



DeltaMAR revised work plan

June, 2019 – June, 2020



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Executive summary

In this summary, we present the main outcome of DeltaMAR's joint effort to improve its operations fundamentally. More in particular, it contains overview of the reallocated responsibilities and time-lines that regard (i) sub-project integration and synergies, (ii) stakeholder commitment and research uptake, and (iii) project management. We will implement the following measures with immediate effect:

IMPROVEMENTS REGARDING SUB-PROJECT INTEGRATION & SYNERGIES

We fundamentally revised and upgraded our strategy regarding the creation of three **integrated project outputs**. The newly assigned responsibilities with regard to sub-project integration are distributed as follows:

- **Dr. Boris van Breukelen** takes full responsibility for the *Water Quality Guidelines*;
- **Dr. Frank van Laerhoven** takes full responsibility for the *Governance Guidelines*;
- **Dr. Paul Schot** takes full responsibility for the *Site selection tool*.

(Proto-type) versions of the three integrated outputs will be delivered according to the following **time schedule**:

- **September, 2019**: First drafts available for discussion, testing and validation with stakeholders;
- **December, 2019**: Second drafts available – improvements based on stakeholder inputs included;
- **March, 2020**: Third draft available for further discussion, testing and validation with stakeholders;
- **June, 2020**: Final version completed and handed over to stakeholders – improvements based on stakeholder inputs included;

This schedule coincides with the scheduling of project reporting to the Steering Committee of UDW. It also follows the schedule for stakeholders' commitment strategy (see below)

IMPROVEMENTS REGARDING STAKEHOLDER COMMITMENT & RESEARCH UPTAKE

We critically revised and improved our strategy regarding **stakeholder commitment** and consequently, **research uptake**. As of now, **responsibilities** with regard to stakeholder commitment and research uptake are assigned as follows:

- **Prof. Dr. Kazi Matin Ahmed** takes full responsibility for establishing and maintaining contacts with the relevant stakeholder representatives, and for the logistics and the administration of workshop events in September, 2019, March, 2020, and the project closing event in June, 2020; he will be co-responsible for the content of workshop

events that regard the discussion and testing of the integrated project outputs; he will take full responsibility for technical capacity building event (September, 2019 and/or March, 2020).

- **Prof. Dr. Shantanu Majumder** takes full responsibility for the governance capacity building event (September, 2019 and/or March, 2020).
- **Dr. Boris van Breukelen** takes full responsibility for the content of workshop events that regard the discussion, testing and improvement of the *Water Quality Guidelines*
- **Dr. Frank van Laerhoven** takes full responsibility for the content of workshop events that regard the discussion, testing and improvement of the *Governance Guidelines*
- **Dr. Paul Schot** takes full responsibility for the content of workshop events that regard the discussion, testing and improvement of the *Site Selection Tool*.

Our strategy to stakeholder commitment gears around the organization of a number of workshops and capacity building events in the Khulna area. We have now agreed on a new **time schedule** for these events that better align with our improved process and strategies:

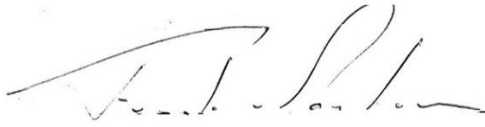
- **September, 2019:** Discussing, validating and testing of integrated output *pre-alpha* versions with relevant stakeholders (representing the Department of Public Health and Engineering (DPHE), The Bangladesh Water Development Board (BWDB), Unicef Bangladesh, Local governments, Entrepreneurs, NGOs and end-users); Building the capacity of relevant stakeholders with regard to (i) water quality and (ii) governance aspects of MAR;
- **March, 2020:** Discussing, validating and testing of integrated output *beta* versions with relevant stakeholders. Building the capacity of relevant stakeholders with regard to (i) water quality and (ii) governance aspects of MAR;
- **June, 2020:** Handing over *release* versions of our 4 integrated outputs to all relevant stakeholders.

IMPROVEMENTS REGARDING PROJECT MANAGEMENT


Effectively immediate, we have overhauled our **project management structure** profoundly. From now on, project management **responsibilities** are allocated as follows:

- **Dr. Frank van Laerhoven** takes full responsibility for the management of (i) within project monitoring of project progress, (ii) financial administration, (iii) sub-project integration, and (iv) stakeholder commitment
- **Dr. Paul Schot** takes full responsibility for the management of (i) external monitoring of project progress (i.e. reporting to NWO), (ii) project communication, and (iii) data collection, storage and management;
- **Prof. Dr. Frank Biermann** provides professional support on report writing
- Professional support on science communication, financial administration, and data management is provided by **Utrecht University experts**.

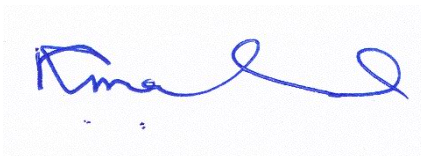
All these measures are the result of multiple discussion sessions – both plenary and smaller-sized meetings. By signing this document, all core project team members express to be fully committed to the implementation of said measures. More details regarding the improvements can be found in the remainder of the report, below.



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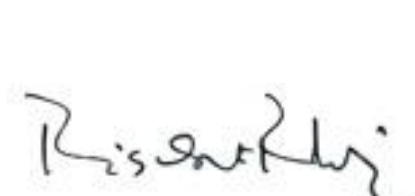
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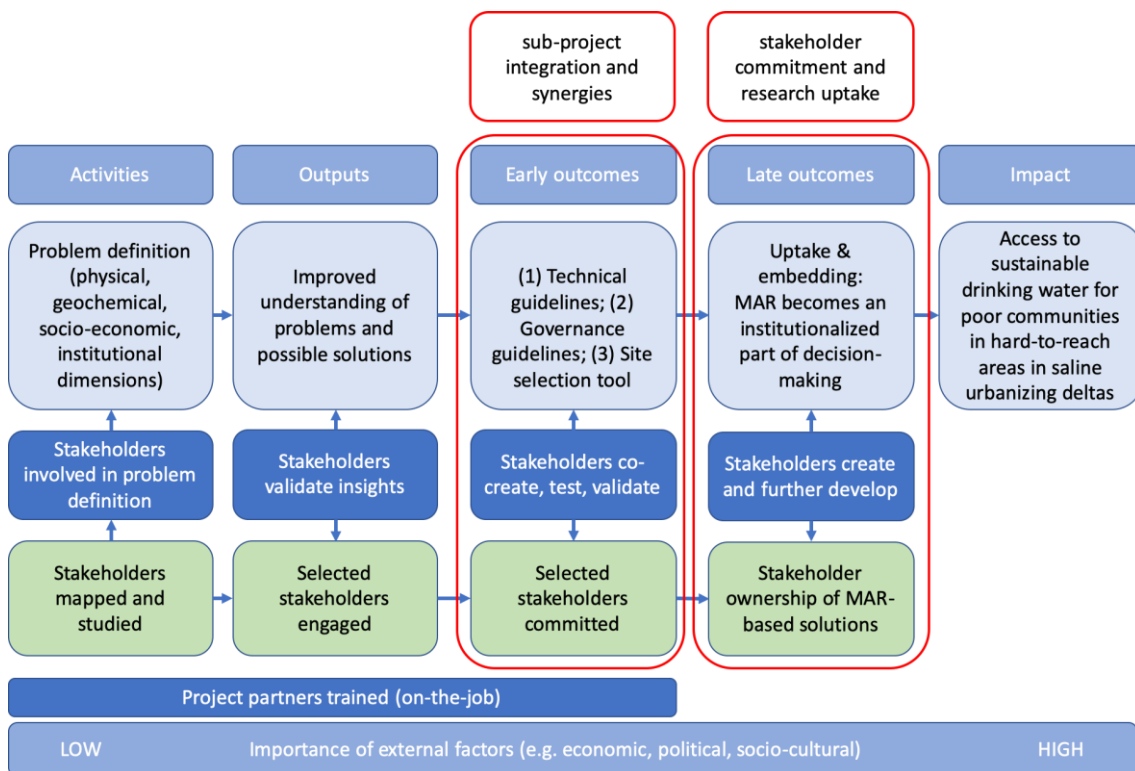
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Introduction

In response to the critical reception of our mid-term review and based to an important extent on the input provided in the workshop led by Jan Joost Kessler of AidEnvironment (The Hague, April 22, 2019), the DeltaMAR core project team engaged in a joint effort to significantly improve the way in which the project's impact pathway strategy is to be conceived of (see figure 1 for a schematic overview). This exercise led to the clear identification of the specifics that need to go into a plan for improvement.

FIGURE 1: IMPROVED IMPACT PATHWAY STRATEGY FOR DELTAMAR

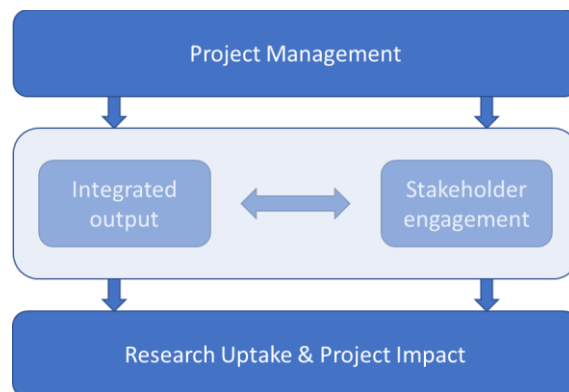


Through stakeholder engagements and the joint efforts of all four PhD candidates, we have so far been able to establish, validate and specify in more detail that – in the eyes of relevant stakeholders – DeltaMAR should be working towards **improving water quality, governance and site selection choices**. We have also realized that finding such solutions requires more integration of sub-projects than realized until now.

Whereas a selected group of stakeholders is currently clearly *engaged*, creating genuine **stakeholder commitment** will require – as pointed out by the reviewers and the Steering Committee – a significantly intensified and improved strategy. The development of early outcomes (i.e. water quality guidelines, governance guidelines and a site selection tool) is behind on schedule and will benefit from more and better **sub-project integration**. The likelihood of actual **research uptake** – i.e. stakeholders feeling and accepting ownership of project outputs and outcomes – will only increase as a result of a considerably improved strategy that focuses more effectively on stakeholder commitment, and on the development and delivery of (early and late) outcomes, based on clever and better sub-project integration. The fact that so far, the project has suffered from sub-optimal performance in this regard, is indicative of the fact that an overhaul of **project management** is needed to achieve our stated goals.

In what follows, we will present how we have fundamentally changed and improved our approach to sub-project integration, stakeholder commitment, research uptake and project management. In spite of the rather linear, point-by-point presentation of all these aspects, they are to be seen as related and interdependent (figure 2).

FIGURE 2: RELATION BETWEEN PROJECT MANAGEMENT., PROJECT INTEGRATION, STAKEHOLDER ENGAGEMENT, RESEARCH UPTAKE AND IMPACT



Sub-project integration & synergies

In full acknowledgement of the validity of the critical remarks in the review report, and in line with our further analysis of deficiencies and opportunities (see introduction, above), we here present the improvements that regards sub-project integration. It reflects the outcome of a series of joint exercises, and consequently, all core project team members are committed to the outcomes here presented. We expect this part of the improvement plan to lead to significantly stronger cooperation and interaction, and subsequently, to the timely delivery of highly relevant integrated project outputs.

Note that the improvements presented in this section of the report only consider the **within-project collaboration and coordination** that is necessary to create integrated outputs. Our plan for improvement regarding the inclusion of stakeholders in the creation of integrated outputs will be presented in section 3, below.

PROJECT OUTPUT INTEGRATION

The *outputs* that are mentioned in figure 1 (above), include the following:

- Water quality guidelines
- Governance guidelines
- Site selection tool

The co-creation of the guidelines is based on a combination of scientific research and stakeholder input.

Table 1 presents an improved specification of the character and extent of the way in which these *outputs* are related and integrated.

TABLE 1: IMPROVED SUB-PROJECT INTEGRATION PLAN

Integrated outputs	Water quality guidelines	Governance guidelines
Water quality guidelines	Recovery efficiency and water quality issues are partly related, e.g. MAR design will influence to what extent the fresh water bubble will mix with non-potable groundwater, and thereby affect recovered water quality	
Governance guidelines	Decision-makers need to know how to produce good quality MAR water efficiently and effectively; MAR	

	governance affects key operational boundary conditions: how much can be infiltrated per day, and how can infiltration be sustained year-round?	
Site selection tool	Site selection needs to consider the impact of natural groundwater dynamics on recovery efficiency; It provides indications for salinity levels in the region which highly determine recovery efficiency; It needs to consider the impact of geology and groundwater dynamics on water quality; It provides indications for background geology which determine water quality.	Site selection needs to consider end-user preferences regarding (e.g.) effort, price and taste, and MAR governance; MAR governance requires decision-makers to know how to select the best possible sites.

STRATEGY FOR ACHIEVING SUB-PROJECT INTEGRATION

In order to better manage the production of the **3 integrated outputs** mentioned above (table 1), we first proceeded to critically advance the specification of the type and nature of **collaborations** between the **4 sub-projects** that are necessary to create the integrated outputs. Table 2 reflects how we jointly proceeded to create more clarity with regard to the specifics of these collaborations between sub-projects.

TABLE 2: COLLABORATION BETWEEN SUB-PROJECT WITH REGARD TO CREATING INTEGRATED OUTPUT

Integrated outputs	SP1: fresh water recovery	SP2: drinking water quality	SP3: MAR governance
SP2: drinking water quality	Risalat (SP2) & Imran (SP1) collaborate on assessing water quantity and quality with SEAWAT modeling; They collaborate on interpretation of the data from the 99 pilot sites to address both water quantity & quality issues		
SP3: MAR governance	Badrul (SP3 & Imran (SP1) collaborate on the estimation MAR capacity given expected demand.	n.a.	
SP4: a priori assessment of MAR	Floris (SP4) and Imran (SP1) collaborate on calculating the recovery efficiencies of the current MAR systems, which are used to verify the MAR site-selection.	Floris (P4) and Risalat (SP2) collaborate on water quality aspects with particular emphasis on Arsenic based on Risalat's water quality analysis.	Floris (SP4) and Badrul (SP3) collaborate on the analysis of the importance of supply/demand issues.

Subsequently, we proceeded to identify in much more detail than before, the **specifics of the data and information** that each of the **4 sub-projects** will contribute to the

creation of the **3 integrated outputs** (table 3). Each sub-project will deliver the main contribution to a particular integrated output (table 3, cells highlighted in grey), but other sub-projects will – to varying extents – contribute the data and/or information that is required to importantly improve the quality and relevance of the respective integrated outputs.

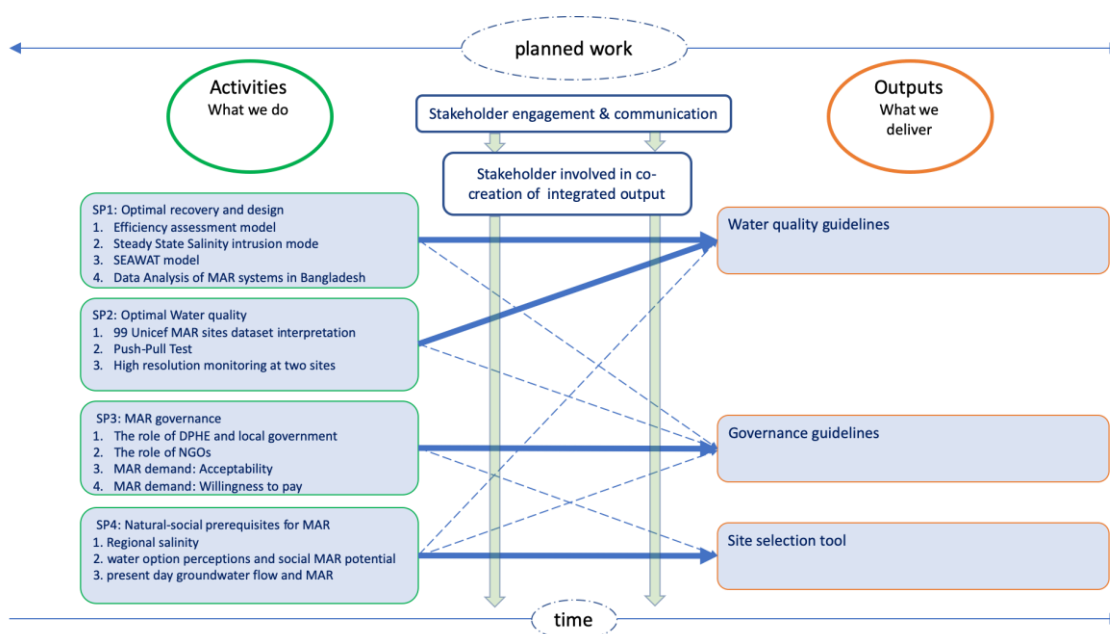
TABLE 3: DELIVERY OF DATA AND INFORMATION FOR THE DEVELOPMENT OF INTEGRATED OUTPUTS

Integrated outputs	SP1: fresh water recovery (Imran Hasan)	SP2: drinking water quality (Risalat Rafiq)	SP3: MAR governance (Badrul Hasan)	SP4: A priori assessment of MAR (Floris Naus)
Water quality guidelines	How to assess the overall recovery efficiency under site-specific conditions; Analysis of recovery efficiency of the 99 pilot sites; 3D variable density groundwater flow and transport model (SEAWAT)	How to assess and improve MAR water quality under site-specific conditions; 3D variable density groundwater flow and transport model (SEAWAT)	How many users can be expected to use MAR – i.e. what must be the capacity of MAR? (i.e. more infiltration could affect recovery positively)	Spatial criteria for the infiltration rate required to reduce density driven flow; Spatial distribution of arsenic and salinity limitations with an impact on water quality
Governance guidelines	How to manage for increased efficiency of MAR (in terms of the recovery efficiency)	How to manage for increased effectiveness of MAR (in terms of water quality)	How to support community mgmt.? How to set up co-mgmt.?	How to determine where feasibility & demand for MAR meet.
Site selection tool	How does site-specific context affect recovery efficiency?	How does site-specific context affect water quality?	How does site-specific context affect demand for MAR?	How to map drinking water threats & opportunities and technical potential of MAR

From our Theory of Change (ToC) it can also be derived how all **4 sub-projects** contribute to the co-creation our **3 integrated outputs** are linked with a variety of stakeholders. Figure 3 zooms in on the part of our ToC that regards the relation between (research) **activities** and **outputs**.



FIGURE 3: FROM ACTIVITIES TO OUTPUTS



ROLES AND RESPONSIBILITIES

In follow-up to the valuable review and the comments we received, we have proceeded to markedly clarify the roles and responsibilities regarding the creation of integrated outputs considerably. Table 4 shows how the main responsibilities with regard to the **supervision** of research, the output-specific **collaboration** between sub-projects, the **coordination** of data and information delivery and the **creation** of the integrated outputs are much more explicitly allocated. Also, it shows how we created considerably more clarity concerning the assignment of co-responsibilities with regard to each integrated output. The allocation of roles and responsibilities is mutually agreed upon – all those named in the table below are committed to their respective roles and responsibilities.

TABLE 4: ROLES AND RESPONSIBILITIES FOR THE CREATION OF INTEGRATED OUTPUTS

Integrated outputs	Main responsibility (name, roles)	Co-responsibility
Water quality guidelines	Boris van Breukelen Daily supervision /co-promoter R. Rafiq (SP2) Lead collaboration with SP 1, 3 and 4 (see table 2) Lead coordination regarding delivery of data and information of SP 1, 3, and 4 (see table 3) Lead creation and delivery of <i>Guidelines for improved water quality</i>	Luuk Rietveld Promotor of R. Rafiq; Kazi Matin Co-promotor of R. Rafiq;
Governance guidelines	Frank van Laerhoven Daily supervision /co-promotor B. Hasan (SP3) Lead collaboration with SPs 1, 2, and 4 (see table 2) Lead coordination regarding delivery of data and information of SPs 1, 2, and 4 (see table 3) Lead creation and delivery of <i>Guidelines for MAR governance</i>	Annelies Zoomers Promotor of B. Hasan; Peter Driessen Promotor of B. Hasan; Shantanu Majumder Co-promotor of B. Hasan;

Site selection tool	<p>Paul Schot Daily supervision/co-promotor F. Naus (SP4) Lead collaboration with SPs 1, 2, and 3 (see table 2) Lead coordination regarding delivery of data and information of SPs 1, 2, and 3 (see table 3) Lead creation and delivery of <i>Site selection tool</i></p>	<p>Jasper Griffioen Promotor of F. Naus; Kazi Matin Co-promotor of F. Naus</p>
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MILESTONES & DELIVERABLES

In recognition of the value of close monitoring, we are committed to update the Steering Committee on our progress, every 3 months. Our first progress report will be due 3 months after the submission of the current report, hence, it will be shared by mid-September 2019. Progress regarding sub-project integration and synergies will be measured by means of the following timeline and deliverables (table 5).

Note: the original end date for DeltaMAR is December 2019. This timeline requires NWO approval for the budget neutral extension of the project end date.

TABLE 5: TIMELINE: MILESTONES & DELIVERABLES

Integrated outputs	September 2019 Pre-alpha Workshops & training session in Khulna	Dec 2019 Alpha	Mar 2020 Beta Workshops & training session in Khulna	Jun 2020 Release Hand-over and project closing event
Water quality guidelines	First starting points available for discussion with stakeholders that regard recommendations for (i) improved recovery and (ii) water quality (i.e. push-pull test results)	Updated version based on further research and the outcomes of the September 2019 workshop results	Updated version based on further research available for stakeholder consultation and testing	Final version available based on further research and the results of stakeholder testing during the March 2020 workshop
Governance guidelines	Draft policy briefs on (i) the role of NGO in community mgmt. of MAR, and (ii) co-production arrangements available for discussion with stakeholders (NGOs, DPHE, Local governments)			
Site selection tool	Draft maps on (i) drinking water risks, and (ii) technical potential of MAR available for discussion with stakeholders			

Stakeholder commitment & research uptake

Fully accepting the value and validity of the critical review of our project with specific regard to our ability to create commitment to MAR among essential stakeholders, the core project team members fundamentally revised its strategy concerning **stakeholder commitment** and consequently, **research uptake**.

PROJECT OUTCOMES & IMPACTS

As can be appreciated from figure 1 (above), we consider the following as our ultimate **late outcome**: MAR becomes an integral and institutionalized part of decision-making that regards drinking water provision in hard-to-reach areas in the saline urbanizing delta of Southwestern Bangladesh. Our approach assumes that when relevant stakeholders become aware of and start using the **integrated project outputs** mentioned above, the **impact** will be that the lives and health of millions will improve considerably through increased access to safe drinking water.

STRATEGY FOR ACHIEVING STAKEHOLDER COMMITMENT

Our strategy for achieving *late outcomes* and *impact* corresponds with the structure and content of figure 1, above, and can be summarized as follows:

- Four PhD researchers carry out *knowledge & research* activities in **4 related sub-projects**. To guarantee that the research is driven by demand, and that the outcomes are relevant, stakeholders have been intimately engaged in the formulation the researchers' respective problem definitions;
- PhD research is functional to the development of **3 integrated outputs** (see section 2, above). Insights obtained from PhD and other research feeds directly into these integrated outputs – i.e. obtaining the inputs and ingredients for the development of the integrated outputs in the primary reason for carrying out the *knowledge & research activities* mentioned above.

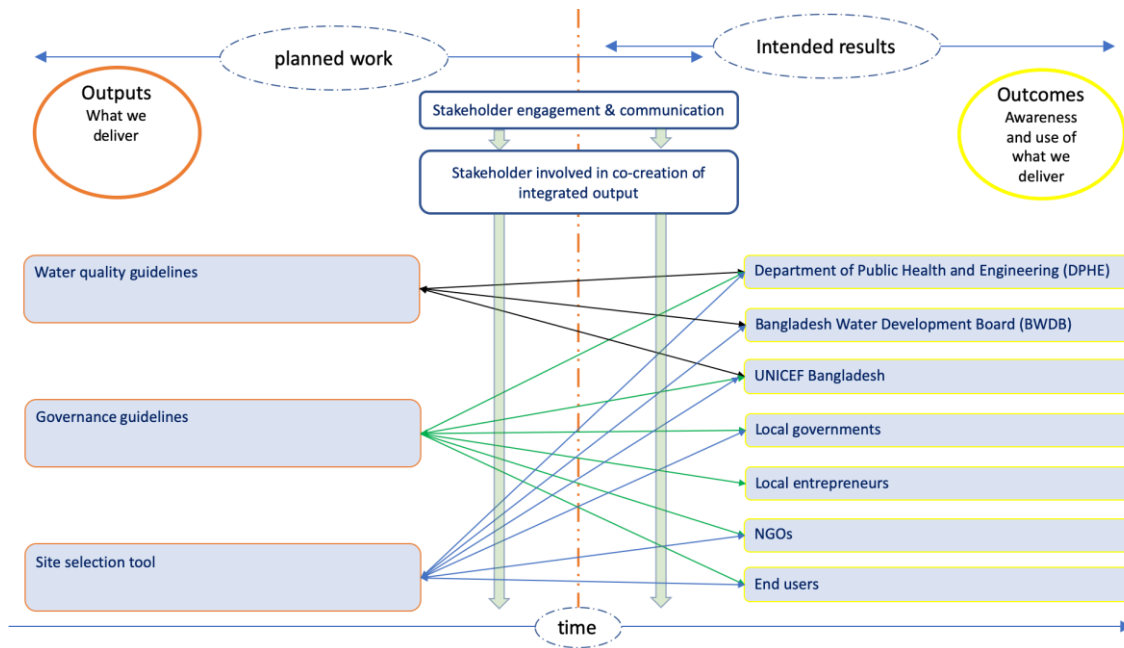
The integrated outputs will be co-created in close cooperation with the stakeholders that we expect to ultimately benefit from and work with the guidelines.

- Stakeholders have already been engaged in the definition and – to varying extents – the carrying out of research the results of which is meant to go into the creation of **pre-alpha versions** of the guidelines. This has led to **stakeholder engagement**.
- Relevant stakeholders will partake in the discussion, testing and validation of the pre-alpha version of the guidelines, in order to provide the input required for the development of **alpha versions** of the integrated output. This is expected to lead to increased **stakeholder commitment**.

- Stakeholders will then discuss, test and validate the beta versions of the integrated outputs, which will allow us to finalize and release the outputs. This is expected to lead to **stakeholder ownership**.

From our Theory of Change (ToC) it can be derived how all **integrated outputs** are linked with a variety of **stakeholders**. Figure 4 zooms in on the part of our ToC that regards the relation between outputs and outcomes.

FIGURE 4: FROM OUTPUTS TO OUTCOMES



In full recognition of the lack of specification, the core project team proceeded to determine in much more details which stakeholders need to be engaged, commit themselves, and ultimately take on ownership of the integrated outputs, why (table 6).

TABLE 6: STAKEHOLDER COMMITMENT: WHO & WHY THEY?

Stakeholders	Who?	Why they?		
		Output 1: Water quality guidelines	Output 2: Governance guidelines	Output 3: Site selection tool
Department of Public Health and Engineering (DPHE)	Mohammad Saifur Rahman, Superintending Engineer, Ground Water Circle, DPHE Bhaban, Kakrail, Dhaka 1000	DPHE has is the agency with formal mandate to provide drinking water in hard-to-reach areas of rural Southwestern Bangladesh. Adding MAR to their portfolio of drinking water options will improve their capacity to fulfill this mandate effectively, efficiently, and sustainably. They have an oversight role with regard to building state-of-the art infrastructure (output 1) at the right spot (output 3), and facilitating equitable, long-enduring (business) models for MAR governance (output 2).		
Bangladesh Water Development Board (BWDB)	Dr. Anwar Zahid, Director, Ground Water Hydrology, BWDB, Hydrology Complex, 72 Green Road, Dhaka-1215	BWDB is the agency responsible for surface water and groundwater management in Bangladesh. In terms of (wo)manpower and data the agency possesses more hydrological capacity than DPHE. BWDB plays a role in the co-creation of the water quality guidelines (output 1) and the site selection tool (output 3). The further development of MAR after the finalization of the DeltaMAR project depends among other things on the commitment of BWDB. BWDB is the project's linking pin with the Bangladesh Delta Plan 2100.		
Unicef Bangladesh	Mr. Kafil Uddin, Head, UNICEF Khulna Regional Office, Sonadanga, Khulna	Unicef Bangladesh has built 99 MAR pilot sites and is interested in the lessons-learned. Project outputs 1, 2, and 3 can be used for possible future engagements with the proliferation of MAR. The outscaling of MAR after the finalization of their pilot project depends on, among other things, Unicef's commitment to the DeltaMAR project integrated outcomes.		
Local Governments	Upazila Parishad Chairmen of the 13 Upazila in Khulna, Satkhira and Bagerhat. Union Parishad Chairmen in 30 unions in the same area.	According to the <i>National Policy for Safe Water Supply and Sanitation</i> , local governments (i.e. Union Parishad and Upazila Parishad) are to be involved in the selection of the sites for community-based drinking water systems. Given the pilot character of the Unicef pilot project, local governments have not yet played this role with regard to MAR. Local governments' engagement with and commitment to especially the site selection tool (output 3) is crucial for MAR success. Given the fact that they are often the closest and most accessible representation of the government, they are important for MAR governance, as well (output 2).		
Local Entrepreneurs	Water Well Drillers, Masons, Hardware Stores and Water Vendors in the project area	In theory, a MAR system can be operated as a commercial enterprise. (Social) entrepreneurship is one of the potential business models worth exploring. For it to take off and succeed, partners willing to consider seizing this opportunity are essential. Their commitment to the development of particular guidelines for this form of governance (output 2) is important.		
NGOs	Shushilon; LoCOS; AOSSED; LEDARS; Jagroto	Bangladesh's <i>National Policy for Safe Water Supply and Sanitation</i> invites support from external actors, including local NGOs, to help communities to solve their drinking water problems. In order to		

	Jubo Shongho (JJS); Mukti Foundation; Gono Milon Foundation	<p>fulfill their roles, NGOs need outputs that will increase their expertise with regard to how to build optimal MAR systems (output 1), where (output 3), and how to help community members governing them (output 2). NGO commitment with regard to all 3 integrated outputs is important.</p> <p>NGOs are considerably more gender-sensitive than many of the other stakeholders listed here. Their engagement and commitment are also particularly important to offset traditional male dominance in the public engineering sector that often leads to a gender bias.</p>
End-users	Institutions, CBOs, User Committees at sites where MAR has been installed by UNICEF /DPHE/DU-MAR project.	<p>Bangladesh's <i>National Policy for Safe Water Supply and Sanitation</i> calls for community participation in the governance of drinking water systems. Community commitment to governing MAR (output 2) and to the just and fair selection of sites (output 3) is crucial.</p> <p>At the household level, drinking water decisions are mostly made by women. However, decisions regarding the drinking water infrastructure – its operation and management – are often made by a majority of men. To counter and solve this gender bias, it is especially important to build commitment among female household members when co-creating guidelines for MAR governance (output 2) and site selection (in order to guarantee safety and comfort) (output 3).</p>

ROLES AND RESPONSIBILITIES

We have proceeded to increase clarity regarding the allocation of roles and responsibilities concerning the implementation of our strategy aimed stakeholder commitment & research uptake (table 7).

TABLE 7: ROLES AND RESPONSIBILITIES STAKEHOLDER COMMITMENT

Name	Roles & Responsibilities
Prof. Dr. Kazi Matin Ahmed	<p>Final responsibility</p> <ul style="list-style-type: none"> Establishing, maintaining, and extend contacts with the relevant stakeholder representatives, logistics and administration of workshop events in September, 2019, March, 2020, and the project closing event in June, 2020; technical capacity building event (September, 2019 and/or March, 2020) <p>Co-responsibility</p> <ul style="list-style-type: none"> Content of workshop events that regard the discussion and testing of the integrated project outputs.
Prof. Dr. Shantanu Majumder	<p>Final responsibility</p> <ul style="list-style-type: none"> Governance capacity building event (September, 2019 and/or March, 2020).
Dr. Boris van Breukelen	<p>Final responsibility</p> <ul style="list-style-type: none"> Content of workshop events that regard the discussion and testing of the <i>Water quality guidelines</i>.
Dr. Frank van Laerhoven	<p>Final responsibility</p> <ul style="list-style-type: none"> Content of workshop events that regard the discussion and testing of the <i>Governance guidelines</i>.

Dr. Paul Schot	Final responsibility <ul style="list-style-type: none"> Content of workshop events that regard the discussion and testing of the <i>Site Selection Tool</i>.
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MILESTONES & DELIVERABLES

Above, we have mentioned the role of stakeholder engagement in guaranteeing that our research activities are ultimately demand driven. We have also explained how their role in the co-creation of integrated outputs will increase the likelihood of stakeholder commitment to said outputs, which in turn will increase the likelihood of then taking on ownership. Table 8 summarizes the formal stakeholder participation and capacity building events that are scheduled to take place between now and the end of the project.

TABLE 8: STAKEHOLDER COMMITMENT: HOW & WHEN

Integrated outputs	Stakeholders	Means
Water quality guidelines	Department of Public Health and Engineering (DPHE); Bangladesh Water Development Board (BWDB); Unicef Bangladesh	<p>September 2019</p> <p><i>Workshops:</i> Stakeholders test and discuss <i>pre-alpha</i> version of the integrated outputs;</p> <p><i>Capacity building event:</i> Targeted trainings will be given to relevant stakeholders on (i) technical and (ii) governance aspects related with MAR.</p>
Governance guidelines	DPHE; Unicef; Local governments; Local entrepreneurs; NGOs; End-Users	<p>March 2020</p> <p><i>Workshops:</i> Stakeholders test and discuss <i>beta version</i> of the integrated outputs;</p> <p><i>Capacity building event:</i> Targeted trainings will be given to relevant stakeholders on (i) technical and (ii) governance aspects related with MAR.</p>
Site selection tool	DPHE; Unicef; Local governments; Local entrepreneurs; NGOs; End-users	<p>June 2020</p> <p>Handover <i>release versions</i> of the integrated outputs in a <i>project closing event</i></p> <p>* For all workshops and training events we will explicitly look for ways to encourage female participation. Part of the content of said events will touch upon gender issues, explicitly.</p>



Project management

In agreement with the observation that so far, project management has not functioned as it should have, and in follow up to the request from the Steering Committee to significantly revise the allocation of management tasks and responsibilities, DeltaMAR has appointed a co-coordinator. Paul Schot will take over a significant part of Frank van Laerhoven's tasks and responsibilities. Frank Biermann will provide professional support to improve the quality of reporting. Professional support with regard to science communication and financial administration will be provided by Utrecht University experts. Table 9 provides the details of how as of now the project is run.

TABLE 9: REALLOCATION OF PROJECT MANAGEMENT TASKS AND RESPONSIBILITIES

	Dr. Frank van Laerhoven	Dr. Paul Schot	Professional support communication and reporting
Monitoring project progress (internal)			
Meetings (staff) (monthly)	Issue agendas and minutes; manage and store meeting outcomes in YODA		
Meetings (PhD students) (monthly)	Monitor meetings (self-organized by PhD students); collect minutes and store them in YODA		
Meetings (all project partners) (every 3 months)	Issue agendas and minutes; manage and store meeting outcomes in YODA		
Monitoring project progress (external)			
NWO-UDW: annual reports		Organize and lead report writing	Professional support on report writing (close reading, editing advice) is provided by Prof. Dr. F. Biermann
NWO-UDW: Final review		Organize and lead report writing	
NWO-UDW: monitoring reports (every 3 months)		Organize and lead report writing	
NWO-UDW: ISAAC		Collect and upload project output	
Project communication			

NWO-UDW: day-to-day communication		Timely response to requests from NWO-UDW	Professional support on science communication using social media, website and other means, is provided GEO Communication & Marketing (T. de Kievith)
Contact and communication with other UDW projects		Initiate and maintain contact with the UDW community (e.g. share project outcomes, request inputs, look for win-wins, etc.)	
Contact and communication with global MAR community		Initiate and maintain contact with the global MAR community (e.g. share project outcomes, request input, etc.)	
Website development & maintenance		Collect, manage and upload content for WordPress website	
Financial administration			
Transaction controls	(Bi)monthly meetings with financial controller at Utrecht University to keep track of income and expenses		Professional support on financial administration is provided by UU Financial Controller (A. Boudarra)
Annual transfers to consortium partners	Organize allocation of annual budgets to consortium partners		
Input to annual & final review reports	Collect and organize budget information for annual & final review reports		
Monitor co-finance obligations	Monitor co-financers' contributions		
Data collection, storage and management			
YourData (YODA) management		Collect, store and manage all project output in YODA (e.g. publications (scientific, professional, popular), guidelines, data, etc.)	Professional support on data management is provided by GEO-ICT (V. Brunst)
Sub-project integration			
Monitor progress regarding integrated outputs	Close monitoring progress on integrated outcomes with those responsible (see table 4) (once per month, minimally)		
Stakeholder commitment			

Stakeholder meetings (September, 2019; March 2020)	Close monitoring and coordination of logistics and content of stakeholder events		
Technical capacity building (September, 2019; March 2020)	Close monitoring and coordination of logistics and content of technical capacity building events		
Governance capacity building (September, 2019; March, 2020)	Close monitoring and coordination of logistics and content of governance capacity building events		

Frank van Laerhoven will double his time investment in DeltaMAR from 0.1 to 0.2 FTE. On average, he will spend 0.1 FTE on project management tasks, while 0.1 FTE is spent on remaining project related issues, i.e. his responsibility concerning the guidelines for MAR governance (see section 2, above), and regarding stakeholder commitment (see section 3, above).

Paul Schot will raise his time investment in DeltaMAR from 0.1 to 0.15 fte. On average, he will spend 0.05 FTE on project management tasks, while 0.1 FTE is spent on remaining project related issues, i.e. his responsibility concerning the site selection tool (see section 2, above), and regarding stakeholder commitment (see section 3, above).

Frank Biermann will spend an average of 4 hours on the close reading and editing of the five external progress reports that will be due before the end of the project (i.e. 20 hours in total).



Conclusion

We are confident that thanks to the changes stipulated, above, we have managed to fix the major flaws that DeltaMAR suffered from, and that stood in the way of project success in the form of research uptake and impact. We thank the reviewers, the Steering Committee, and the UDW program office for their support in identifying the project weaknesses, and for giving us the opportunity to address these.

Appendix: Letter of Support Department of Public Health and Engineering

Government of the People's Republic of Bangladesh
Department of Public Health Engineering
Office of the Superintending Engineer, Groundwater Circle
14 Shaheed Captain Mansur Ali Sarani, DPHE Bhaban (4th Fl), Kakrail, Dhaka-1000

Memo no: 46.03.2600.043/ 2526

Date: 11-06-2019

Letter of support

Dear Dr. Van Laerhoven

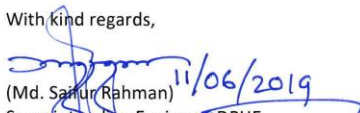
This letter is to transmit our continuing appreciation for the work we have been developing together and will continue to develop further.

DPHE is a public agency in Bangladesh with the official mandate to provide drinking water to the citizens of Bangladesh (except some mega cities) including the areas of hard-to-reach in rural southwestern Bangladesh. Adding Managed Aquifer Recharge (MAR) to our portfolio of drinking water options will improve our capacity to fulfill this mandate effectively, efficiently, and sustainably. DPHE has an oversight role with regard to building state-of-the-art drinking water infrastructure, at locations where demand for and technical feasibility of MAR meet, and facilitating equitable, long-enduring (business) models for MAR governance, preferably based on community management.

The project outputs that we have been working towards to, together, will greatly improve our capacity to play this oversight role. The technical guidelines regarding recovery efficiency and water quality will help us realizing optimal MAR systems, the site selection tools will allow us to ensure that these are built where MAR (rather than any of its alternatives) is in fact the best drinking water option, and the governance guidelines will decrease the risk of drinking water system abandonment and failure.

By means of this support letter we wish to express our ongoing commitment to the project objectives, both during and after the finalization of the project.

With kind regards,


(Md. Saifur Rahman) 11/06/2019
Superintending Engineer, DPHE
Groundwater Circle, Dhaka