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Technology Applicability Framework (TAF) questions Mobile Desludging Units

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Research Into Sludge Enterprise (RISE)

Assessing the feasibility of mobile desludging in small urban centers in Zimbabwe

This document presents the adaptation of the original Technology Applicability Framework (TAF) questionnaire for sanitation (developed by the WASHTech project partners) to the situation of Mobile Desludging in Zimbabwe.

About RISE
Research into Sludge Enterprise (RISE) is an action research initiative lead by Welthungerhilfe and working towards a viable model for mobile desludging in urban centres in Zimbabwe. The initiative believes that by trialling, researching and demonstrating a viable model for mobile desludging in urban centres in Zimbabwe:

- Local authorities will have a new tool to address sanitation challenges
- Private operators will have a viable business option that supports sanitation services
- Institutions will be able to reduce costs by desludging rather than building new toilet blocks
- Householders with latrines and septic tanks will have an affordable locally available emptying service
- Local Authorities and the Environmental Management Agency will be able to regulate the activities of licensed operators to ensure that faecal sludge is adequately collected, transported, treated and disposed

IRC is a partner to this initiative and is responsible for the action research component.

Terms and definitions:

The technology = MDU (mobile desludging units)

O&M: Refers here to the operation and maintenance (O&M) of the technology (the MDUs)

Regulator: Local Authority responsible for sanitation services oversight, compliance, monitoring, regulation, planning, etc. in the pilot area, or national authority responsible for national sanitation oversight, compliance, standards, norms, etc. In this project, Norton Town Council (NTC), Zvimba Rural District Council and the Environmental Management Agency (EMA).

User: Intended target/ recipient of the service

Buyer: Local operators, e.g. small scale private entrepreneurs or contractors; whoever is buying/ leasing the desludging unit and using it to provide a service to users, in this project, Green Earth Waste Removal Services.

Provider: Produces the desludging units and sells/ leases them to operators to provide the service. The provider can be seen as an intermediary between the producer and the operators. In this project, this was WASTE Malawi.

Producer: Produces the technology (desludging units, WASTE NL).

Facilitator: Local actors responsible for social mobilisation/ marketing.

Investor: Welthungerhilfe Zimbabwe support by Australia's Department of Foreign Affairs and Trade (DFAT) under the Civil Society WASH Fund.

Social

1 – Demand for MDU

User, operator

Why is this indicator relevant?

Target users must express a real need or demand for the services provided by a technology if management challenges are going to be overcome in the future. Cultural taboos can cause users to reject a technology. If users feel a technology is inferior, they may reject it. If users are unwilling to invest in a technology or pay for its operation and maintenance, prospects for sustainability will be undermined.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 1.1	Do the majority of users express a strong demand for the service that the MDU provides?	An understanding of user expectations for a technology helps to form a picture of what demand they may have for it.
GQ 1.2	Which technologies (if any) are currently used to address sanitation related issues and needs in this community/area?	It is useful to understand if other technologies are already addressing sanitation related needs and whether the new technology is needed.
GQ 1.3	Within the target region could there be cultural or religious reasons why this new technology may not be acceptable to people?	Cultural and social acceptance is essential for sustainable uptake. If a technology is viewed as inferior for any reason, it may not be accepted. Inclusive, equitable service levels should be a high priority.
GQ 1.4	Are users interested in the MDU? If yes, would they be willing to pay for such a service?	This is an in-principle indication of willingness to pay as an indicator of demand from users.
GQ 1.5	Would theoperators of the service be willing to invest in capital and running costs?	This is an in-principle indication of willingness to pay as an indicator of demand from operators.
Scoring Question SQ 1	Are potential target users and operators interested in the new technology can provide to the extent that they would be willing to pay for it?	Score for indicator 1

Social

2 – The need for promotion of the MDU and market research

Producer, provider

Why is this indicator relevant?

Without strong promotion, technologies, providers and supply chains will often not be known to users and buyers. Good promotion is essential for scalability. Ongoing market research must be carried out by producers and providers if technologies are going to continue to meet users' needs. Poor user feedback mechanisms can mean that design problems are not acted upon, affecting sustainability.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 2.1	Do all target users really know that the MDU exists and understand what service level it can provide?	People generally only consider investing in a technology if they know it exists and understand what service level it can provide.
GQ 2.2	Are financing mechanisms available for the MDU (e.g. from government, donors), and are users, operators and producer aware of this?	Subsidies can stimulate demand for a technology and help to raise awareness of the services it provides.
GQ 2.3	How do operators understand what demand and expectations exist for the MDU and any user problems with it? How do they update this information?	Market research and follow up are essential if producers and providers are going to continue to meet user needs and demands. Design flaws must be acted upon.
GQ 2.4	Who will promote this technology at the national and local level? How do potential new users find out about this new technology?	Good promotion is essential for scalability. It requires dedicated skills and funding.
GQ 2.5	According to the producers (and operators and faciltators), which media are most appropriate for promotion of this sanitation technology? (e.g. TV, radio, drama, demonstration site, other)	Promotion has to be directed at the target audience using the most suitable media.
GQ 2.6	How do the producers/providers/operators consider the needs for the technology/sevice to be accessible to the poor and excluded groups in product development? Do they target all groups in the user population with promotion? If not, which groups are excluded and why?	Technologies need to be accessible to poor and marginalized groups if they are to meet user needs.
Scoring Question SQ 2	Do the operators and producers have resources and mechanisms to do targeted market research, promotion, product development and follow up/ feedback from customers?	Score for indicator 2

Social

3 – The need for behaviour change and social marketing

Producer, provider

Why is this indicator relevant?

There may be low demand from users and buyers/ operators for the sanitation service level provided by this technology without substantial change to their perceptions, attitudes and behaviours. This requires strong community mobilisation, social marketing and integration/alignment with existing traditions and incentives, for example linking improved sanitation services with productive livelihood activities, e.g. gardening.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 3.1	How do communities and service providers (inc. EHOs) currently address sanitation issues in the target area? What are common behaviors, and practices?	This question sets the scene for follow up questions on the need for behaviour change and social marketing.
GQ 3.2	Are changes to the perceptions, attitudes and behaviours of target users required to stimulate demand for affordable and cost efffective sanitation services using this MDU?	If this is the case, the need for substantial behaviour change must be met with skills and resources to achieve it.
GQ 3.3	Are changes to the perceptions and attitudes of local authorities, investors and facilitators necessary to stimulate demand for affordable and cost effective sanitation services using this MDU?	Wrong perceptions / attitudes of the regulator, investor, facilitator regarding this technology or target groups can inhibit its scalability and sustainability.
GQ 3.4	Do providers and facilitators have the necessary skills and resources to bring about changes to users' perceptions, attitudes and behaviours required for sustainable uptake of the MDU?	If providers and facilitators do not have the necessary skills and resources to bring about changes, a technology may be rejected.
GQ 3.5	Are users in the target area involved in choosing technologies, introduction processes and cost models? Who decides what technologies should be deployed? Politicians, technocrats, local government, NGOs or users?	Technology choice is often top-down with insufficient involvement of those who are affected by the choice of that technology. If this is the case, the need for essential behaviour changes might get neglected.
Scoring Question SQ 3	Is the introduction of this new sanitation technology possible without any behavioural changes? Do opreators and facilitators have the necessary skills and resources to bring about changes to perceptions, attitudes and behaviours for this new sanitation technology to be sustainable and scalable?	Score for indicator 3

Economic/ financial

4 – Affordability

User, buyer

Why is this indicator relevant?

If users cannot afford to pay for this sanitation service, scalability will not be possible without subsidy. If buyers/ operators cannot afford to pay for the operation and maintenance costs (including the cost of major rehabilitation), sustainable service levels will be highly unlikely without permanent external financial assistance.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 4.1	What do people pay now for similar sanitation services (e.g. manual emptying, large vacuum trucks, septic tank emptying if these exist?)	This gives an indication of whether users would be willing to pay for such sanitation services at all?
GQ 4.2	Could operators afford to pay for the full capital cost required for the MDU and related equipment? (CapEx)?	Indication of affordability to buyers/ operators.
GQ 4.3	Could users afford to pay for the full expected tariff required for the MDU?	Indication of affordability to users.
GQ 4.4	Can operators afford to pay the costs for major repairs (CapManEx) on the desludgers?	Indication of affordability to buyers.
GQ 4.5	What is the estimated average cash income per family per month among the target group in this region?	Users may be unwilling to disclose, try to estimate from other expenses, such as school fees and healthcare.
GQ 4.6	Will poor households who cannot pay for the service be excluded from using/benefiting from this new sanitation technology? Are there mechanisms that would allow them to benefit from it?	Gives an indication of whether affordability is a barrier to access for poor households.
GQ 4.7	Does the MDU offer potential economic benefits for the buyer, for example using safe by-products for agriculture, savings on constructing new latrines?	Income generated through use of the technology could help to pay for its CapEx, and its OpEx and CapManEx.
Scoring Question SQ 4	Is the amount of money that users should pay for the service affordable?	Score for indicator 4 – Should be less than 5% of hh budget. If only affordable with subsidies, the score should be yellow. The score is red if subsidies cannot be assured on long term basis.

Economic/ financial

5 – Profitability

Producer, provider

Why is this indicator relevant?

If producers do not raise sufficient revenues to cover the cost of market introduction, promotion, technology development, supply chain development and after sales support, their technologies may fail to be scalable or sustainable. In some cases, subsidies will be needed and may be provided by third parties, e.g. NGOs or governments, to enable the producer to create sufficient turnover and revenues.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 5.1	How much does it cost to produceprocure a single unit of the MDU to the manufacturer (ex-factory)	Estimate the total annual fixed costs, the total annual variable costs, add the two together, and divide by the number of units that the seller anticipates will be sold in one year. Add unit production cost, profit and transport.
GQ 5.2	What price is a single MDU unit sold for on local markets? This should include delivery and installation, as well as the associated equipment (e.g. vehicles, trailer, marketing and promotion).	Capital and set up costs are important in terms of new operators entering the market
GQ 5.3	Is there good, profitable market potential for the MDU in this region or even in the country?	Does the producer expect substantial, profitable sales in the region or beyond?
GQ 5.4	Is the MDU fully developed (ready to use), or is substantial funding still needed for further development to get this technology ready to sell?	Gives some information on the stage of development of the technology.
GQ 5.5	Are there other ‘comparable’ technologies (substitutes) that perform the same function available on the local market and what is their sale price?	Answer gives an indication of the level of competition on the market.
GQ 5.6	What support could be available for promotion and development of the MDUfrom other actors, for example through bank loans or grants?	Gives an idea of what other actors will support in promotion and product development (triangulate answer with GQ for indicator 18).
Scoring Question SQ 5	Is there a likely chance that the operator can generate sufficient revenues from sales to cover costs of product development, promotion, supply chain development and after-sales support?	Score for indicator 5

Economic/ financial

6 – Supportive financial mechanisms

Regulator, investor, facilitator

Why is this indicator relevant?

Supportive financial mechanisms such as subsidies very much assist uptake by poor communities but do not guarantee sustainability or scalability as they may not be in place for long periods or at scale.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 6.1	Are financing mechanisms[1] required for users to pay for the service?	If yes, how much is required?
GQ 6.2	Are financing mechanisms required for capital, running and major repair costs of the desludging units?	If yes, how much is required?
GQ 6.3	What are potential short and long term sources for this finance?	Government subsidy is indicative of government commitment to support the technology or service provided by the technology.
GQ 6.4	Are there rules and preconditions applied for subsidising this particular sanitation technology? (e.g. free demos, reduced disposal fees, delay in CapEx payments by 18 months, etc). If so, please give details.	If subsidies are given, clear rules will be needed..
GQ 6.5	Are viable financial mechanisms in place which allow potential operators to purchase this technology, e.g. revolving funds, saving cooperatives, bank loans, microfinance?	Affordable financial mechanisms might be the only way to allow poorer households to purchase some of the technologies, e.g. using SACCO schemes or revolving funds.
Scoring Question SQ 6	Will supportive funding mechanisms be needed and available for the services delivered by the MDU?	Score for indicator 6

[1] For example area based district support, or microfinance, or cross subsidy from water or sewage tariffs etc…

Environmental

7 – Potential negative impacts on the environment or user

User, buyer

Why is this indicator relevant?

The use of the technology could have negative impacts on the local environment or for the user, for example, pollution created by unsafe disposal of faecal sludge.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 7.1	Does the MDU present risks to the users or operators and staff if it is not correctly operated or maintained? Are users, operators and staff aware of these potential risks? Do they know how to manage them?	If buyers are not aware of how to use the technology, they may not be aware of risks associated with its use.
GQ 7.2	Are the users and buyers aware of any restrictions on the use of this techology?	Indicates if users are aware of any operating restrictions. For example problems with unlined or badly lined pits, accessibility of the faecal content, unfavourable anal cleansing or MHM material, lack of solid waste management systems.
GQ 7.3	Are the usersoperators and staff aware of any restrictions on the use of this techology?the MDU?	Possible risks could include, for instance contamination of nearby water sources, leakage in transport vehicle, or uncontrolled disposal of faecal sludge.
GQ 7.4	Is there a mechanism to inform users, operators and staff of risks and restrictions associated with use of the MDU?	If users are not aware of risks or restrictions, the potential for negative impacts will be higher.
Scoring Question SQ 7	Is there any indication that there might be a risk that negative impacts could result from the use of the MDU?	Score for indicator 7 **Scoring rule**: if there is no risk, use score “green”.

Environmental

8 – Potential for local production of product and spares

Producer, provider

Why is this indicator relevant?

Local production of the technology or spares might lead to income generation but might need specific inputs which are difficult to provide on a constant basis.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 8.1	Is the MDU or any of its major components currently being produced in the country or even locally?	Technologies might depend on imports from foreign producers, risk enforcement of high import taxes, poor quality control and unreliable supply lines. Local production saves on transport costs.
GQ 8.2	Does the process used to produce the MDU or any of its major components potentially harm the environment in any way?	Potential negative impacts could include disposal of harmful chemicals used in production or clearance of large areas of vegetation.
GQ 8.3	Is production of the MDU any of its major components or related equipment possible locally in terms of skills/capacities and availability of workshops?	Indicates if there is potential to create income or employment through local production with the added benefit of lower fuel consumption/pollution.
Scoring Question SQ 8	Does production of the MDU or any of its major components or related equipment impact negatively on the environment, and could such negative impacts be reduced through local production?	Score for indicator 8

Environmental

9 – Potential for negative impacts of scaling up

Regulator, investor, facilitator

Why is this indicator relevant?

If a technology is scaled up for use in multiple districts, there could be impacts on the environment and natural resources at a regional level. Such impacts might include widespread groundwater pollution. If the performance of the technology is vulnerable to environmental factors this will be another risk if the technology is used at scale.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 9.1	Could the MDU offer environmental benefits over other technologies whilst providing similar levels of service, e.g. through lower fuel or water consumption or lower use of raw materials.	Potential environmental benefits.
GQ 9.2	Does the MDU have the capacity to perform under varied conditions, for example, heavy cloud cover, high temperatures, low or high relative humidities, drought, floods, or earthquakes?	Localized use of the technology may not have significant environmental impacts, but if it is used at scale, cumulative impacts may occur.
GQ 9.3	Are agencies or organisations at district or national level actively monitoring environmental impacts that may result from the use of the MDU such as pollution thorugh unsafe disposal of sludge?	A lack of monitoring by responsible agencies may mean that environmental problems go unchecked.
GQ 9.4	Are these monitoring agencies/organisations sufficiently resourced with staff, equipment, funding and skills to effectively monitor any impacts and enforce corrective measures?	Institutions with sufficient skills, staff, equipment and funding must be in place to monitor environmental impacts and enforce corrective measures if environmental risks are to be adequately managed.
Scoring Question SQ 9	Is the MDU able to perform under varying conditions and are any agencies actively monitoring environmental impacts of this technology with a remit to enforce corrective action?	Score for indicator 9 **Scoring rule**: if technology can perform under variable conditions and an agency is monitoring its impacts, use score “green”.

Legal, institutional, organisational

10 – Legal structures for management of technology and accountability

User, buyer

Why is this indicator relevant?

If services are to deliver optimal benefits and be sustainable, the roles and responsibilities of users, local governments, NGOs, external support agencies, private service providers and national government must be clear. Responsibilities for financing, management and external support must be clearly set out and understood. Institutions must be in place to fulfil roles. Legislation should enable roles and responsibilities to be acted out.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 10.1	Is it clear who is responsible to pay the CapEx buy the MDU? Is it clear who is responsble for OpEx to keep it running and for CapManEx should it suffer a major breakdown? Who is responsible for carrying out O&M on the MDU?	Users, local governments, NGOs, external support agencies, private service providers and national government may all have roles to play.
GQ 10.2	Is the level of O&M carried out on the present sanitation technologies sufficient to keep the MDUs running in the long term? Is preventative maintenance presently carried out for the current technologies, e.g. Vacutugs?	Effective preventative maintenance can help prevent expensive breakages from taking place, reducing management costs. Triangulation with indicator 4. In simple terms, this Q is exploring the possibility that this is happening already/ can happen easily.
GQ 10.3	Whom should the operator or staff of the MDU business contact if the MDU or any component breaks down?	What are the O&M requirements of the new technology? Is a normal operator able to do it, or are specific mechanical skills needed?
GQ 10.4	If there is breakdown and MDU is not working, what institutional and financial arrangements are required to get it to work and to respond to the needs of users during down time?	Assuming new management models will be needed, is there potentially sufficient support for these to be devised and put in place?
GQ 10.5	Is the service provided by the MDU possible within the current regulatory and legal framework?	Are there any legal or institutional barriers to putting this in place? For example, can performance contracts between LAs and providers be put in place? Can operators have consumer charters with users?
Scoring Question SQ 10	Is the O&M required to adequately run the MDU feasible and sustainable within the current legal framework and with the available financial capacities of the operators?	Score for indicator 10

Legal, institutional, organisational

11 – Legal regulation and requirements for registration of producers

Buyer, producer

Why is this indicator relevant?

Registration of producers/providers and effective monitoring of their activities by regulatory authorities enhances quality assurance. It may also help to raise awareness of standard prices for technologies and services.

Scenario: Sanitation – New – General

GQ	Guiding Question	Explanation
GQ 11.1	Is it possible for the producer or provider of this new technology (or of spare parts) to operate legally without being registered or certified?	In some countries, producers or providers of technologies and services need to be registered with government agencies. Is this the case in your country?
GQ 11.2	Are there clear and specific government rules/laws for registration of MDU operators?	Licences may be required to produce or supply technologies.
GQ 11.3	Are there clear guidelines for producers and operators on how to get registered?	Clear, well publicized procedures for registration help to ensure that producers/providers are aware of what they need to do to operate legally.
GQ 11.4	Which institution has a specific mandate to regulate the quality of the MDU and the service it supplies? Does this institution regulate the quality of this sanitation technology and its service (in reality)? Who can be held accountable if production or installationtechnology/ service quality is poor?	Do producers/providers know who is responsible for regulating the quality of their technologies and services?
GQ 11.5	How do operators ensure that their services/equipment comply with production standards?	What quality controls do producers/providers have in place themselves?
GQ 11.6	Is there a process for government validation of the MDU and the service, and is it transparent?	Are there vested interests known around validation and procurement of technology?
Scoring Question SQ 11	Is regulation of operators and the services they deliver transparent, transparent, enforced and effective?	Score for indicator 11

Legal, institutional, organisational

12 – Alignment with national strategies and validation procedures

Regulator, investor, facilitator

Why is this indicator relevant?

Sanitation technologies introduced should be aligned with national standards if they are to get support from government institutions. Support from government institutions is important to achieve scalability and sustainability.

Scenario: Sanitation - Existing – General

GQ	Guiding Question	Explanation
GQ 12.1	Do national standards exist for the MDU and sanitation services? If so, does the MDU and the services it provides comply with these standards? It there a conflict with any law/guideline?	If the sanitation technology is not in line with any national policies or standards, a strong case will have to be made for it to gain approval from government or the Bureau of Standards.
GQ 12.2	What is the national process for getting the MDU validated and approved?	Ask regulator/investor/facilitator to describe this process. This is usually a national issue.
GQ 12.3	Can the design of the MDU be altered to suit local conditions or is it rigid due to patents?	This is an important issue which is often neglected: is the technology patented or public domain? Source: WASTE
GQ 12.4	Which institution has a specific mandate to regulate the quality of the MDU and the service it supplies? Do these institutions really regulate the quality of the technology and or the service it delivers? Who can be held accountable if quality is poor?	This question has purposefully been asked twice to allow triangulation with the answer provided by the producer/provider under indicator 11.
GQ 12.5	Are there rules or guidelines to decide and to define what kind of O&M is most appropriate for the MDU in this context? (e.g. O&M manual)	Which are the rules that define O&M structures?
GQ 12.6	Does this control agency have sufficient capacity and resources to follow up quality control and to enforce regulation?	Are there any examples of this agency exercising its authority in relation to similar technologies?
Scoring Question SQ 12	Is the MDU and the service it supplies aligned with national standards and strategies, and is it in compliance with national quality standards? Are there sufficient capacities in place at national and local level to exercise quality control of the MDU and the	Score for indicator 12 If the technology is not aligned to policies and standards the score should be red.

	service it supplies?	

Skills and knowledge

13 – Skill set of user or operator to manage technology including O&M

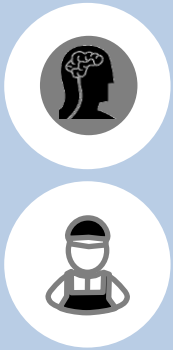
User, buyer

Why is this indicator relevant?

Sanitation technologies might need specific skills for management, operation and maintenance. For some users, specific training is needed to ensure proper use. Follow-up training of users should be available if skills are to be retained and updated.

Scenario: Sanitation - Existing – General

GQ	Guiding Question	Explanation
GQ 13.1	Are operator, caretakers and local mechanics familiar with the MDU, and do they know how to use, operate and maintain it? Do they know how to check if maintenance or repairs are needed?	How confident are those tasked with managing this technology that they are able to do it?
GQ 13.2	Is intensive upfront training of operators, caretakers and local mechanics or service providers needed for proper O&M of the MDU?	This will require resources on the part of the provider or facilitator.
GQ 13.3	Do operators, caretakers or mechanics have the technical capacities to carry out O&M of the MDU? What about their managerial capacities to manage it? Do they have the right tools?	If minor repairs are needed, can they be carried out by users, buyers, caretakers or local mechanics?
GQ 13.4	Who is responsible for organizing and providing the necessary training on O&M and management? Are sufficient capacity and resources in place to carry out follow-up training?	Follow up training is important as people move on and skills are lost.
GQ 13.5	If there has been an initial training of operator and caretakers, has there been a follow up? When will the next follow-up training take place and who will provide it?	The need for follow up training is often neglected.
Scoring Question SQ 13	Based on the current level of skills and capacity of operators, caretakers or mechanics, will they be able to manage the sanitation technology and to provide O&M on a regular basis?	Score for indicator 13



Skills and knowledge

14 – Level of technical and business skills

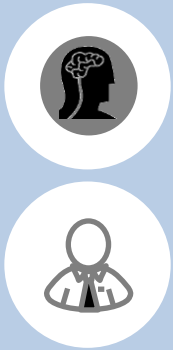
Producer, provider

Why is this indicator relevant?

Producers and providers need specific business skills to ensure they continue to provide pre- and after-sales services at competitive yet profitable rates.

Scenario: Sanitation - Existing – General

GQ	Guiding Question	Explanation
GQ 14.1	Does the operator of the MDU have sufficient business, technical and promotion skills to operate competitively and profitably in the market?	Specific skills are needed for technology introduction; triangulate answer with answer to indicators 2 and 5.
GQ 14.2	Are additional service providers needed to be trained to support O&M of the MDU or provide required services?	Specific skills are needed for doing proper O&M of some sanitation technology. These services might be stigmatized, so training of these service providers need specific efforts.
GQ 14.3	Does the operator need external support to define and develop these competences?	Who can provide support to bridge the skills gap?
GQ 14.4	Is there a local training provider who can provide business, technical and promotion skills at local level?	Is support available locally?
GQ 14.5	Does the producer/provider have adequate skills in place for after-sales service for the MDU?	After-sales services may be needed next to the supply chain of spares etc.
Scoring Question SQ 14	Does the operator of the MDU have sufficient business skills to introduce this technology using a cost model that ensures competitive, affordable rates but also profitability?	Score for indicator 14



Skills and knowledge

15 – Sector capacity for validation, introduction of technology and follow up

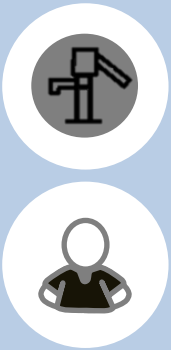
Regulator, investor, facilitator

Why is this indicator relevant?

The sector must possess sufficient capacities to introduce sanitation technologies, for example, the capacity to coordinate actors, to document and share experiences, the capacity to carry out quality regulation, monitoring and evaluation, to carry out applied research and to provide back-up technical support.

Scenario: Sanitation - Existing – General

GQ	Guiding Question	Explanation
GQ 15.1	Does the national and local/district sanitation sector (including facilitator) have sufficient capacity to coordinate the activities of different actors who could be involved in the process of introduction of the MDU?	Does government or civil society possess adequate coordination capabilities?
GQ 15.2	Do sufficient institutional capacities and financial resources exist at national level (including the facilitator) to provide technical advice and follow up for the introduction of the MDU?	Focus is put here on capacities and resources at **national** level for **technical advice and to do follow up** technology introduction.
GQ 15.3	Do sufficient institutional capacities and financial resources exist at district level to provide technical advice and follow-up for the introduction of the MDU? (can also be a local NGO)	Specific focus is put here on capacities and resources at **district** level for **technical advice and to do follow up** technology introduction.
GQ 15.4	Do sufficient institutional capacities and financial resources exist at local and national level which allow management, coordination, M&E and documentation of the introduction process for the MDU?	Focus is put here on capacity at national level for **planning and managing** an introduction process.
GQ 15.5	How and where can potential buyers access non biased information about existing and new sanitation technologies of this type?	If a sanitation technology is to be scalable it is important that potential buyers can access detailed information about it.
Scoring Question SQ 15	Are current capacities and financial resources at national and district level sufficient to provide adequate technical advice and support for the introduction of the MDU, including coordination, management, M&E, market research and follow-up?	Score for indicator 15



Technological

16 – Reliability of technology and user satisfaction

User, buyer

Why is this indicator relevant?

Products have to fulfil the expectations of users. If expectations are not met in relation to performance, design life, quality and ease of O&M, a sanitation technology may be rejected, or users may not be willing to pay for it. If this technology enhances social status, this may also improve the willingness of users to pay for it.

Scenario: Sanitation - Existing – General

GQ	Guiding Question	Explanation
GQ 16.1	Do the users appreciate the level of service provided by the MDU?	Asks for how far this sanitation technology would fulfil the user expectations.
GQ 16.2	Can the user rely on adequate performance of thie service provided by the MDU all year round?	Asks about level of robustness to perform even if conditions have changed.
GQ 16.3	Can the MDU be used to provide emptying services for toilets used by all target users in particular women, and children, but also elderly or disabled people?	Highlights how inclusive the product design is. In the case of the MDU, the question rather goes to the latrines it empties. This GQ could also apply to the user-friendliness of the MDU itself.
GQ 16.4	If this sanitation technology breaks down, can the the operator or caretaker repair the technology themselves based on the training received or only with external support such as mechanics?	Focuses on level of reparability of this water technology through users; allows triangulation with indicator 13.
GQ 16.5	Is there any component of the MDU that may not work properly in the local context, based on experiences with comparable technologies? Which part should be improved? How should it be improved in detail?	Asks for specific areas for improvements of technical design.
Scoring Question SQ 16	Considering operator and clients, what is the level of user satisfaction with regard to the performance of the MDU?	Score for indicator 16

Technological

17 – Viable supply chains for technology, spares and services

Producer, provider

Why is this indicator relevant?

Viable supply chains are required for a sanitation technology to be scalable and used on a sustained basis. Supply chains can also enhance the feedback from users to suppliers.

Scenario: Sanitation - Existing – General

GQ	Guiding Question	Explanation
GQ 17.1	How are services physically delivered to client? Is anyone else involved in delivery other than the operators? How is the MDU and spares delivered to the operators? Is anyone else involved in delivery other than the producer/provider?	
GQ 17.2	Is the envisaged supply chain viable for the service in the current context? Is the envisaged supply chain viable for the service/equipment in the current legal environment and market conditions?	Does a supply chain seem viable and sustainable currently?
GQ 17.3	Are retailers and supply chains already in place for other sanitation technologies, which could become the supply chain for the MDU too?	What options exist for distribution of spares?
GQ 17.4	What is the design life of the MDU if used according to the instructions? Which part or parts need replacement within a year of operation?	Producers and providers should be aware of when replacement of components will be necessary.
GQ 17.5	Have target users been involved in the development of the MDU?	Usually, early involvement of target users helps to improve a sanitation technology significantly.
GQ 17.6	Is there any mechanism to capture user feedback, to document ideas for further product development and to plan targeted follow up?	Capturing feedback is essential but often no systematic mechanism is in place to do it.

Scoring Question SQ 17	Do viable supply chains exist or can they be developed for the MDU and spares in this target region, and is there any mechanisim for follow-up with users after technology introduction?	Score for indicator 17

Technological

18 – Support mechanisms for upscaling technology

Regulator, investor, facilitator

Why is this indicator relevant?

The development and introduction of technologies requires a lot of financial resources over a long period when there are hardly any revenues. Many initiatives don't manage to cross this "Valley of Death".

Scenario: Sanitation - Existing – General

GQ	Guiding Question	Explanation
GQ 18.1	Are entrepreneurs at local or national level with capacities and financial resources interested in supporting the development, introduction and scaling up of the MDU?	Supportive conditions leading to a vibrant local private sector will help to support introduction. Scale-up should consider expansion in business of the operator and also increase in the number of operators doing viable businesses.
GQ 18.2	Are there government-led programmes or financial mechanisms in place, which support the operator/facilitator in the development and introduction of this sanitation technology, e.g. a fund for WASH or sanitation technology innovation?	Introduction of a technology can be boosted if it is integrated in government programmes, e.g. a specific sanitation / hygiene or WASH project or an innovation programme.
GQ 18.3	Are there third parties, e.g. development partners, knowledge networks or INGOs with sufficient long-term funding, who can take up and support the development, piloting and introduction of the MDU, and structure learning on the process?	Development partners are important actors to support innovation and research in WASH Technology introduction. The question is more of a general nature than specific for this sanitation technology.
Scoring Question SQ 18	What is the level of supportive structures for the MDU, in particular for funding further innovation and development to bridge the "Valley of Death" and to pass the tipping point (see TAF Manual)?	Score for indicator 18