

A Voluntary Survey to Identify Priorities for IAH MAR for Development Working Group
An activity associated with the ISMAR9, Mexico City, June 20-24, 2016
Yan Zheng, Chair, IAH MAR for Development Working Group

About you:

Name and email (optional)

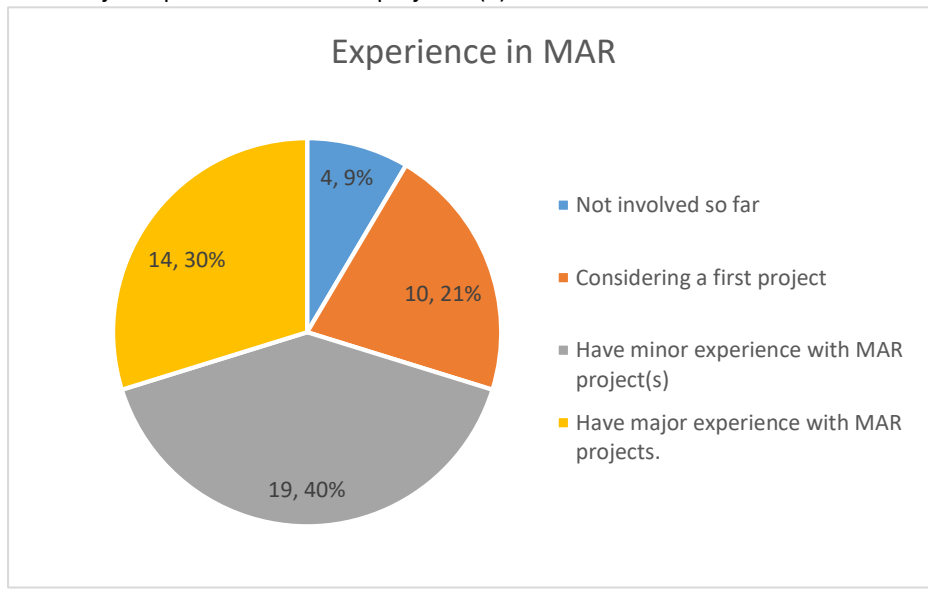
Organisation (optional)

CountryBangladesh.....

No individuals will be identified in presenting survey results.

1. Experience in MAR (circle most relevant number):

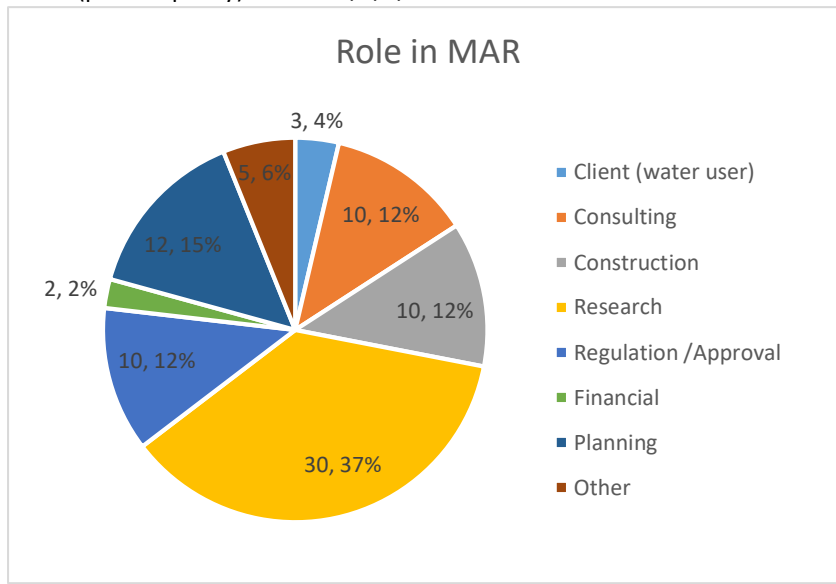
- 1 Not involved so far (go to Q6)
- 2 Considering a first project
- 3 Have minor experience with MAR project(s)
- 4 Have major experience with MAR projects. (4)



2. Your role in MAR (circle number for any relevant, and underline dominant one)

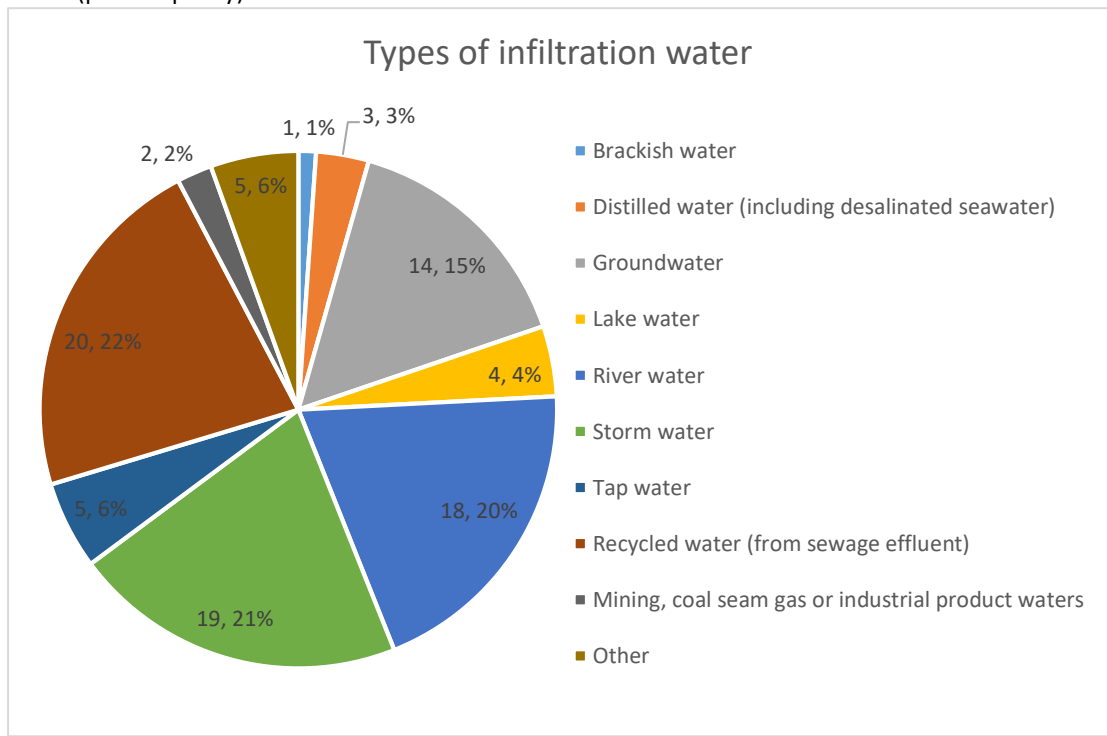
- 1 Client (water user)
- 2 Consulting
- 3 Construction
- 4 Research
- 5 Regulation /Approval
- 6 Financial
- 7 Planning

8 Other (please specify).....3/5/6/7.....



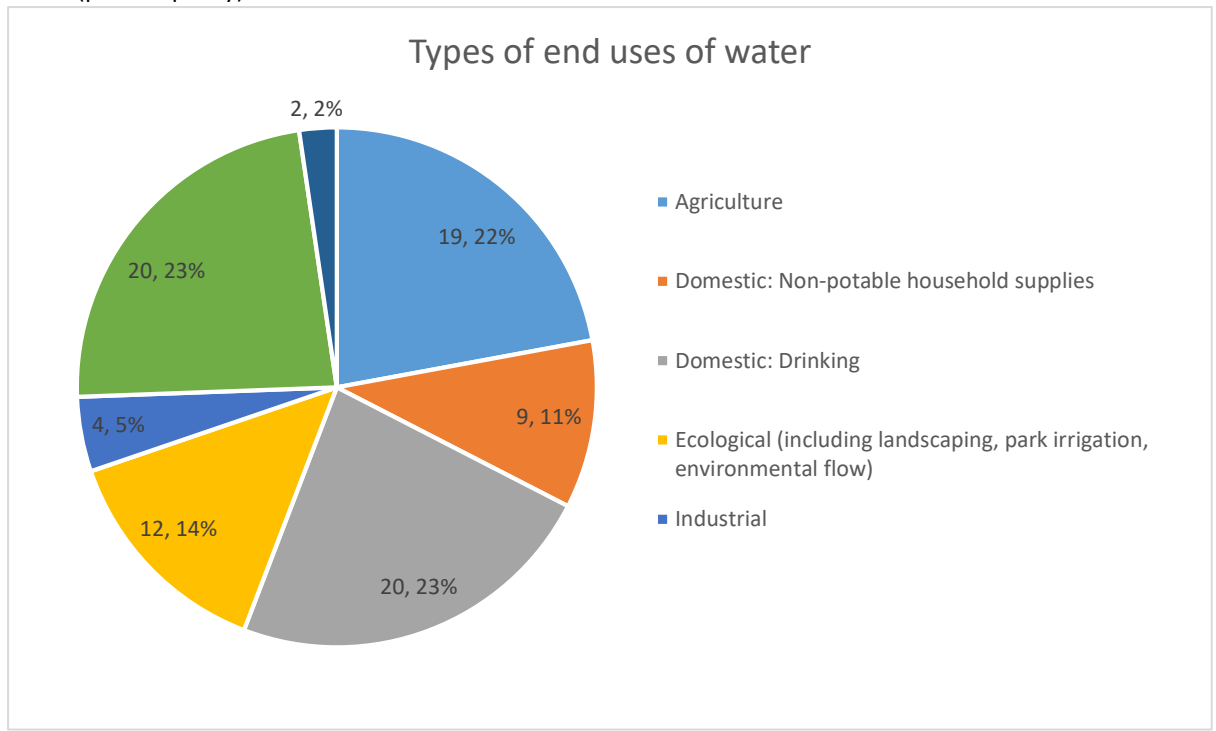
3. Types of infiltration water used in your MAR project(s) (circle number for any relevant, and underline dominant one)

- 1 Brackish water
- 2 Distilled water (including desalinated seawater)
- 3 Groundwater
- 4 Lake water
- 5 River water
- 6 Storm water
- 7 Tap water
- 8 Recycled water (from sewage effluent)
- 9 Mining, coal seam gas or industrial product waters
- 10 Other (please specify).....4 and Rain.....



4. Types of end uses of water in your MAR project(s) (circle number for any relevant, and underline dominant one)

- 1 Agriculture
- 2 Domestic: Non-potable household supplies
- 3 **Domestic: Drinking (3)**
- 4 Ecological (including landscaping, park irrigation, environmental flow)
- 5 Industrial
- 6 **Aquifer management (including saline intrusion barrier, storage for drought and emergency supplies)**
- 7 Other (please specify).....

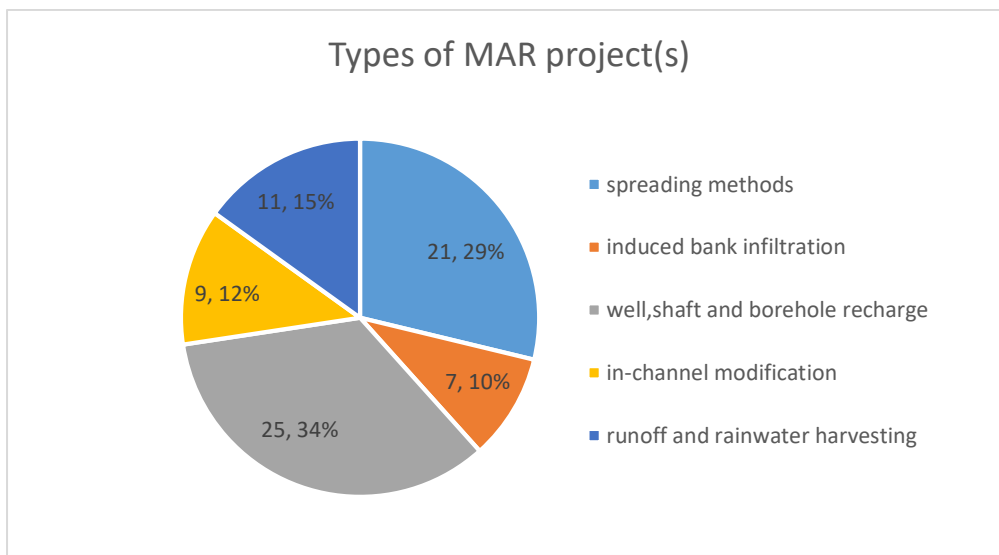


5. Types of MAR project(s) (circle within the table for any relevant, and underline dominant one)

Deep well injection; rooftop rainwater harvesting

	MAIN MAR TYPE	SPECIFIC MAR TYPE
TECHNIQUES REFERRING PRIMARILY TO GETTING WATER INFILTRATED	Spreading methods	Infiltration ponds & basins
		Flooding
		Ditch and furrow
		Excess irrigation
		Reverse drainage method
	Induced bank infiltration	
	Well, shaft and borehole recharge	Deep well injection
Dug well/ shaft/ pit injection		
TECHNIQUES REFERRING PRIMARILY TO INTERCEPTING THE WATER	In-channel modifications	Recharge dams
		Subsurface dams
		Sand dams
		Channel spreading
		Barriers and bunds
	Runoff and rainwater harvesting	Trenches
Rooftop rainwater harvesting		

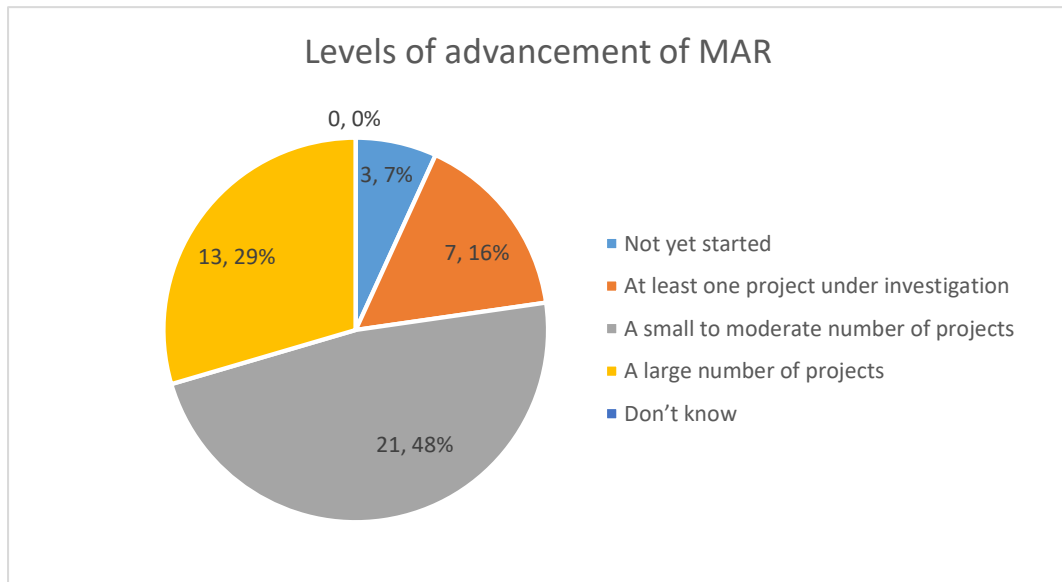
About your country (If reporting a location in a country, enter province/state: Khulna Division):



6. Describe the level of advancement of MAR in your country (please circle one number).

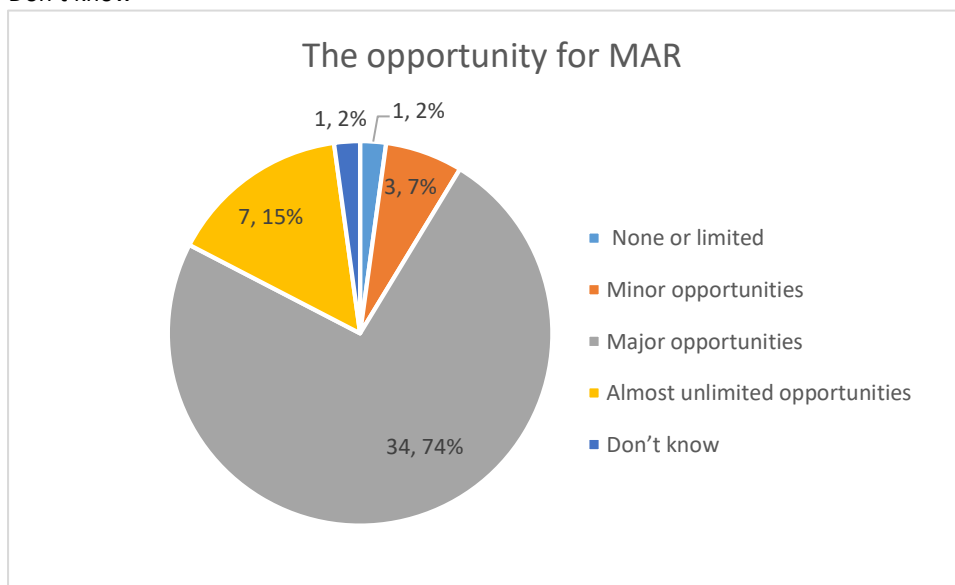
- 1 Not yet started
- 2 At least one project under investigation
- 3 A small to moderate number of projects**
- 4 A large number of projects

5 Don't know



7. Describe the opportunity for MAR in your country (please circle one number).

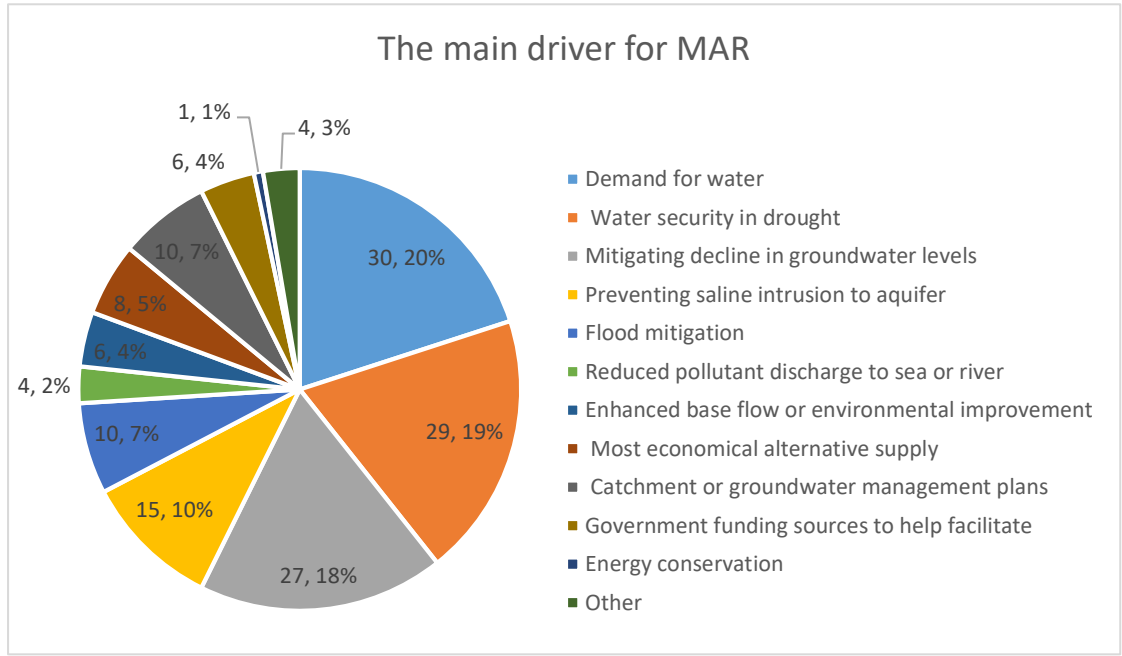
- 1 None or limited
- 2 Minor opportunities
- 3 Major opportunities**
- 4 Almost unlimited opportunities
- 5 Don't know



8. What is the main driver for MAR in your country (circle number for any relevant, and underline dominant one)

- 1 Demand for water
- 2 Water security in drought
- 3 Mitigating decline in groundwater levels
- 4 Preventing saline intrusion to aquifer**
- 5 Flood mitigation
- 6 Reduced pollutant discharge to sea or river
- 7 Enhanced base flow or environmental improvement
- 8 Most economical alternative supply
- 9 Catchment or groundwater management plans
- 10 Government funding sources to help facilitate

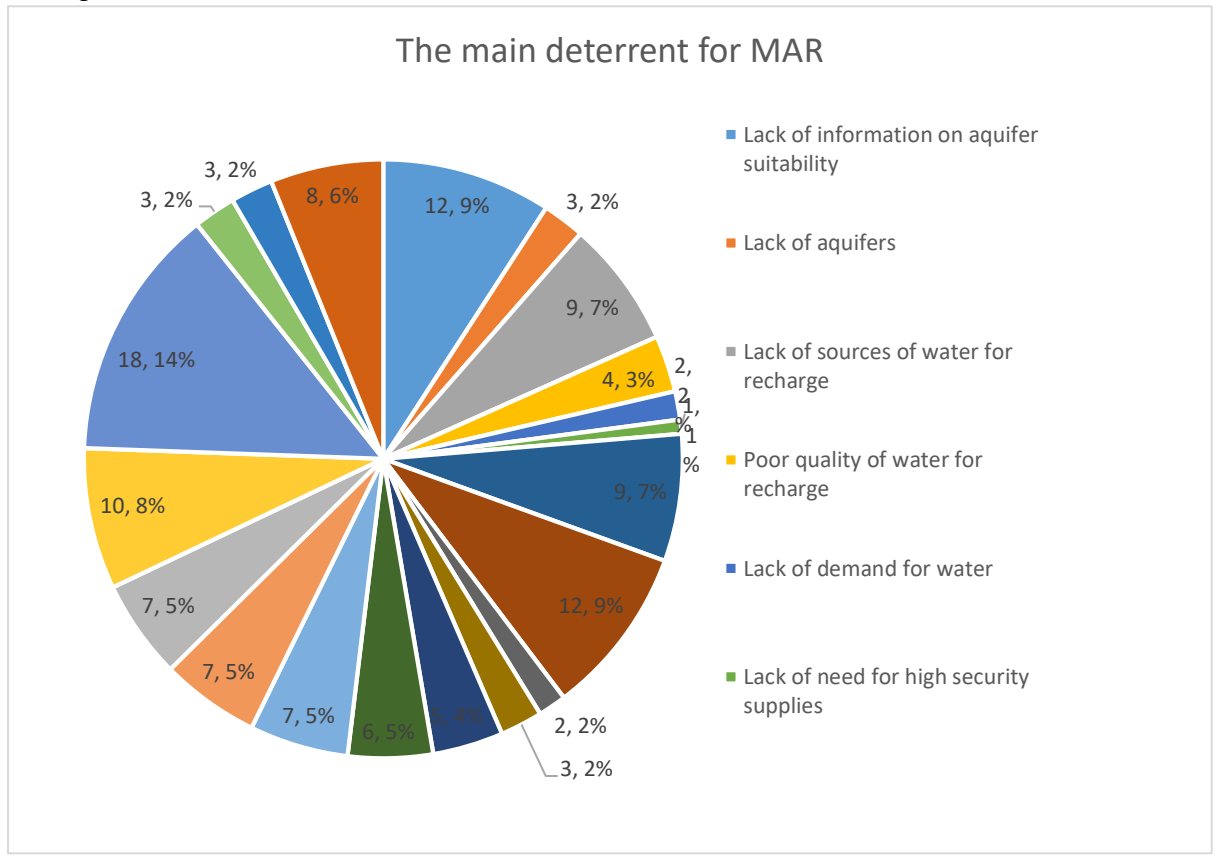
- 11 Energy conservation
- 12 Other (please specify).....



9. What is the main deterrent for MAR in your country (circle number for any relevant, and underline dominant one)

- 1 Lack of information on aquifer suitability
- 2 Lack of aquifers
- 3 Lack of sources of water for recharge**
- 4 Poor quality of water for recharge
- 5 Lack of demand for water
- 6 Lack of need for high security supplies
- 7 Lack of confidence that it will work**
- 8 Unknown ability to recover stored water
- 9 Lack of secure entitlements to source water
- 10 Lack of secure entitlements to recover water
- 11 Lack of definition of water quality requirements for health and environmental protection
- 12 Onerous water quality requirements for health and environmental protection
- 13 Lack of suitable land for building MAR projects
- 14 Lack of overarching catchment or groundwater management plan
- 15 Lack of public confidence in MAR
- 16 Lack of funding mechanisms
- 17 Lack of institutional coordination**
- 18 Too difficult- too much red tape
- 19 Lack of access to skills

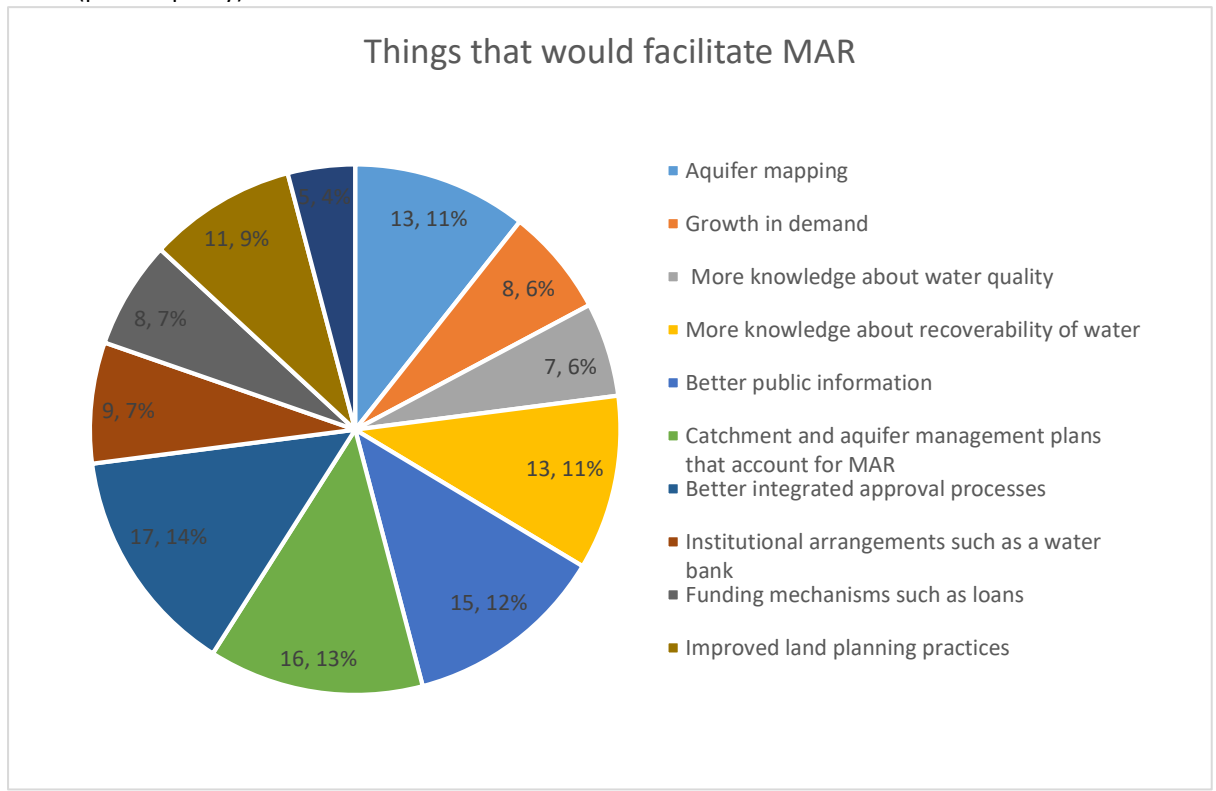
20 Other (please specify)Cost recovery and operation and maintenance funding.....



10. What are the three most important things that would facilitate MAR in your country? (Circle number for any relevant, and underline dominant one)

- 1 Aquifer mapping
- 2 Growth in demand**
- 3 More knowledge about water quality
- 4 More knowledge about recoverability of water
- 5 Better public information**
- 6 Catchment and aquifer management plans that account for MAR**
- 7 Better integrated approval processes
- 8 Institutional arrangements such as a water bank
- 9 Funding mechanisms such as loans
- 10 Improved land planning practices

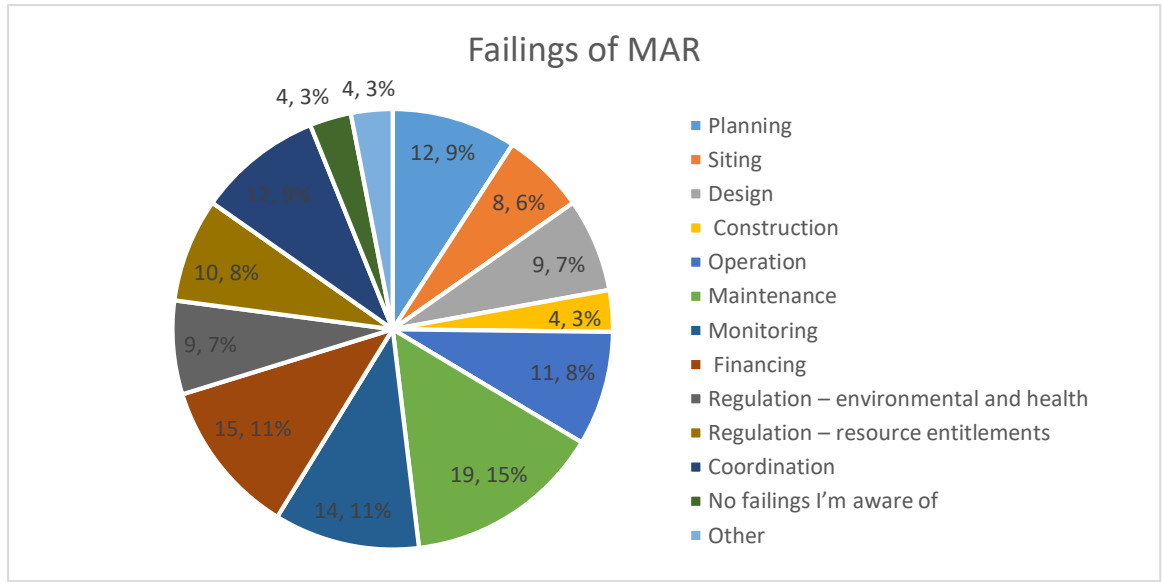
11 Other (please specify)



11. What are the failings of MAR in your country? (Circle number for any relevant, and underline dominant one)

- 1 Planning
- 2 Siting
- 3 Design
- 4 Construction
- 5 Operation
- 6 Maintenance**
- 7 Monitoring
- 8 Financing
- 9 Regulation – environmental and health**
- 10 Regulation – resource entitlements
- 11 Coordination
- 12 No failings I'm aware of

13 Other (please specify)



12. Which organisation(s) do you believe is the lead authority in your country with whom to propose any new managed aquifer recharge project? Expand on their roles if multiple organizations are involved.

Department of Public Health Engineering (Ministry of Local Government and Rural Development):

Drinking water supplies

Ministry of Environment and Forestry (MAR as a climate change adaptation and disaster resilient technology)

13. List up to three regions or aquifers in your country do you believe new managed aquifer recharge project can bring large economic and ecological benefits? Briefly explain.

1. Upper aquifer or composite aquifer
2. Main aquifer
3. Deep aquifer (has been overexploited by Dhaka urban water supply)

Your say and help:

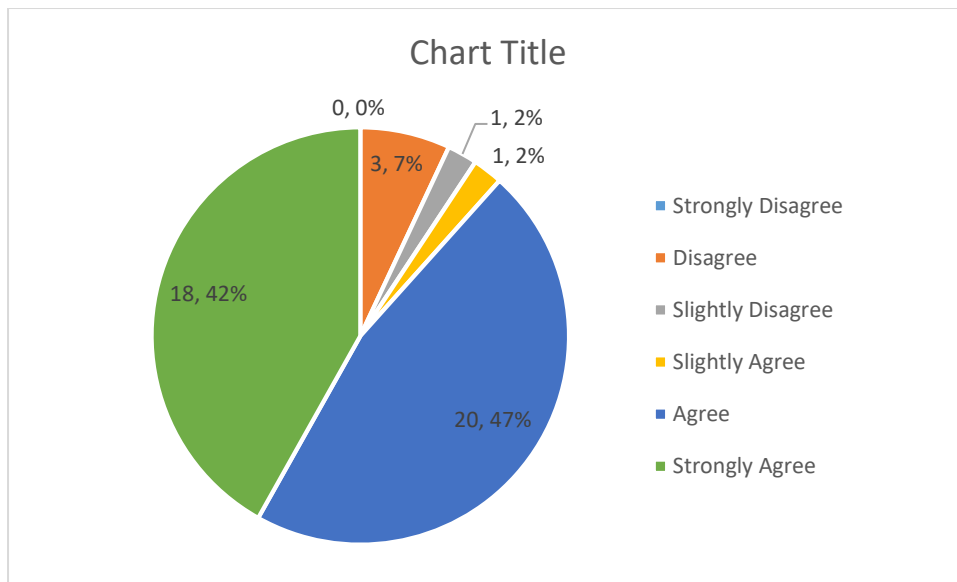
14. What should the priority of the IAH MAR for Development Working Group be?

Generating and disseminating evidence of successful implementation of various types of MAR projects with different objectives

Facilitating South to South Cooperation around Managed Aquifer Recharge

15. Decision makers, especially those in low and middle income countries, are generally unaware of MAR, let alone the economic and ecological benefits of MAR, resulting in a lack of enthusiasm in including MAR as part of the water resources management portfolio. Dissemination of selected successful MAR projects in all countries may help. However, the metrics for measuring success MAR project are not well defined and could vary. To what extent you agree that the IAH MAR for Development Working Group should work on developing such metrics to help identify successful MAR projects in low, middle and high income countries? Circle only one of the 6 options below for your answer:

- | | | |
|-----------------------|----------|-------------------|
| Strongly Disagree | Disagree | Slightly Disagree |
| <u>Strongly Agree</u> | Agree | Slightly Agree |



16. In your view what indicators should the metrics for measuring success of a MAR project use?

1. post project sustainability
2. Water quality
3. percentage recovery
4. per capita cost (if domestic)
5. Planned versus actual cost
- 6 Degree of . Institutionalisation
7. achieved outcome/output versus planned outcome/output (drinking water, rise in groundwater level)

17. Are there any issues not addressed by this survey that you think are important in the context of MAR for Development?

Findings in relation to operation and maintenance requirements and behaviour change communication to facilitate adoption of technology

13. Are you willing to be involved in the IAH MAR for Development Working Group?

Yes /No (Yes)

