology, context, experiences so far, need, partners)
	2. Setting up of Study team
Step ❶	**3. Screening**, mostly desk work
Step ❷	**4. Preparation of field work**: e.g. contextualization of questionnaires incl. data on costs needed (e.g. CapEx for indicator 4), training of study team on TAF, logistics, orientation of partners in field including districts and villages to be visited
	5. Formal orientation of partners in the field, including districts and villages to be visited, training on TAF methodology, logistics incl. translation for local languages
	6. Field visits: interviews and data collection, using Focus Group Discussion, bilateral interviews with randomly chosen households and site visits
	7. Processing and validation of data, maybe in a workshop
	8. Scoring workshop; attended by all relevant actors, moderated by an experienced and **neutral** facilitator
Step ❸	**9. Presentation of all results** (screening, field visits, scoring) in the workshop
Step ❹	**10. Interpretation of results** in the workshop and **documentation**

What is the objective of the assessment in your particular case ?

Depending on the objective of the TAF application (e.g. assessing a new technology, evaluation of an existing technology) but also on country specific procedures, the design of the TAF application process needs to be adapted. **In all cases, each of the four steps must be incorporated in the adapted methodology.**

How to assure involvement of future users of the technology in the assessment?

For an assessment of **existing** technologies in a specific context the scoring workshop could take place at **district** level. This implies that data processing and validation also has to be done in the field prior to the workshop. Additional participants for the scoring workshop, maybe coming from national level have to travel to the district.

In particular for an assessment of **new** technologies that might need validation from a central body, a scoring workshop at **national** level might be more appropriate. The scoring workshop might take place later and on national level, which means the user voice might be represented indirectly only, through consolidated data on paper. However having the workshop at national level would offer the opportunity for new participants to come in and bring in new ideas and thoughts - which is not possible if organized at district level.

In all cases, it needs to be assured that future users of the technology are adequately involved in the stepwise process and that they can bring in their perspectives and voices into the scoring workshop.

Overview: One Pager to read before entering a TAF assessment

What is the rationale of this assessment?

To prepare the TAF assessment, go through the general questions, such as:

- What is the WASH related issue to be solved with this technology?
- What is the purpose of the assessment: assessing a new technology or an existing one? Who is interested in this assessment?
- What are the experiences with this technology or similar ones regarding the level of service provided in your region or district?

Resources needed

The TAF is designed as a 4-step process, which includes field work. All four steps should be accomplished. All relevant actors should be involved in the field work and in the scoring workshop. There should be sufficient resources to accomplish all four steps properly. The application of the TAF costs around **US$ 3,000** per assessment of one technology per district (see Annex 7 and 8).

What happens in the field?

The use of the Technology Applicability Framework in the field takes at least 3 days practice:

- Day 1: Introduction of TAF to TAF users in the field
- Day 2: Field work to visit technology being evaluated, maybe including verification of data
- Day 3: Presenting data from field, Scoring of technology/service using the TAF and formulating recommendations for sustainability/scalability

What happens before going to the field?

Preparatory work prior to going to the field (needs two to three days):

1. Identifying which technology you want to focus on and the objectives of this assessment. This task is done by the **study team**, comprising the host and selected experts
2. Setting up of **field visit team** (could include members of study team)
3. Screening (= Step ❶ of TAF), mostly done as desk study
4. Identifying the district/communities you wish to evaluate the technology in
5. Agreeing participation of district staff and use of district headquarters for the training and the scoring exercise
6. Inviting relevant people to use the TAF with: producers and local providers of the technology (private sector and NGOs), local and national government staff, other NGOs, donors
7. **Speaking to the producer/provider upfront to gather information about the CapEx, OpEx, CapManEx of the technology as well as for indicators 1, 4 or 5**

Where to organize the scoring workshop?

The **scoring workshop** usually takes place at the district headquarters with permission and participation of the district staff. This allows users to a participate directly in scoring workshop.

How many people will be involved?

A **field visit team** for one area is composed of 3-4 people: 1-3 persons with strong expertise in research and community mobilization, one person for documentation, a driver, and a translator for local languages if needed.

The scoring workshop team might be bigger and include more people (up to 10—15 people), for sure representatives of the host institution, representatives from national level such as from the department of health, from local government, the local private sector, such as handpump mechanics, local NGOs and representatives of users, e.g. water user group.

Composition of a team

When composing teams aspects such as experience with this technology (water, sanitation, hygiene) and working in that region should be considered.

The members of the field visit team should be selected so that they can provide a strong, independent facilitation and a secretariat.

Step 1: Screening

I. Purpose of the screening

The purpose of the screening is to assure a cost effective assessment of a technology which has the potential to be feasible and reasonable in a specific context. The screening helps to reject technologies which are not **suitable in a particular context,** e.g. latrines where the groundwater level is high and the area is often flooded.

Basic assumptions

The screening in the TAF is designed to be applied for a specific context at **local** level. **The result of the screening is therefore valid only for the context considered and a reasonable period of time.**

For screening it must be clear which **specific technology** should be assessed and which **specific context** has to be considered. In general a screening should **always** be applied, even if the technology is known. During the field visit it is important to verify on the ground if the technology identified on the ground is really the technology to be assessed, if it is part of a system of various components and how to define reasonable **boundaries for the assessment**.

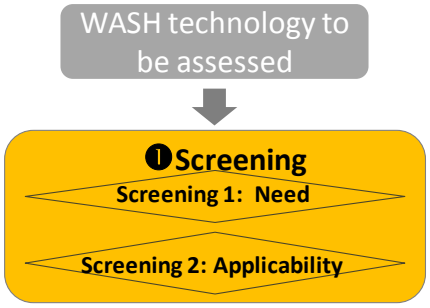
Expected result of the screening

Based on the results of the screening, the TAF user will decide on whether the time and other resources should be dedicated to a proper assessment or rather to rethinking the usefulness of this technology in this context. Information collected in the screening will feed into the overall interpretation of the results in step 4 of the TAF.

II. How does the screening work?

The screening is based on a simple-to-use **questionnaire, the so called screening sheets.** The screening sheets include all questions to support the user in the decision making for the screening. Two key criteria are used for the screening, the **need** for this particular technology in the area being considered and the **applicability** of the technology in this area. Additional information will be collected on **acceptance** and on the way the technology is supposed to be introduced.

Selection of screening sheet



The screening sheets also collect information about the **specific context** the technology should be introduced in, the purpose the technology should fulfil, e.g. the level of service. Annex 2 provides tailor made screening sheets for “Water Lifting Technologies”, (e.g. pumps) and for “Latrines” (e.g. VIP) Screening sheets for other technologies will be provided on www.washtechnologies.net.

Who does the screening?

A **study team** composed of representatives of the host institution of the TAF and selected experts will accomplish the screening.

Data and time needed for screening

The information needed to answer the relevant screening questions should be available or accessible for professionals at national and district level. Field visits should not be necessary to answer the screening questions, thus filling out the screening sheets can be done as desk work. The time needed to do the screening is approximately half a working day.

Step 2: Assessment

I. Purpose of the Assessment

The Technology Applicability Framework (TAF) is a **decision support tool** on the **applicability, scalability and sustainability of a specific WASH technology to provide lasting services in a specific context** and on the readiness for its introduction. The TAF assesses not only the **technology** but also if key elements for a successful introduction of this technology are in place to assure that **lasting services** can be provided. The concept of the TAF allows the user to identify areas of risks and of opportunities and to define specific measures to support the technology **introduction process**. The TAF can be used to identify requirements and challenges of a specific cost model which has been chosen as basis for the introduction process.

Expected outputs

The key outputs of this step ❷, the assessment step, are a graphical profile and additional comments. The result of the TAF assessment can support the decision making to "Go", "NOT-GO" or "GO under certain conditions" for the introduction of the technology being considered. The results are documented and discussed in a detailed **Final Assessment Report**.

II. How does the assessment work in general?

A successful introduction of a WASH technology is only realistic if an enabling environment is established and all key actors are supportive and able to fulfil their roles.

6 sustainability dimensions

To ensure sustainable services provided by WASH technologies, **six sustainability dimensions** should be considered: **social, economic, environmental, institutional and legal, skills and knowhow and the technical dimension.**

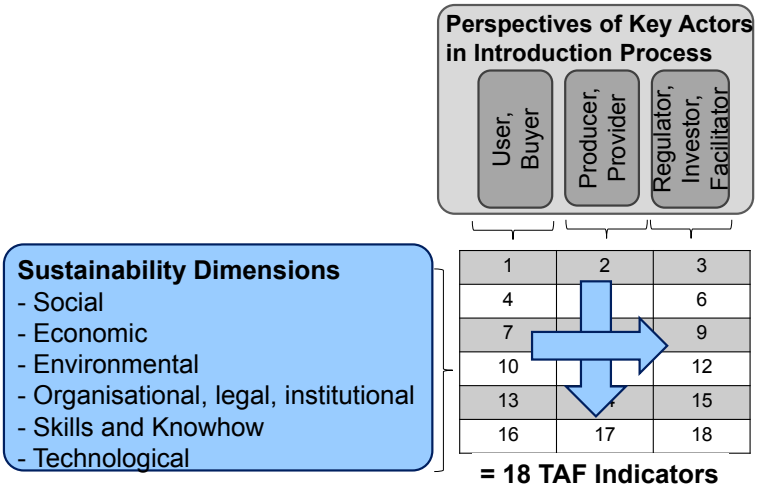
Perspectives of 3 key actors

In the TAF methodology the **perspectives of key actors** in the introduction process are considered explicitly in order to highlight their roles and needs in the introduction process. To capture the most relevant priorities of the key actors in the technology introduction process, the six sustainability dimensions are explicitly assessed from the perspective of the

- Technology **user or buyer,** the user can be the household or community using e.g. a latrine or even an operator in charge of providing services,
- Technology **producer or provider** (retailer of products such as spares, service provider related to the technology itself),
- **Regulator** of the WASH sector, **investor** in the introduction process **or facilitator** of the introduction process.

TAF assessment based on 18 indicators

In the TAF the assessment of WASH technologies is based on a set of **questionnaires** considering 18 indicators.



Step 2: Assessment (cont. 1)

How does the assessment work in detail?

1. Analyzing the objective of the assessment

For each TAF application the **host** should analyze the particular objective of the assessment and define the tasks and the data needed accordingly, and identify potential partners to form the **study team**, the **field visit team** and the **workshop team**. The study team supports conducting the TAF assessment process, the field visit team is in charge of collecting field data in a neutral way, the workshop team is responsible for bringing in all relevant views in the scoring. The composition of team members should be verified to capture the relevant topics for this assessment. Maybe members from other sectors (e.g. health, agriculture) should be included. All team members should be provided with sufficient documentation and should be comfortable with the TAF methodology and the concept of the questionnaire. This needs time for discussion and training within the group.

2. Analyzing and familiarizing with indicator sheets

For each of the 18 indicators a specific questionnaire (1 page/per indicator) has been developed, called **Assessment Indicator Sheet.** These sheets include background information on the indicator, **3 - 7 guiding questions and one scoring question.** Indicator sheets are provided for different cases, in particular for water and sanitation technologies (see Annex 3). Indicator sheets can be accessed through www.washtechnologies.net

3. Determine data needs

The data needed to answer the guiding questions and the scoring question have to be carefully determined. Subgroups of interviewees should be identified which could be interviewed separately to collect the data.

4. Develop field questionnaires

Customizing the field questionnaires

For each sub-group specific questionnaires should be developed. Double checking of data could be useful to allow triangulation. The language should be customized to the local context.

Specific cost data needs to be collected, checked and processed using the simple cost tool (see Annex 6) **prior to going to the field** and approaching users for the interviews. Field visits also should allow for a verification of results from screening, dependencies of technology and services on other components, and boundaries and assumptions for the assessment.

5. Prepare realistic schedule, data sheets, timing of assessment

A realistic schedule is developed based on a careful selection of sites and direct contacts and pre-information of all local actors involved. The timing should consider aspects of rainy season, activities of farmers i the field or cultural events. The schedule should allow some flexibility in terms of timing. At this stage, the composition of the team should be reviewed again.

6. Organizing logistics for field visit and data collection, including formal orientation of representatives at district and local level

Training of all actors involved

7. Training of all actors involved, including local focal persons

8. Field visit, data collection, pre-analysis and verification

The key methods for data collection are Focus Group Discussions (FGD). Based on prepared field questionnaires, FGDs are performed with all key groups in the community incl. local leaders, women groups, and disabled persons. Bilateral interviews with heads of households of the user community should be performed as a means for verifying results of FDGs. The total number of these face-to-face interviews per technology and region should not be less than 20 interviews. The households should be selected randomly.

Data verification

After each day of data collection the field visit group should verify the collected data before starting for the next day.

Step 2: Assessment (cont. 2)

Scoring system in the TAF

8. Assessment based on TAF guiding and scoring questions

The scoring in the TAF follows a workshop based procedure with involvement of **all relevant** actors if possible. The **scoring workshop** uses the validated data from the field as a basis for the assessment. If prepared properly the scoring workshop takes not more than one day if it is an assessment of one technology applied in one region.

The scoring in a workshop

To start the scoring workshop, a short wrap-up of the field visit should be provided by the workshop facilitator. Additionally sufficient time should be dedicated to give a short introduction in the TAF methodology and the objective of this assessment as actors will also participate who are not familiar with the TAF methodology. In the TAF methodology a score will be given for each indicator using the **traffic light system**. It is important to highlight that scoring **is not about criticizing particular individuals or organisations**. It should focus on a constructive discussion and to agree on a result for the assessment.

Scoring rules in the TAF

+	**High value, neutral or positive, supportive characteristics**
0	**Potential impact, could become critical, needs follow up**
-	**Low value, negative, critical, hindering characteristics**
?	**Unclear information, should be clarified**

Prior to the scoring

Prior to the workshop, the data from the field visits need to be verified. The verified data are then presented to the workshop team for approval. In the next step communication rules for the scoring workshop are explained and agreed. In a further step the rules for deciding on a score should be discussed and agreed prior to the scoring.

Scoring should be done **along dimensions** to better focus on one dimension. However, scoring can also be done separately, in the group according to the perspectives and results shared and discussed later in the workshop group. To support the process of deciding on a score using the traffic light system, and to add further information for interpretation an intermediate step can be introduced. For example, numbers between 1-5 can be used to allow more differentiation in the interpretation of field data. However, for the final presentation of the scoring, the traffic light system should be used.

Handling conflicting scoring

To enable the participatory process and the sharing of different views on issues it is highly recommended to do the scoring in the entire workshop group. This ensures consistency in the methodology of scoring and transparency on information and perceptions. In some cases, there might be concerns that some participants could dominate the discussion. There are different options to deal with strong opinions in the scoring workshop:

- Splitting up in subgroups in a first round and deciding in the workshop group in a second round. If the groups decide to split up in sub groups, mostly, it has to be assured that in each group there is the same procedure of discussion and the scoring methodology is adhered to.
- Another approach to soften eloquent speakers is to ask for scoring by each of the participants, ask for evidence if reasonable and after that to open the discussion for the floor.

Strong facilitation

In all cases it is important to have a strong, skilled and neutral facilitator who assures that communication rules are followed.

Step 3: Presentation of Results

❶Screening

Step ❶ "Screening" provides general information about the context the technology is supposed to be applied in, but in particular, the results include

- the assessment of the **need to introduce the technology in the context considered;**
- the assessment of the **applicability of this technology in this context.**

Especially for **complex technologies** such as sand dams, it should be checked if **scientific recommendations concerning e.g. the proper siting and construction of the technology** have been considered adequately.

Screening sheet

Relevant information on **acceptance** and on **dependencies of this technology on other technical components** should also be reflected in the screening. All results, issues and questions should be documented on the specific screening sheet used for the specific technology.

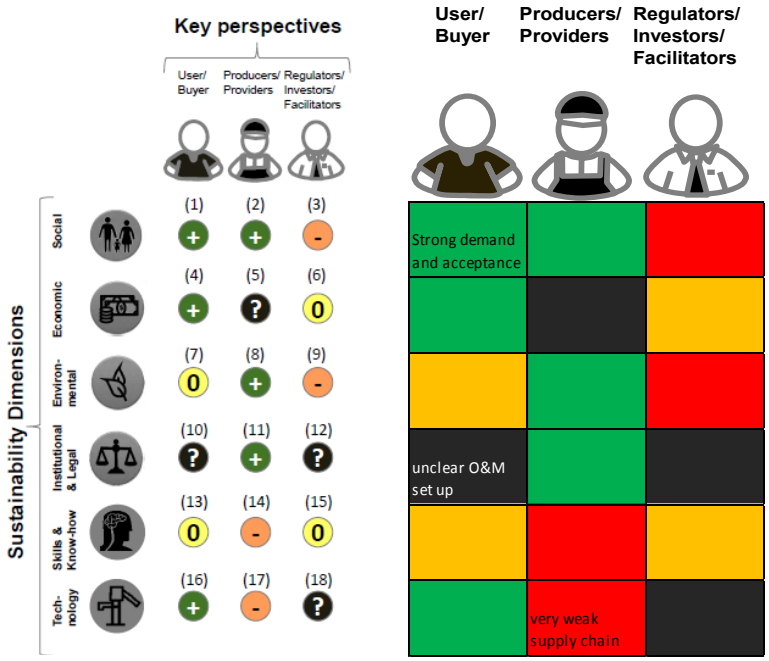
❷Assessment

After the field visits the data collected should be verified. And presented in the scoring workshop for approval prior to the scoring. A compilation of the approved field data should be included in the presentation of the assessment as an annex.

Verified field data

Presenting the 18 scores in a graphical profile

The resulting 18 scores of the TAF assessment (see Annex 1) will be presented according to their numbers in a **graphical TAF profile.** The figure below shows on the left side an **example** of a TAF profile. On the right side, an example of an annotated profile is added.



Additional information

Nuances which came up during the discussion in the scoring workshop, such as different or conflicting views of stakeholders on one issue, should be captured to support the interpretation of the profile. As an example, additional information, such as in text or as figures used to provide additional information during the scoring can be presented in an annotated profile.

Step 4: Interpretation of Results

❶Screening

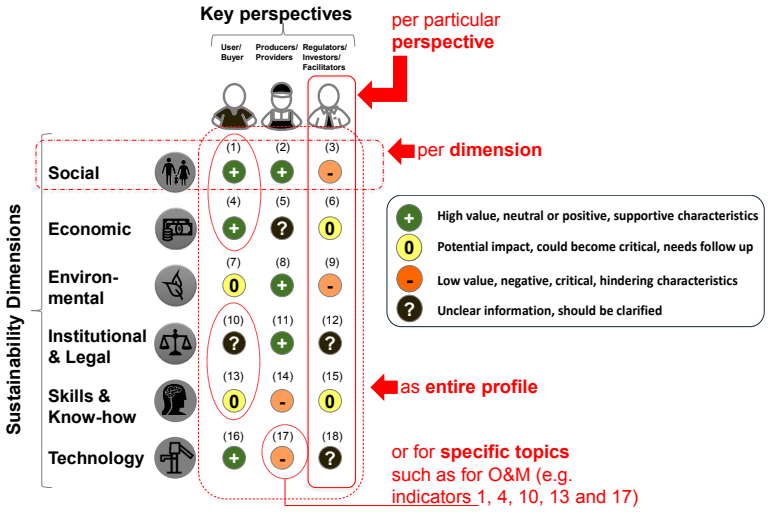
The interpretation of the results of Step ❶ "Screening" is straightforward. **Results of the screening are very context specific and not applicable to other regions without detailed analysis.**

❷Assessment

Information on the scope of technology use, the mode of introduction and the boundaries defined for the assessment or impressions and information from the **field visits** are crucial inputs for Step ❷ and the interpretation of the results. Questions which came up during the screening should be clarified during the assessment in Step ❷. The results of Step ❷ are interpreted based on the graphical profile, on the comments coming up during the field visit and the discussion but also on additional comments received during the screening and field visits. The **graphical profile** offers various entry points and supports a comprehensive interpretation:

Interpretation of graphical profile

- Per row focusing on a specific **sustainability dimension**
- Per column focusing on a **specific perspective**
- Comprehensively as an **entire profile**
- Additionally specific thematic interpretation is possible with respect to **cross cutting topics** such as O&M (Annex 5).



Result of TAF assessment

These entry points allow to **identify areas of high risk** and to define appropriate **mitigation measures**, e.g. to improve the design of the introduction process. The **result of the TAF assessment** can support the decision making to "Go", "NOT-GO" or "GO under certain conditions for the technology being considered". It also indicates the bottlenecks e.g. concerning the service level provided by this technology and the introduction process. The TAF process also trigger discussion if there are actors wiling to take the technology further.

Conclusion and comprehensive documentation of the results and process

A comprehensive synthesis of the discussion of the results and of the detailed interpretation including the nuances in the process is documented in a **Final Assessment Report**. The report should elaborate on the process of the TAF testing, participation of the different actors, the atmosphere in the scoring workshop but also on the particular technology, e.g. photos or drawings, the TAF profile. Annex 4 provides a list of minimum information which should be provided in the Final Assessment Report. As a four page summary document of the Final Assessment Report a **technology brief** informs the sector on the results of this assessment (see Annex 4).

Results of the TAF assessment are very context specific and not applicable to other regions without detailed analysis.

ANNEX

Annex 1: The 18 TAF indicators

Annex 2: Screening Sheets for step ❶ (for water lifting, latrine)

Annex 3: Indicator Sheets for step ❷ (TAF Water, TAF Sanitation)

Annex 4: Proposed information for Final Assessment Report incl. example of Technology Brief

Annex 5: Support for thematic interpretation of graphical profile

Annex 6: Cost Tool for TAF - to calculate parameters for cost-related indicators such as indicators 1, 4 and 5 (developed by KNUST)

Annex 7: Breakdown of costs for applying the TAF

Annex 8: Practical information for preparing a TAF application

ANNEX 1: The 18 TAF indicators

Perspective / Sustainability Dimension	User / buyer	Producer / provider	Regulator investor facilitator
Social	(1) Demand for the technology	(2) Need for promotion and market research	(3) Need for behavioural change and social marketing
Economic	(4) Affordability	(5) Profitability	(6) Supportive Financial Mechanisms
Environmental	(7) Potential for benefits or negative impacts for user	(8) Potential for local production of product or spares	(9) Potential for negative impacts or benefits for natural resources on a larger scale
Legal, institutional, organisational	(10) Legal structures for management of technology and accountability	(11) Legal regulation and requirements for registration of producers	(12) Alignment with national strategies and validation procedures
Skill and knowledge	(13) Skill set of user or operator to manage technology including O&M	(14) Level of technical and business skills needed	(15) Sector capacity for validation, introduction of technologies and follow up
Technological	(16) Reliability of technology and user satisfaction	(17) Viable supply chains for product, spares and services	(18) Support mechanisms for upscaling technology

ANNEX 2 and 3: Screening Sheets and Indicator Sheets

ANNEX 2:

As input for TAF Step 1: SCREENING a set of Screening Sheets for different technologies have been developed, e.g. for Water Lifting (Pumps) or for Latrines.

All Screening Sheets developed so far can be downloaded from www.washtechnologies.net.

ANNEX 3:

As input for TAF Step 2: ASSESSMENT a set of Indicator Sheets for different technologies and scenarios have been developed (August 2013), e.g. for **Water (General - existing)** and for **Sanitation (General - existing).** These questionnaires are both formulated for existing water supply or sanitation related technologies respectively in a **general** way, not specific for one type of technology.

The indicator sheets include the guiding and scoring questions for all 18 indicators.

For each indicator, there is one page with questions and background information on the relevance of the indicator, but also on the background of the guiding questions and how they are related to the scoring question.

All Indicator Sheets developed so far as well as background information can be downloaded from www.washtechnologies.net.

ANNEX 4: Minimum information for Final Assessment Report and Example of Technology Brief

Background on technology and context to be considered

- Name of technology, producers and information on costs (include picture or drawing showing how it works)
- Regional geographical and socio-economic context
- Experiences with this technology in the area so far
- WASH issue to solve, intended level of service for households/community
- Contact person / implementing organization
- Assessment date

Screening Results

Need: Is there evidence of a need which can be satisfied if this technology is introduced in this context?

Applicability: Is this technology applicable in this physical context? Have scientific recommendations been properly considered in the application of the technology?

Acceptance: Are there issues of acceptance with regard to this technology?

Technology - System: In this context, does this technology depend on other technical elements to perform? How did the field visit team define the boundaries for the assessment?

Result of screening, important comments:

TAF results: screening, field visits, graphical profile, maybe including annotated profile

Comprehensive interpretation of all results, such as:

Dimension: key issues per dimension

Perspective: key issues and high risk areas per perspective

Risks: Are there "no go" or high risk areas which hinder further introduction in the short term or long term? Do possible mitigation measures exist? Do all key actors involved share the conclusion including relevance and priority? Do they have the willingness and resources to overcome these risks and to implement mitigation measures?

Affordability: Are costs for CapEX, OpEx and CapManEx affordable for users? Are there mechanisms in place to access service for those who cannot afford the costs? Are the tariffs paid sufficient to keep the system operational in the long term?

O&M: Is O&M done regularly? Within the user group are there sufficient knowhow and skills available to do proper O&M? Is sufficient funding available for appropriate O&M? Is it realistic for users/caretakers to fulfil their role in terms of O&M in the future as well ?

Technology specific feedback: Is the technology performing and providing services as expected? Are there concrete ideas on how to improve the technology or its performance?

Introduction Process: Is the introduction progressing well? Which cost model has been considered for the introduction? Which are the key issues for the introduction considering the cost model applied?

Recommendation for sustainability of this technology and its services / Next steps

Is there a potential for this technology to be introduced in this context to provide lasting services? If yes, what should be considered in the design of the introduction process (e.g. actors, roles, resources, cost model)? Who is responsible for working out these steps? Who could be the "champion" in the introduction process? If currently there are issues or **little potential** for this technology in this particular context, how could the **technology** or the **introduction process** be improved? Which measures are needed and who is interested in taking on these tasks? Is there a potential for this technology in a different context?

Comments on TAF process, e.g. on

Who were team members, who was involved in field visits, who participated in the scoring?

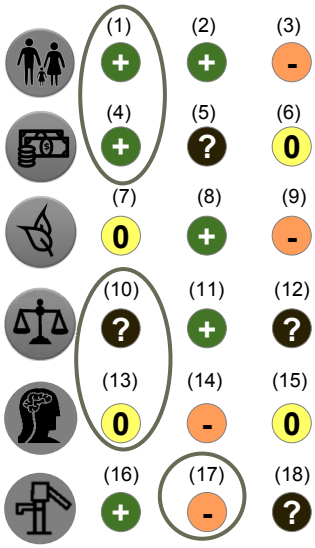
Have all 4 steps of the TAF process been executed including the Screening?

Have there been conflicting opinions during the scoring process? What were the issues? Which procedure was followed to get to the final scoring? How has the "user" perspective been represented in the scoring?

ANNEX 5: Thematic Interpretation of Graphical Profiles

For the interpretation of graphical profiles it could be necessary to focus on some specific themes in detail, such as “operation and maintenance” (upper part), or “supporting introduction process” (lower part). As there is not a single indicator for some themes the TAF user should consider and focus on a selected group of indicators which are relevant for this theme (encircled indicators).

Specific theme: Operation & Maintenance (O&M)



User, Buyer:

Indicator 1: Is there clear willingness to do or to pay for O&M?

Indicator 4: Are user contributions enough to allow sufficient O&M in the long term?

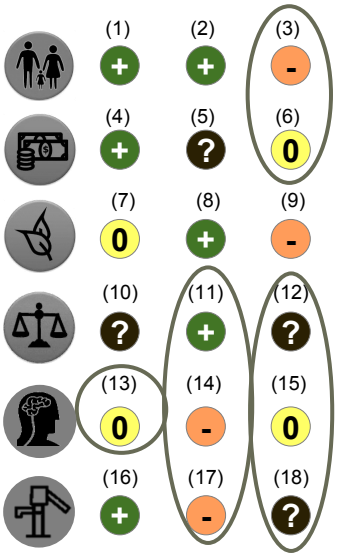
Indicator 10: Is there an effective O&M model which is applicable within the legal framework?

Indicator 13: Do users have sufficient capacities and skills to do O&M?

Producer, Provider:

Indicator 17: Is a viable supply chain in place? Is it easily accessible for the users?

Specific theme: Sector capacity to support introduction



User, Buyer:

Indicator 13: Do users have sufficient capacities and skills to manage the technology including doing O&M?

Producer, Provider:

Indicator 11: Do producers need registration to be recognized?

Indicator 14: Do producers have sufficient skills to operate and do business considering the cost model chosen?

Indicator 17: How should a viable supply chain be set up and maintained following the cost model chosen?

Regulator, Investor, Facilitator:

Indicator 3: Are substantial efforts needed with respect to social marketing to support introduction of the technology?

Indicator 6: How are policies on subsidies and other supportive financial mechanism?

Indicator 12: Does government have a formal validation process and standards for this technology? Does this technology comply with the standards?

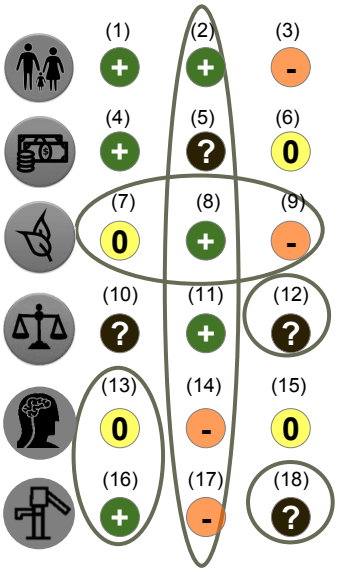
Indicator 15: Is there capacity to coordinate, document, share and follow up a technology introduction process in the sector?

Indicator 18: How to bridge the “Valley of Death”?

ANNEX 5 (cont.): Thematic Interpretation of Graphical Profiles

For a comprehensive interpretation it might be important to also have information related to the technology itself (upper part). For a quick assessment some “must have indicators” are included (lower part).

Specific theme: Product development and improvement



User, Buyer:

Indicator 7: Are there risks of negative impacts for users?

Indicator 13: Is it easy to operate and maintain (O&M)?

Indicator 16: Is the product ready for use? It is easy for the user to repair after being trained? Are the users satisfied with the performance of the technology?

Producer, Provider:

Indicator 2: Do producers know about needs of potential buyers?

Indicator 5: Can the revenues cover costs for promotion and product development?

Indicator 8: Is there a potential for local production?

Indicator 11, 14 and 17: Is quality control and follow up an integrated part of the business approach?

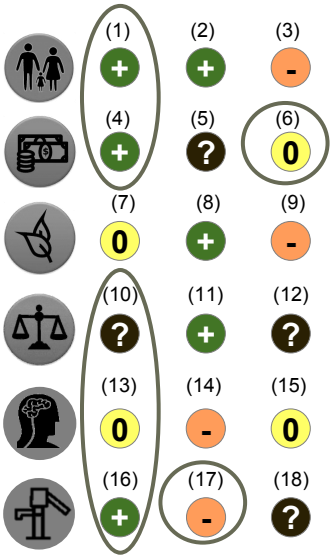
Regulator, Investor, Facilitator:

Indicator 9: Potential for impacts at local level if scaled up?

Indicator 12: Does the product comply with standards?

Indicator 18: How to bridge the “Valley of Death”?

“Must have” indicators for WASH technologies (However: introduction not being considered !)



These aspects have to be in place, otherwise the uptake by user/buyer will be most unlikely:

Indicator 1: There has to be a demand for this product. If the status of this technology is too low in all segments of the target group an alternative might be preferred. Users have to be willing to invest and to do or pay for maintenance.

Indicator 4 and 6: In particular in rural areas, affordability of WASH products can be critical and households are not always in a position to invest. If products and O&M are not affordable, no one will buy them or assets will break down soon due to lack of sufficient maintenance. If affordability is only achieved through providing supportive financing mechanisms, this has to be followed up carefully, as sustainability of subsidies might be not assured in all cases.

Indicator 10: It must be clear who is in charge of O&M and what is to be done in case of a break down.

Indicator 13: The use and maintenance of technology has to be simple.

Indicator 16: The product has to fulfil its purpose, has to be reliable and must be easily repairable.

Indicator 17: There needs to be a viable supply chain in place for this technology. The supply chain has to be easily accessible for the user and operator.

If one or more of these indicators is scored red, the likelihood to provide lasting services based on the technology in this context is very unlikely and no sustainability can be expected. In all cases, screening needs to yield a positive result. However in these indicators linkages and issues related to the introduction and follow up and support by regulators are **not** considered .

ANNEX 6 and 7: Cost related information

ANNEX 6: Cost Tool for TAF (developed by KNUST, Ghana)

Based on the experiences from the WASHCost project (www.washcost.org., a simplified MS EXCEL based tool was developed by KNUST, Ghana to calculate cost figures which are needed to ask particular guiding questions of cost related indicators, especially for TAF indicators 1, 4 and 5 as one input information for the scoring process.

The simple-to-use tool helps the TAF user to calculate costs figures for operation and maintenance (minor repairs) OpEx and for Capital Maintenance costs (CapManEx) before going to the field and putting the questions to the user to answer. Initial input data can be generated by asking facilitating or implementing institutions, from local pump mechanics or operators in charge of O&M, or by using reliable benchmarks from the region.

After the interview with the users, the calculation should be updated and verified. The tool (version August 2013) with instructions on how to use it including examples can be downloaded from www.washtechnologies.net.

ANNEX 7: Cost breakdown for applying the TAF

The cost estimation for applying the TAF on one technology in one area is about **US$ 3,000** and based on assumptions as following

1) The TAF has a host that has its own vehicles so no need for vehicle hire but still a need for a driver.
2) Only two people are required to facilitate the use of the TAF: a lead facilitator and an annotator.
3) The producer/provider is likely to be a non district participant not residing in the district.
4) TAF takes three days to apply - 1 day introduction to district, 1 day in field, 3rd day scoring (as the scoring workshop could be quite intensive, it could be an option to split the workshop in two half days: 1.half day: introduction in TAF methodology/presentation of validated data; 2nd half day: scoring and discussion of results); splitting up could add a lot in terms of focus and active participation; the additional costs are minor.
5) Two travel days to and from the district are required.
6) A non-district participant from central government or a regional support body will most likely take part.
7) All other participants will be based in the district.
8) Allowances for non-district participants is $60-$80 per day
9) Allowances for district participants is $10 per day
10) TAF facilitators are each paid a salary of $100 per day.
11) Fuel to location is $100
12) Fuel from location is $100
13) Fuel whilst on location is $50
14) TAF assessments take place at district headquarters at no cost

Example: The budget for implementing the TAF with 6 district level participants would therefore be:

» Fuel = $250
» Salary of TAF facilitators and driver (5 days) = $1,100
» Allowances for 5 non district participants (including driver) (3 days) = 5 X $80 X 3 = $1,200
» Allowances for 6 district based participants (3 days) = 6 x $10 = $60 x 3 = $180
» Materials = $50
» Fuel for second district based vehicle = $60
» Miscellaneous = $50

The total costs for one TAF application are about US$ 3'000 (even if the workshop is split up in two half day sessions). This is an example; the real costs for your TAF application should be calculated based on real unit cost figures.

ANNEX 8: Practical information for preparing a TAF application

The information listed below are general hints based on a series of TAF testing, however for each TAF application the order and focus of these tasks should be revised to fit to the context.

Preparation

- Team building along information as described on pages 5 and 6
- Acquainting with TAF documents; if translation is needed considered sufficient time for translation and training before departure to the field
- Definition of roles in the filed team, in particular who is facilitator, who is rapporteur taking notes of all inputs incl. photos
- Logistics:
  - vehicle, accommodation, cash for paying per diem of participants
  - Other material: flip chart paper, marker, tape, printed icons for dimensions, perspectives and traffic light symbols for scoring, digital camera
  - sufficient hard copies of Manual and indicator sheets or at least annex 1
- If supplier/producer is based in capital city and will not attend the scoring workshop, an interview should be organized in advance

Day 1 in the field:

- Courtesy visit to authorities and with local WASH officers from local government; discussion of schedule; interview with regulator perspective (local regulator)
- Meeting with local implementing partners and briefing on TAF, technology, schedule of TAF application, logistics, people to visit

Day 2 in the field:

- Field visit to communities; interview with focus groups (in particular community government, water user committees, households, women, men, elderly and with local supplier if available)
- Maybe start validation of field data

Day 3 in the field:

- Validation of field data
- Scoring workshop with all participants: agenda should include

  ▶ Introduction / Rationale of the TAF application

  ▶ Introduction in TAF methodology, presentation of all questions of indicator sheets, results of Step ❶ Screening

  ▶Presentation of validated data, scoring and interpretation

  Optional: splitting up the day for scoring in two half days. The first half day could be in the afternoon of Day 3. It would focus on introduction of the TAF methodology; results from Step ❶ Screening and presentation of validated data from interviews

Optional additional day in the field:

If the scoring workshop has been split up in two half days:, the 2nd half day should include:

▶ Focus on scoring

▶ Interpretation and discussion of results

▶ Next steps and wrap up