SHIFTING GROUNDS INTERNATIONAL WORKSHOP 2017

Shifting Grounds: Institutional transformation, enhancing knowledge and capacity to manage groundwater security in peri-urban Ganges delta systems

International Workshop with Project Advisory Group, Key Experts and Project Team
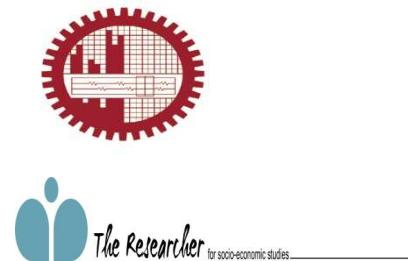
Date: Monday 6 February 2017

Venue: IWFM, BUET, Dhaka, Bangladesh

1 INTRODUCTION AND PROJECT OVERVIEW

1.1 PURPOSE, AGENDA AND PARTICIPANTS

Opening and welcome by chair of the Project Advisory Group professor Wil Thissen and meeting host professor Mashfiqus Salehin, Director of BUET-IWFM. The workshop brings together international members of the Shifting Grounds project advisory group, team members as well as invited experts and researchers from other Bangladesh-based projects under the Urbanizing Deltas of the World programme.

Purpose of the workshop:
- Share mid-term findings and discuss way forward for remaining two project years
- Quality feedback for project team on how to continue
- Information, new insights, for participants, useful to their own fields of work
- Face-to-face discussion and exchange of views between guests from India and from Bangladesh, especially/including members of the Project Advisory Group
- Contacts (remain) activated to enable government and expert involvement in project

This introduction was followed by a overview of the workshop agenda and a short round of introductions of participants. Agenda and list of participants are provided in the Annex.

1.2 OVERALL PROJECT SET UP AND GOALS, CURRENT STATUS AND MTR RESULTS

Short overview of project status, progress and plans by Leon Hermans, project leader.

Key points:
- Workshop ties into the recent MTR so it is an opportunity to reflect on the process thus far, and strategize for the remainder of the shifting grounds project
- Short overview of four villages. Negotiated Approach focuses on two peri-urban villages: Hogladanga (Khulna) and Tihuria (Kolkata). Research covers these villages also, plus two additional villages: Matumdanga (Khulna) and Bodai (Kolkata). Different issues and situations in different villages, not just between India and Bangladesh, but also between villages in same country. Drinking water is a main concern for the communities in the villages covered in the Negotiated Approach (NA).
- Project aim: Improve the management of shared groundwater resources through rules of the game supported through analysis of the institutional, geohydrological and socio-economic aspects of the system. Support community capacity to engage in negotiations and dialogue
- Integration between the different project component is the focus at this stage of the project, while maintaining balance between project ambitions and budget constraints. Focused research are restricted to a 4 year time scale but local communities have a much larger range of issues to address. Also, in the next stage of NA is to link local communities with official government system.

2   RESEARCH ACTIVITIES

2.1   INTRODUCTION

Research is a key pillar of Shifting Grounds, with two PhD students and a Postdoc researcher investigating the interrelated aspects of physical groundwater systems, socio-economic conditions and formal and informal institutions in peri-urban groundwater management. Each researcher presented progress and recent findings, to start of a discussion about ensuring useful research output in the next phase of the project, integration with other project components and concerns and risk management for research success.

2.2   SOCIO-ECONOMIC RESEARCH

Presentation of Socio-economic research by Poulomi Banerjee (Postdoc SaciWATERs)
PAG Discussants: Dr. Priya Sangameswaran, Dr. Sultan Ahmed

2.2.1   KEY POINTS IN PRESENTATION

- Presentation of first survey results (for four villages) after initial preliminary analysis, and approach for further qualitative and qualitative analysis of results. See slides in Annex.
- Focus is on how access to groundwater resources affect the livelihood choices within peri-urban communities
- Groundwater quality issues more severe than quantity issues
- Role of gender is captured through gender dynamic survey questions. Caste/Class so far is not found to play a significant role. Political association explores the use of networks in accessing water. (Through household survey)
- Some more specific insights (preliminary, subject to further analysis):
    - Bodai: Analyzing this based on religion, bottled water is the primary source for Hindus during peak season while Muslims rely on public water supply or handpumps. Comparisons across land holding size: Bottled water for the landless is the main source in both peak and lean season. Need to explore if this population is excluded from water supply.
    - Thiuria: Different water bottling companies present. Peak season bottled water dependency decreases for landless households as the number of options are better during this season with more competitive prices for water supply.
    - Groundwater irrigation in Tihuria is utilized as additional source for aquaculture. In Khulna villages there is also strong dependence on groundwater for aquaculture.
    - Striking increase in number of groundwater pumping hours in Tihuria as well as Matumdanga over last five years (self-reported, so care needed about validity).

2.2.2   DISCUSSION:

- More clarity needed on used terms and concept, especially in relation to water uses and sources. Surface versus groundwater, drinking and irrigation. Private or public.
- Consider groundwater quality aspects in the main research objectives. Also consider how groundwater or surface water is polluted and households' reactions to this. Considering the land use, deforestation, pollution pressure on peri-urban areas, we need to study the impact on groundwater quality.
- Could seasonal differences in bottled water market be explained from higher urban demand, from city areas, in lean season? How local/regional is this activity, and what water flows out of the peri-urban to the urban consumers?

- What motivated industries in Bodai from locations in Kolkata and elsewhere in India to settle now in peri-urban areas? Were there (water) resource availability considerations?
- Data on cost/ profitability of livelihood sectors that could help explain the choices between different sources of water.
- How political affiliations affect groundwater use - do the observations show that this increases political corruption leading to undue advantages over other people?
- In Noth 24 Parganas, the groundwater dependency is high, but it is an area that is highly arsenic, how does it affect the village?
- Critical point regarding bottled water use that is higher in peak season in Bodai than the lean season- Advised to visit the data in a deeper way by taking into account sampling data size?
- Survey of groundwater resources status shows perception. Also look into groundwater level data and quality data.
- Peak season dependency by hindu/muslims could be linked to economic status as muslims are mostly agriculture based compared to hindus. Explore why groundwater use (pumping for irrigation) is increasing in general.
- Is it really either or surface or groundwater? May be both. Is the case, but relatively; primary and secondary source.
- There is an initiative through the project to do community arsenic testing in the villages in Kolkata.
- Arsenic contamination is due to fractured aquifer (In Kolkata North 24 it's an issue in the shallow aquifer, in South 24 its affecting deep aquifer).
- Wastewater quality is not perceived as the problem for farmers in peri-urban Kolkata. However, wastewater quality has changed from 30-40 years ago, due to different waste coming from city in recent year. Now in entering into the food-chain more directly through fish cultivation is creating a health problem. The fish grown in these ponds is even banded in India, and people in Bangladesh don't eat it anymore. But there is a market and people still transferring from paddy to this fish cultivation.

2.2.3 SUMMARY OF KEY POINTS RAISED
- **Clarity on terms** and on numbers behind results. More distinction needed and more clarity on definitions
- Triangulation / cross-validation of survey outcomes, which capture **perceptions**, with monitoring groundwater level, with some official (quality) **data** and **quality tests** in both villages.
- Add quality dimension in main framing of research. (And not only rely on community perceptions there either).
- Explanation of results: further discussion with villagers (not only government officials SWID and PHE), but also looking in data for other variables and linkages/correlations.

2.3 INSTITUTIONAL RESEARCH

Institutional research by Sharlene Gomes (PhD researcher TU Delft)
PAG Discussant: Dr. Mustafa Alam (Dhaka University).

2.3.1 KEY POINTS PRESENTED:
- Research planned around three key stages: institutional change analysis, game theory modelling and a learning intervention, possibly through use of a simulation game. Now entering into stage of learning intervention design – for which preferred modes of learning of community representatives need to be assessed prior to deciding on form (game or other)

- Institutional analysis done for key issues related to drinking water access and groundwater access for livelihoods in Khulna villages; results captured in using Institutional Analysis and Development (IAD) framework and game trees.
- Earlier suggestions raised by PAG and how these were taken up: e.g.
    - o Institutional plurality and formal/informal institutions: both taken into account, as rules, selection based on relevance (rules-in-use) in action arenas for specific issues (e.g., drinking water access)
    - o Relevance of government-level decisions for peri-urban communities: inclusion of different institutional levels in the analysis, following IAD (mostly operational and collective choice levels).
    - o Community involvement first on role groundwater in livelihoods, before discussing rules and regulations: reflected in order of NA plans .

2.3.2 DISCUSSION

- Look also at agriculture, and agriculture and drinking water together. Now mainly drinking water.
- Plurality and overlapping institutions: How do government groups, initiated by different institutions, overlap with each other and these other local level institutions? Rural and urban institutions. Maybe you talk about local government institutions, which are not necessarily rural in nature. Where does dichotomy work, where does it work, permeability between the two, locally?
- Capacity building objectives and stakeholder engagement through Negotiated Approach:
    - o Better understanding of the institutional component. Existing situation, to think of these situations as a game, and their strategies and outcomes. At local level. And also more insights in higher government level, because that is the part they are somewhat isolated from.
    - o Explore what can result from different institutional set-ups and works for them in terms of outcomes and payoffs. "If I change this rule, how would my situation change?"
- Simulation: More as serious game than simulation. Need to now figure out what is community's preferred way of learning. Stories, role playing, perhaps more than game.
- Game theory models static picture, but games are played indefinitely; how to incorporate first experiences in future strategies of the game. Yet to figure out.
- Values you assign to certain choices, will take as given certain factors, such as livelihoods currently practiced and seen as feasible, or likelihood to get a permit. If that would be more transparent, you could also think about where and how to change some of them; Values (payoffs) of actors in models now simply based on estimates based indirectly on interviews with key actors. Next step is to do something more based on values. Each player: if your objective is to meet household daily needs, what is important? Time, costs willingness to pay,…? To get some more weighted payoff value and see over time how these values might change.
- Institutions: not so much conceptualized here as organizations, but as (formal and informal) rules. Not only drinking water, but also other issues in other areas, including irrigation.
- Use of transaction cost notion? Some work on this in institutional change papers for informal and formal strategies, looking at resources needed to change formal rules.
- More differentiation in formal institutions can be made, with official policy as stated intent of governments, budgets as actual intent, and local level ordinances as implementation intent and how at ground-level implementation is perceived by local community. Budgets are missing, as well as local ordinances. This is restricted by government websites, English translation and availability; local government ordinances aren't necessarily available at the offices. Trying to figure out a way around it.
- Future scenarios around groundwater to be included in future scenario discussions.

- Recently established Economic Industrial Zones, one is in Bothiagata Khulna area, may be sooner effected than Khulna Master Plan, and thus have more immediate impact.
- Formal and informal institutions links: there often is a formal set up but informal rules are used for gap in formal rules, or when formal rules not working for local actors, from functional perspective for local communities.
- Private sector: tube well owners sell water to farmers. May be explored in more detail in upcoming field visit.
- In Khulna area, also many NGOs are involved in drinking water supply and selling water and also public sector. Public ponds managed by the community now installed by government. How will peri-urban arrangements respond to these changes in water supply?
- Query into local DPHE Licensing process: WATSAN committees exist to support drinking water supply at local level. Committees include members DPHE, Unions, and other Govt departments. Applications and norms for allocation are there (spacing, demands, groundwater status in applicant;s area), but not enough licenses to go around in sub-district.

2.3.3 SUMMARY OF KEY POINTS RAISED

- Pay attention to the larger picture, against which the more specific games are being played. Completeness of analysis and diagrams, clarification of choices in setting boundaries for analysis and limitations thereof.
- Future scenarios: different issues and developments to consider were suggested.
- Actors considerations and payoffs in games are still fairly rudimentary
- Discussion was held on how to link to capacity building of this work and the learning intervention
- How to deal with repeated games rather than static snapshot models?

2.4 GROUNDWATER RESEARCH

Presentation of Groundwater research by Rezaul Hasan (PhD researcher BUET)
PAG Discussant: Dr. Saiful Alam (WARPO)

2.4.1 KEY POINTS PRESENTED:

- Sanchibunia Mouza consisting of 5 villages selected as the case study locations in peri-urban Khulna. It is 5-6 km from Khulna city and is currently under peri-urbanization process.
- Census data on population change (last ten years)
- Industries have started since 2003. Five different industrial areas found in the mouza
- Master plan (2001) and detail area plan (2015) but urbanization is not in line with these plans
- Changing demand for groundwater for irrigation purpose change from 13,5% to 65.5% and surface water use decreased from 8.5% to 34.5%
- DPHE has installed 11 tube wells of between 225-270m. Many tube wells installed privately for drinking water purposes.
- Changing water demand in the last 10 years
- DPHE (2015) declining groundwater situation. Sanchibunia mouza in Jamla union is showing declining groundwater trend (Khulna).
- Pre-monsoon data from SWID shows declining groundwater level in many parts of North and South 24 Parganas, although well depth is unknown (Kolkata).
- MODFLOW-SEAWAT course model developed- needs to be further refined. River aquifer interaction explicitly considered

- Regional model shows GW to be declining in Khulna but finer scale model using local level groundwater data is needed
- Field investigation for salinity monitoring in 14 existing drinking water tube wells at 1-4 meters below surface during post model level

2.4.2 DISCUSSION
- What is the water depth for these diff aquifer levels (shallow, middle deep level aquifer)?
- How EEZ, economic zones for future land use will change groundwater system?
- Consideration of deltaic process (exchanges in GW flow, historical analysis). Consider the deltaic formation processes which are very diff between Kolkata and Khulna side.
- Site selection was not based on this hydrological study.
- Besides water quality/ table analysis we also need to analyse safe yield from hydraulic conditions. Analysing variability could be important given the regional level impacts/ change. Suggested going for water budget analysis- ground, surface and rainwater demand (including environmental demand). This can be used to develop water allocation plan.
- Aquifer analysis is needed to see if there are suitable aquifers, pockets of aquifers in terms of safe yield. However, this is different from regional scale modelling, which usually starts with conceptual model of layers. When you do a local scale model you can introduce more complexities in model. This should be the ultimate outcome of this work.
- How you define the area in which you collect the data? What is the relationships between this level of hydrological data and level of analysis in socio-economic and institutional research? (peri-urban boundary vs aquifer boundary). Scale issue between supply and demand. Aquifer conditions cannot be taken as an administrative conditions like the other research components.
- Models for Sanchibunia mouza will be complemented by study of deltaic processes at a macro scale. Scenario development will consider inputs from institutional and socio-economic changes.
- Quality : in Khulna not so much arsenic, but needs to be included there in Bothiagata. Salinity problems seem not to be perceived as an issue by community based on survey, but this may change in future. That is what simulations should help assess. Already simulating for baseline.
- Long term deltaic processes over 1000s of years needs to be examined. Expected to see some lithological differences between Kolkata and Khulna from this, but not possible to study origin of groundwater. Macro level data imp but mostly based on secondary sources. Major challenge is water demand/ extraction that can be incorporated into smaller scale model. Regional scale conceptual models possible but not so useful for aquifer realities or changes locally. Village level model not possible, but an aquifer analysis is needed for the micro scale complexities. Timescales for EEZ and Khulna city piped supply needs to be considered.

2.4.3 SUMMARY OF KEY ISSUES DISCUSSED
- Scale issues, and linkages across scales and water sources and pressures.
- Boundaries of study (time, location, groundwater vs surface, supply and demand components) and of other studies.
- Both groundwater quantity and quality need to be analysed. Locally, need for assessment of aquifer safe yields based on hydraulic conditions as final outcome of study.
- It all needs to be part of a larger picture, in addition to the local level specific issues being analysed.
- How/now to start linking the findings through the larger frameworks used in each of the three studies.

3 NEGOTIATED APPROACH (NA).

Presentations by Leon Hermans (replacing Remi Kempers), ATM Zakir Hossain, Partha Sarathi Banerjee.
PAG Discussants: Mr. Jayanta Basu (The Telegraph, Kolkata) and Prof Mustafa Alam (Dhaka University)

3.1 INTRODUCTION TO NEGOTIATED APPROACH

Short introduction to role of the Negotiated Approach (NA) in Shifting Grounds by project leader Leon Hermans (TU Delft), replacing Remi Kempers, NA coordinator Both ENDS.

- NA grew out of the need for community driven NRM and need for capacity building in this regard
- Developed by several organizations of which Both Ends, Prof Alam, Prof Paranjpye were also involved
- Link local grass-root community with official government policy making worlds
- In our Shifting grounds project we began with bottom up perspective but now we aim to link it to the government processes
- NA is iterative process, generally involving stages of bonding and awareness creation among village communities, capacity development and knowledge exchange with community on technicalities of the problems they face, e.g. groundwater systems and their operations and official rules in both lay mans and official language to enable them to talk with other experts in those fields, and to establish connections between local communities and government circles, whereby government officials can benefit from and recognize the value of the knowledge available of local resources (management) with the communities

3.2 NA RESULTS FROM KHULNA

Results from the NA process initiated in Khulna were shared by ATM Zakir Hossain, Director of JJS, the NGO partner in Shifting Grounds coordinating activities in Khulna.

- NA implemented since 2 years with the help of Prof. Vijay Paranjpye from India who has experience in implementation of this approach
- It is not just focused on participation but also empowering communities to engage in the planning process
- Background:
    o Hogladanga is 5km away from Khulna city nearby Khulna Sathkira highway
    o 189 households, 43% of population settled in the last 10 years
    o Agriculture is main livelihood source but source of irrigation has changed over time
    o 17% of households engaged in fish farming
    o Safe water sources: 97% use groundwater for drinking and household use compared to 6% before 10 years
- NA in Khulna organized around different livelihood groups with local participants
    o Glossary of terms
    o Water policy and practices
    o Village profile development – how many farmers, fisherfolk, tubewells, location
    o Reported in Bangla, simple booklet
- Issues of focus decided: Encroachment of canals (water logging) and Drinking water.
- Development, presentation and validation of participatory water management plan by local community with local government (KDA, KCC) and water authorities.

- Received official support for plans, excavation of canals (Upazilla chairman) and installation of tube wells (DPHE). Process that continues. Communication and negotiation skills still need to be enhanced. Effort to include community plans under Union and Upazila WaSH Plan.

3.3 NA RESULTS FROM KOLKATA

Results from the NA process initiated in Kolkata were shared by Partha Sarathi Banerjee of The Researcher, the NGO partner in Shifting Grounds coordinating activities in Kolkata.

- 2015 workshop to familiarize Tihuria village in 24 South Parganas on project approach and key issues of concern in the village
- In October 2015, a second workshop helped understand groundwater situation- drinking water is the most crucial issue in Tihuria village; Groundwater quality and supply is inadequate in the village, yet dependency on groundwater for drinking and domestic uses is very high
- Series of mango tree meetings to identify what potential steps can be taken to address these issues:
  - o Inadequate PHE water supply, and unknown quality due to mixing of surface and groundwater sources
  - o Women walk long distance to fetch water
  - o Two bottling plants developed in village catering to the needs of that village as well
- Institutional brief workshop on existing rights and laws on groundwater. First time panchayat officials interacted directly with local community. Panchayat officials assured their assistance (June 2016).
- Sept 2016 meeting with Panchayat Prodhan and members. Their suggestions included:
  - o Negotiations with PHE on access to safe water supply to all panchayat villages
  - o Facilitate negotiations with the Irrigation Department about cleaning of drainage system that passes through villages so that wastewater doesn't flood villages and mixes with fresh water in ponds. In last few months main canal was being excavated by government which is a positive development.
  - o Raise awareness among other villages in area on groundwater issues (not just one village)
- Villagers: Benefited from the information received from NA activities but signalled that the project has not brought any visible results. PHE coming to fix pipelines, or more tube wells or more pumps for irrigation from canal and shallow groundwater. Suggested to them to form committee to negotiate with government officials. Supported, but difficult to find volunteers to join this group – those who are active in community are already overloaded.
- Project on arsenic, through Arsenic Network, is being started to provide more training on groundwater systems and to help local water quality monitoring, enabling communities to also check the quality of their different water sources more directly. Anticipated to enhance the process and gain confidence of community through limited but visible results/information for negotiation with government officials. This process will begin in March 2017.

3.4 DISCUSSION OF NEGOTIATION APPROACH ACTIVITIES AND PLANS

Discussions were kicked off by a short presentation of Mr. Jayanta Basu, who raised the following points:
- Negotiation premise: why should it be negotiated at all, especially for intangible GW resource
- Negotiation limitation: official SWID data suggest GW is not diminishing but improving. If abundant, why need to negotiate? Needs counter evidence.
- **Micro-macro level** – should influence policy at various levels. State Assembly, Ministers.
- Replicability. Not just for two villages. Huge exercise as a structure to be used by others. Replication.

- Existing relevant water laws need to be pushed initially. Law needs not negotiated, just implemented.
- Qualitative and quantitative needs in methodology
- Groundwater to groundwater-plus. For more holistic picture and inclusion of other relevant water resources available in the area.
- **Communication strategy** and media strategy locally. People believe the printed words
- Village committee created will not be viable if not integrated in existing local institutions – Panchayat Raj. Whatever existing committee there is should address the groundwater.
- **Low hanging fruit** first, graded negotiated. Showcase something.
- Exit strategy. Needs graded exit, not black-and-white.

Points raised by PAG member professor Mustafa Alam:
- Agrees with presentations. Points for clarification: How is this NA different from traditional participatory approaches? Groups to convey your message, how do you do that? There are water groups already there, how can you empower and energize them more? That needs to be understood. How do you form groups to empower people? Will a group of just five people negotiating with government officials cut much ice?
- Knowledge development: How was knowledge development happening? Seems almost like tutoring: Tell them what we know, jargon etcetera. Have you delved into local knowledge? What is experience in the field? If discussed, then local people will own it better.
- Shift the eminent domain from state to society. How much empowerment have you done? Using a cascading strategy, from local level various levels before moving up. And check local water management plan against national water management plan(s). How easily members of local government have said they support local plans; do they fit with larger national level plans and strategies?

These first PAG reflections were followed by a more general discussion, where also the other PAG members and participants contributed useful comments and insights:
- Zoning in Kolkata and its impact on groundwater restrictions should be included so they can develop and appropriate strategy on how to negotiate. The target of NA activities towards only specific groundwater management issues is not fulfilling in a way.
- Good local effort but not any policy influence so far. Also need to ratify with the broader structure: not just the process in these two villages but scaling up to address the structure as a whole. Is the local Gram Panchayat "Shifting Responsibility" back to the project team to avoid making commitments?
- If NA can have an agreed and signed minutes it would establish used rights for community resources (stronger commitments also). Village resource management groups since they don't only use resources but also pollute/ deplete use so it is not only about right to resources but also sustainably manage these resources.
- History of political organization in Khulna makes a difference to local willingness to participate. For Kolkata case, be cautious about the transfer of responsibilities from PHE to the community/project.
- Project level: comparative analysis between cases needed. In terms of the kinds of demands, as a way to connect with other components of the project. NA is about learning policy language but also highlight the use of local knowledge and categories among government persons.
- Philosophy of NA is that community is best equipped to manage local issues, which isn't necessarily the case. How does NA differ from participatory action research? For example is there a need for replication that makes it different? In building empowerment- building capacity to engage in dialogue

can be useful. Other key difference is the emphasis on linking what can be done locally with what can be done at the higher level through established government institutions.

- The village plans need to be accommodated within existing government departments; Not as if villagers will make the plan – there are departments and plans, village plans not managed independently or in isolation of those.
- Widening the scope of water quality resources requires additional resources to implement this type of activity on the ground. Community needs confidence to negotiate on their own which is a long-term process that extends beyond the project timelines. Committee should be formed under the sanction of the law.
- How do we deal with the existing formal institutions and link it to the community? Difficult to sustain new platform.
- For Bangladesh, should have village resource management groups, maybe under existing laws and legal frame. Village communities use and depend on local resources, but also deplete and pollute the very precious resources. Need to discuss with them not only right of use, but how to keep them in good condition. NA can make them aware of that. We could also trigger such a discussion using the results from our own research findings and, in doing so, support the use/ articulation of their own knowledge in a way that also unlocks this knowledge for external (government) parties. Community biodiversity registers are an example from India.
- Replication: Project does not aim at suggestion a new uniform governance structure based on these NA experiences, but rather adds experience on this particular issue and by doing so, hopes to establish a basis that can spread further more organically, and that can be replicated elsewhere.

3.4.1 SUMMARY OF KEY ISSUES DISCUSSED

- A key difference between Participatory Action Research and the Negotiated Approach is that the NA makes an explicit effort to add official planning and policy perspectives to the participatory research at community level.
- Use of existing local-level platforms and institutions: Presence of an existing local nucleus, some kind of platform or institution, has been a selection criterion in site selection, but still remains difficult, as local platforms need strengthening and do not always entirely fit. However, it is clear we should not set up a new parallel structure, but should make sure we use and connect well with the existing structures that are there.
- We have started this process gradually, with the "low hanging fruit" first: communities' needs that clearly require some external government or public support, by other parties, not yet the more sensitive local conflicts and shared uses of precious groundwater resources. Logical process, but we should also ensure the NA also continues in this direction, if it is to be sustainable and to support local sustainable natural resources management.
- Knowledge component is important in the engagement and empowerment of villagers. Here we are somwhat behind in this project, as research trajectories are on different time-path than local discussions. Also: communication of different kinds of knowledge is challenging. Research, local, government. Community register and/or community monitoring records can help.
- Replication of NA: Not through establishing a clear structure or blue-print for the larger region, but more through spreading experiences, more organically.

4 Cross-cutting themes – group discussions

4.1 Communication strategy.

Chair: Professor Sucharita Sen (SaciWATERs)

Key points discussed:
- Communication strategy needs to be beyond the Negotiated Approach, but also address research:
  - Communication between/ across three research sub-projects;
  - Connect academic research with issues highlighted in NA approach
  - Researchers with policy makers
- What level should be communicated within the government and in the community (i.e. were the issues identified highlighted by the voiceless or the more powerful community actors)
- Who should communicate? Given the resource constraints can we form a forum to collectively engage on some of these issues (e.g. through UDW programme)
- Policy implications: Government may be interested in how their concerns match our research findings
- Language for communication: academic partner for higher level policy makers and NGO partners for community level decision makers. Which language do we agree on using: local language or technical terms?
- How should we communicate the results: Mango tree meetings or policy briefs. The type of strategy should be specific to the levels
- Arsenic knowledge network : Ties with this India-wide network through participatory water quality monitoring project in Kolkata
- Is Arsenic the most important priority issue that needs to be communicated? Problem identification and alternative solutions is important.
- Local quality monitoring can help check the validity of govt data
- Multi-stakeholder dialogues is the next step after water quality testing with block level departments to sharing results from community exercise
- Communication matrix deals with who, what, when and how of communication.
- What do we have in our research that would be interested for the government in terms of an agenda or linking with existing processes initiated by government?
- Working paper series on the NA experiences across the two sites: process documentation (Where we have succeeded, where we have failed, with the kind of work we are doing with the NA.)
- Identifying key persons in the political system that will be around for at least the next two years

4.2 Community-based Monitoring

Chair: Professor Mashfiqus Salehin (BUET)

Background to the discussion: Groundwater data are not available in good quantity at local level. How to get local level data at reasonable cost and with reasonable effort? By engaging local people, participatory groundwater monitoring. Idea: Local people could be involved in measuring groundwater quality if we can equip them with cheap EC meter, arsenic detection tools. But they need to remain motivated, to own these data. We need to demonstrate the usefulness of these data to them. And then how can we sustain this, after two years, exit strategy?

Key points discussed:

- Monitoring groundwater quality is not very costly. Groundwater level is little bit costlier, requires borehole installations.
- If one can persuade government agencies that this data would be shared with them, data they would otherwise not be able to collect, and in return get them to signal willingness to negotiate with local people and to do something in return. Mutually beneficial thing, to motivate villagers.
- BWDB, Khulna city or DPHE might be logical government partners in this process.
- DPHE involved in Drinking Water Safety Programme with UNICEF. If we can motivate central DPHE, Dhaka, then it will work. It is participatory data monitoring. May also help sustain the process after end of our project; it may be continued under the Water Safety Programme.
- Village motivation: Some have observed arsenic around Khulna, then closed tubewell and install another. In terms of salinity, order of change is not yet that significant. But if too much withdrawal, that can drive more salinity into that aquifer. That kind of demonstration needs to be done for, through research model. Until 2000 not much problem, only after 2004-2005 decline went up alarmly, tubewells started to get dry last two months. How serious this issue is for that area, do they perceive issue as a very serious one in that area?
- Probably communities can be made aware and willing, if supplied with data. How much is rate of local user extraction and that of city areas that are nearby? Don't think irrigation has expanded a lot, maybe increased abstraction outside area. Also gives them an evidence base to use in negotiation.
- For Kolkata sites, government departments are not always interested in ground situation in particular village. They are at another level, in administrative and political reality, satisfying their minister.
- Who will monitor and why? If we select some individuals and give money, they will keep the data in their own room. Better to give this responsibility to self-help groups (Kolkata): In Bengal hundreds of thousands of self-help groups. Groundwater is most affecting the women; their fetching the water, cooking, washing, and have to feed their children and are concerned about the health of their children. You do it for your own family, your own community. There are youth clubs also, but they will not be involved without money; women self-help groups seem the better option.
- Most of gov't departments, even when they understand there is a problem, they don't have the fund to do some detailed measure. PHE in Kolkata is very cooperative, but not in charge of that only this particular panchayat with Tihuria village. Whole district, lot of problem with drinking water. Cannot expect immediate effort in just that one place. We cannot assure the villagers get immediate benefit. Not an easy process, long-term effort.
- In Khulna: easier to work, but depends from person to person. And on who is Upazilla head. DPHE for drinking water. But DPHE cannot do anything without permission of MP, local government.
- Khulna: Professor Salehin is going to Khulna 13th Feb, to further discuss, if someone from DPHE local office could also join? Water Safety Plan as larger umbrella for activities in Khulna.
- Kolkata: Planning link to Arsenic network, possible SaciWATERs' Gender Water Alliance if plan is to work with women SHG, not restricted to arsenic only.

5 CONCLUSIONS AND REFLECTIONS

Several participants and PAG members offered their final thoughts and reflections on the discussions held during the day. A selection of conclusions raised:

- Comparison between two regions must come out more strongly, to explain things instead of only presenting this as different cases
- How to start thinking about delta urbanization more in research?
- How to integrate the three components that we conceptualized? And to what extent is integration feasible to do?
- What have been the stumbling blocks in NA? As important as showcasing successes. Is incremental process, what else needs to be in place, in terms of institutions, for NA to work?
- How to ensure community based actions will continue, to move on, even after project?
- Process started from longer term expectations, while from communities short-term direct issues are put forward on the agenda.
- Integration and linkage of everything with everything is not going to happen, and therefore, we:
    - need to contextualize, within larger scale and larger picture;
    - need to be clear about our terminology, our scoping and scaling choices, and what it is we are looking at;
    - need to reflect on how this relates to the results and insights obtained by other studies;
    - need to go back to our full sample, comparatively, instead of just separate cases;
    - need, as bottom-line, to reflect on how this knowledge helps support empowerment of the local communities. Not as one-way street but tapping into, and recognizing/valuing the local knowledge as well, to enable an ongoing dialogue. This way, we can hope to leave something behind after project is finished as well.
- Finally, realistic expectations are needed about the change from one single project. Not the experience in the past. At the same time, not fair to say there can be no change because of any of these. Results NA on the grounds: already good if there is more willingness to ask questions, or a little more power for people, even if only temporarily. It makes difference to people's self-esteem and people's sense of self.

6 ANNEXES

6.1 WORKSHOP ATTENDEES:

	Name	Affilliation	Role in project
1	Anwar Zahid	BWDB	External
2	Binoy Majumdar	The Researcher	Project team
3	Dilip Kumar Dutta	Khulna University, Environm'l Sciences	External
4	Kazi Faisal Islam	JJS	Project team
5	Jayanta Basu	The Telegraph / Calcutta University	Project Advisory Group
6	Kazi Matin Ahmed	Dhaka University, Dept of Geology	External (UDW DeltaMAR)
7	Leon Hermans	TU Delft	Project team
8	Mashfiqus Salehin	BUET, IWFM	Project team
9	Md. Badrul Hasan	Univ of Dhaka, Dept of Political Science	External (PhD DeltaMAR)
10	Md. Jakir Hossain	BUET-IWFM	External (Msc Student)
11	Mustafa Alam	University of Dhaka, Dept of Economics	Project Advisory Group
12	Nazmul Huda	JJS	Project team
13	Partha Sarathi Banerjee	The Researcher	Project team
14	Poulomi Banerjee	SaciWATERs	Project team
15	Priya Sangameswaram	Centre for Studies in Social Sciences	Project Advisory Group
16	Rezaul Hasan	BUET	Project team
17	Kazi Md. Sabirul Alam	Khulna Development Authority	Project Advisory Group
18	Saiful Alam	WARPO	Project Advisory Group
19	SaifurRahman	DPHE	External
20	Shah Alam Khan	BUET, IWFM	Project team
21	Sharlene Gomes	TU Delft	Project team
22	Soma Majumdar	The Researcher	Project team
23	Sucharita Sen	SaciWATERs	Project team
24	Sultan Ahmed	Department of Environment	Project Advisory Group
25	Umme Kulsum	BUET UDW PhD Candidate	External (UDW PhD ADM)
26	Vishal Narain	SaciWATERs / MDI	Project team
27	Wil Thissen	TU Delft	Project team
28	Zakir Hossain	JJS	Project team
29	AFM Afzal Hossain	IWM	External
	Absent w notification:		
	Remi Kempers	Both ENDS	Project team

6.2 WORKSHOP AGENDA

9:30 – 9:45   Opening and welcome
                Chair: Professor Wil Thissen (Chair of Project Advisory Group, TU Delft)
                Host: Professor Mashfiqus Salehin (Director BUET-IWFM)

9:45 – 10:15   Overall project set up and goals, current status and MTR results
                Leon Hermans (Project leader TU Delft)

10:15 – 11:00   Presentation of Groundwater research by Rezaul Hasan (PhD researcher BUET)
                Discussants: Dr. Niladri Naha (SWID) and Mr. Saiful Alam (WARPO)

11:00 - 11:30   Tea break

11:30 – 12:15   Presentation of Socio-economic research by Poulomi Banerjee (Postdoc SaciWATERs)
                Discussants: Dr. Priya Sangameswaran (CSSS) and Dr. Sultan Ahmed (DoE, NRM).

12:15 – 13:00   Presentation of Institutional research by Sharlene Gomes (PhD researcher TU Delft)
                Discussant: Dr. Mustafa Alam (Dhaka University).

                Themes for research presentations and discussants: Progress & recent findings. Ensuring useful research output on the short term. Integration with other project components. Concerns and risk management for research success.

13:00 – 14:00   Lunch

14:00 – 15:00   Negotiated Approach (NA).
                NA process so far - Remi Kempers (NA coordinator Both ENDS).
                Negotiated Approach Khulna - Zakir Hossain (NA process Khulna, JJS)
                Negotiated Approach Kolkata - Partha Sarathi Banerjee (NA Process Kolkata, The Researcher).
                Discussants: Mr. Jayanta Basu (Calcutta Univ & The Telegraph) and Engr. Sabirul Alam (KDA)

15:00 – 16:00   Discussions in subgroups (with tea)

                Group 1: Communication strategy.
                Chair: Professor Sucharita Sen (SaciWATERs)
                Reporter: Poulomi Banerjee (SaciWATERs)
                Clear and simple story on our project. Using our resources effectively. Drafting a generic plan.

                Group 2: Community-based monitoring.
                Chair: Professor Mashfiqus Salehin (BUET)
                Reporter: Rezaul Hasan (BUET)
                Community-based monitoring as part of NA/Research integration. Groundwater education, community-based measuring of groundwater (quality) parameters, during project and exit strategy for monitoring to be sustained after project, to monitor agreements (institutions) and enable continued engagement with government partners.

16:00 – 17:00   Plenary closing session.
                • Short presentations of by groups reporters (communication and joint monitoring).

- Key take-away points from the day by Professors Shah Alam Khan, Sucharita Sen, and Wil Thissen.
- Short reflection by Project Advisory Group Members as desired.
- Wrap-up by project leader Leon Hermans.

17:00 – 18:00   Drinks

Note that a change to the agenda was made to enable participation of Dr. Saiful Alam in discussion about groundwater modelling research, due to last minute work demands and transportation problems. Hence, groundwater modelling research component was discussed as last research component, rather than the first.