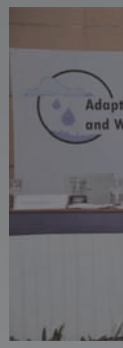
Peri-Urban Water Security in South Asia: Adapting to Climate Change and Urbanisation

Report of the Dissemination Workshop

June 18, 2013

Kathmandu, Nepal



Acknowledgement

SaciWATERs gratefully acknowledges the financial support of the **International Development Research Centre, Canada (IDRC)** for the project titled '**Peri-urban Water Security in South Asia: Adapting to Climate Change and Urbanisation**' of which this was a concluding event organised for disseminating the research outputs.

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Background of the Workshop

About the Conference

South Asia Consortium for Interdisciplinary Water Resources Studies (SaciWATERs) in collaboration with International Development Research Centre (IDRC) organised a dissemination workshop on June 18, 2013 at Soaltee Crown Plaza in Kathmandu, Nepal. This workshop was organised to disseminate the findings of the research project titled "Peri-urban Water Security in South Asia: Adapting to Climate change and Urbanisation". The findings highlight how climate change and urbanisation work as multiple stressors and adversely impact access to water for communities living in selected peri-urban locations of Bangladesh, India and Nepal.

The workshop was a forum to share the findings of the research conducted in the four locations and to receive valuable suggestions and comments from a mixed group of audience.

About the Project

The project aims to understand the implications of urbanization processes for water access and use in peri-urban locations in four select research sites in South Asia and to examine water related vulnerability, adaptation and resilience of different social groups in the context of climate change. The objective of the workshop was to bring the researched issues to the fore, thereby creating a dialogue-based platform and deliberating upon the nuances of uneven development common across the project sites.

The specific objectives of the meeting were:

- To enable researchers to compare and contrast methods and approaches on climate adaptation research;

- To facilitate opportunities for collaboration, networking, communication and policy advocacy at a regional level.

Participation

The workshop participants included climate change and water management professionals, practitioners, policy makers, researchers, academicians, scholars, students, etc. from different South Asian countries namely Sri Lanka, Bangladesh, Nepal, India and Pakistan. The participants list is available in annexure 1.

Structure of the Workshop

The workshop was organised into four sessions; an opening session, followed by site presentations from the four research sites and, a panel discussion on means to link research with policy and a concluding session. The program schedule for the day is available in annexure 2.

Opening of the workshop

The opening speech was delivered by Mr. Mark Redwood (Programme Officer, Climate Change and Water (CCW), IDRC, Canada), who welcomed the participants and highlighted the significance of the dissemination workshop. He briefed the participants on IDRC's interest in the Climate Change and Water (CCW) Program and its aim at reducing the effect of climate change on water security. Mr. Redwood added that the way to achieve this was through supporting research; building the capacities of researchers is the main goal of IDRC. He cited the peri-urban project as a successful example of the kind of work supported by IDRC.

This was followed by a small introduction by Dr. Sara Ahmed Senior Program Specialist, Agriculture and Food Security, CCW, IDRC New Delhi, on the objective of the workshop and the thematic area of the event. Dr. Ahmed set the context of the conference; highlighting the day's programme, which was meant for disseminating the outputs of the project led by SaciWATERs. This project studied the implications of water security in peri-urban areas, which are under dual stress of climate change and urbanization. She appreciated SaciWATERs for their approach in studying water issues from an interdisciplinary perspective which has further enhanced the quality of output in this project. After extending a warm welcome to all participants who were present for the day's programme, She invited Dr. Vishal Narain, Associate Professor Management Development Institute (MDI), Gurgaon, India to give an overview of the project, Prof. Shah Alam Khan Professor, Institute of Water and Flood Management (IWFM), Bangladesh University for Engineering and Technology (BUET),Dhaka, Bangladesh and Prof. Ashutosh Shukla, Professor, Nepal Engineering College(NEC), Kathmandu, Nepal to make the site specific research presentation in the following session.

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Research Site Presentations

This session was chaired by Dr Sara Ahmed. It comprises of four research presentations which were delivered by the site specific research coordinators. The session also had a concluding presentation on major concerns, learnings, ways forward and a summary of findings from all the research sites deliberated by the Project Director, Dr. Anjal Prakash.

The first session was inaugurated by a presentation from Dr. Vishal Narain, who introduced the project objectives, explained its context and the research design. He introduced the concept of peri-urban and how it was contextualised for this particular project. He further elaborated on the term "peri-urban" which was to be understood as an analytical construct, which focussed on the flows of goods and services between rural and urban centres and involving the concepts of place and process. He explained that in the context of vulnerability; income diversification is a key aspect, and that vulnerability in peri-urban location have social and gendered dimensions. Expanding on the methodology, a mix of methods and approaches were developed by the project team like, hydro-meteorological modelling, ethnographic and other qualitative and quantitative research tools, such as cost benefit analysis and vulnerability and capacity index. While focusing on the interventions that have been up-taken at the various selected sites, Dr. Narain listed out a host of activities: stakeholders meeting involving both water users and service providers, lobbying for the protection of water sources with government departments and mobilizing communities for the formation of water user committees, that were undertaken by the project team at the different locations.

The first individual research site presentation was made by Prof. Shah Alam Khan from Bangladesh, who presented the case of Khulna, a delta city on the banks of the Rupsha-Bhairabh river. He explained how peri-urban Khulna was water insecure due to high

levels of salinity in the groundwater and the pollution of the Mayur River, the only freshwater surface source in the area. He further explained how the present trends could have an adverse impact on crop production due to rising salinity and, urban flooding due to rising tidal levels. The key results from the research reveal that people are opting for salt resistant crops, adapting technologically by building dykes and institutionally, by leasing ponds. The key intervention undertaken by the team therefore, has been a contribution towards saving the Mayur River through a campaign. As part of the advocacy component of the project, a general awareness has been created within the local community and amongst a variety of stakeholders on the benefits of saving the river. Other activities include preparing village development plans with the communities; organising different types of awareness programmes with schools like quiz, painting, drawing and slogan writing competitions to disseminate academic knowledge.

The discussion that followed focused on the approach and acceptability of the 'Save the Mayur Campaign'. Dr. Khan responded by saying that an incremental approach was used, beginning with individuals, after which it was scaled up to the level of rallies and public events, and finally, the Mayor of the city was roped in and was instrumental in providing support to the campaign. As per plans, policymakers will sign a document that they are in agreement to save the river; and this will ensure wide acceptability and sustainability of the campaign.

In Khulna, communities are opting for salt resistant crops, adapting technologically by building dykes and institutionally, by leasing ponds..... In Kathmandu, pressure on groundwater resources to meet the water demand is increasing..... around 700 tankers are operating in Kathmandu city alone.

The next presentation was given by Prof. Ashutosh Shukla on the Kathmandu research sites. He began by tracing the history of urbanisation in the Kathmandu valley, citing that the urban population has been increasing at the rate of 6.4 percent per annum. The growing population is increasingly adding to the pressure on groundwater resources to meet the water demand, which is increasing by 60 MLD per annum. Further he commented that around 700 tankers are operating in Kathmandu city alone, and much of the water they supply, comes from the peri-urban areas. The specific results from the study have shown that spring sources have been drying up, competing water users are adding pressure, and the transfer of water from peri-urban/rural to urban areas is affecting water availability in peri-urban areas. Prof. Shukla highlighted the hydro- metrological analysis done by the Kathmandu team. The results reveal that minimum and maximum temperatures have been increasing in the valley, which has large implications for water availability. To deal with the issues of water scarcity, communities

are using household storage techniques while some others are trying to capture rain water through rooftop water harvesting. While further deliberations and discussions asked around difficulties in scaling up of rooftop water harvesting, Prof. Shukla explained that the greatest hurdle was that of investment, since rainfall is only for four months. Considering water demand is on the increase, high investment is the biggest issue.

After the tea break, Ms. Sreoshi Singh (Research Fellow, SaciWATERs) made a presentation about the Hyderabad research sites. Highlighting the historical and institutional systems of water management that are declining in Hyderabad, Ms. Singh emphasised specific details about the research sites, and how different sets of problems were plaguing peri-urban areas. She showcased the study of Aliyabad, a peri urban area, in which the water user association is now defunct, because of reduced water level of the Shamirpet Lake in its vicinity. In Mallampet, another project site, has a huge industrial zone, which has been polluting the groundwater, thereby affecting agriculture in this peri-urban location. Similarly, Peerancheru, a peri-urban area is affected by groundwater pollution especially by a health care centre (Shadan Hospital), located in the vicinity along with other government and other commercial establishments. The communities in this location depend on bottled water for drinking (the largest proportion of population across all the study villages). Another peri-urban village, Raviryala has seen how the washerfolks are vulnerable because of insufficient water in the lake within their village. Unplanned urbanisation like construction of the Outer Ring Road in the watershed of the lake in this village has led to the blockage of the inlets to the lake, rendering it dry. As part of the intervention a Village Water and Sanitation Committee (VWSC) was formed, and a school water tank built under the supervision of this committee.

As means to adapt to water insecurity, Ms. Singh explained how communities were practicing shifting of crops from rice to vegetables. Some of the key questions that were posed by the participants focused on the significance of climatic variability as against urbanisation and unplanned urban development leading to change in water availability and how short term and long term adaptation could be conceived, planned and adopted to avoid maladaptation and ensure policy reflection in some form for these fragile ecosystems. When participants also raised questions on how gender, class and caste interacted to affect water security, Anjal Prakash from SaciWATERs explained the social complexity of the peri-urban locations and how it generally affects the water availability of the community, while also adding that the innovation in this study was on collecting gender segregated data in order to understand if varying views of men and women existed with regard to water collection, use and management within the household.

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The Gurgaon research site presentation was made by Dr Vishal Narain. He expressed that proximity to the Indira Gandhi International Airport, policies favouring economic development, and a property boom due to the advent of

DLF, were the main factors inducing the process of rapid urbanization and growth of Gurgaon. An introduction to the research sites was then presented, and a list of key issues regarding water insecurity and associated vulnerabilities were elaborated upon. Dr. Narain deliberated upon the major land-use changes in the peri-urban sites, like the Sultanpur National Park, the farm houses of the urban elite, water treatment plant to supply water to city, and acquiring of land for the Dwarka Expressway. As explained by Vishal, the study made an attempt to capture the lived experiences of people and capture their understanding of a changing climate, through quotes: "Diwali used to be colder earlier; now we wear summer clothes". Even data analysis shows that the average of both minimum and maximum temperature is increasing, while rainfall is decreasing. Adaptation strategies in Gurgaon peri-urban sites have been brought through changes in technology and institutional mechanisms. Sprinkler sets are a common technological response to scarcity of water and labour in peri-urban Gurgaon. As an intervention, a platform for mutual co-operation and dialogue between water users and providers was developed using stakeholder meetings. Advocacy has led to the installation of ductile iron pipes in Sultanpur village, and a separate water connection for the school in Jhanjhrola Khera.

Dr. Anjal Prakash concluded the session by providing a synthesis of the research from all sites relooking at the key results that the teams presented on issues in their respective areas, in sync with the objectives and research questions that the project set out to explore, apart from contextualising some of the main concepts, like water security, vulnerability, adaptation, gender and equity. Dr. Prakash highlighted the specific learnings in this project which included collection of gender disaggregated information, which has revealed in many cases that poorest women from all the locations across south Asia were the most vulnerable. He also reiterated the fact that climate science and local perception need to inform each other and not be analysed or viewed in insulation. The discussion that followed focused on how policy makers can be influenced based on the research conducted and what should be the ideal means of communicating research to ensure appropriate changes in policies. Dr. Anjal Prakash agreed that there is an absence of framework for dialogue, where people can raise their concerns to influence policy thoughts, and that it was a critical issue that needed attention. Methodological issues were also discussed post presentation, and a need for site specific climatic data analysis to understand and

Major land-use changes in peri-urban Gurgaon comprise the Sultanpur National Park, the farm houses of the urban elite, water treatment plant to supply water to city, and acquiring of land for the Dwarka Expressway.

integrate with the local contexts would be essential for appropriate uptake of adaptation plans for each of the countries in question. While responding to a query on factors determining adaptation measures by the community, Dr. Prakash mentioned that local adaption is based on the subject's interpretations, which in turn are based on long standing experience of the region.

Cross Cutting Issues - Session 2

This session was chaired by Dr. Philippus Wester, Chief Scientist, Water Resource management, ICIMOD, Nepal. Two research presentations were delivered, of which one was a case study of Khulna in Bangladesh and the other was a microstudy on climate, water and vulnerability focusing on climate trends in South Asia from all the project sites. This was followed by discussion and reflection.

Dr. Purnamita Dasgupta, Associate Professor, at the Institute of Economic Growth, New Delhi was the first speaker for this session. She has contributed to this project by leading a micro study focused on the Cost Benefit Analysis of rejuvenating and reviving the Mayur River with the Bangladesh team in Khulna. The objective of her presentation was to ascertain whether reviving a river was a practically justifiable solution to tackle peri-urban water scarcity. Speaking from a pure eco-system perspective, she asserted that a river is an asset and currently the Mayur River in Bangladesh, is suffering from increasing salinity and massive dumping of solid waste. Although this solid waste dumping has generated small pieces of land over which people claim their property rights, the primary services of the river has disappeared. A Cost Benefit Analysis was done and data was collected using a mix of different methods, like household interviews, focus group discussions and secondary data sources. The act of reviving the Mayur River as a freshwater source will have a baneful impact on the farming community, who will lose a source of irrigation, but shall benefit through preventing saline water intrusion from the sluice gate. Further, fishing in the river will also have to be banned, but the biggest issue will be concerns over rehabilitating people living on encroached lands along the river. The most beneficial impact of reviving the river is that of controlling floods, while other benefits include reduced drudgery costs. The study has given discounted values to the

benefits that shall arise in order to give a safe estimate. Keeping in mind that a Cost Benefit Analysis is utilitarian in nature, a post analysis test showing a cost benefit ratio of 2:3, with a net present value at a discount rate of 10.11 percent for a period of 10 years clearly shows that reviving the Mayur River is well justified.

Post presentation discussions focused mainly on methods used to ascertain the claimed values. The presenter explained that a mixed methods approach was used, for e.g. in cases where drudgery costs were to be examined; primary interviews with women were done. In services where there are numerical values, past trends were used to ascertain future pricing. Purnamita Dasgupta, in response to another query from participants, raised her concern on shadow pricing, and personally felt that it was not at an appropriate stage to understand the implications of shadow pricing for eco-system services and biodiversity.

Following this, a presentation was made by Dr. Shajahan Mondal, from the Bangladesh research team who presented the micro study on climate, water and vulnerabilities focusing on climatic trends and variability in South Asia from all the project sites. He started by explaining that data across last 40 to 50 years have been used to assess the long term climatic implications for peri-urban water security. Key factors governing impact of climate change in south Asia include poor environmental management, high incidence of poverty and extreme dependence on agriculture and related activities. Peri-urban communities are especially vulnerable to water insecurity due to institutional lacuna, poor environmental setting, lack of social cohesion, insecure land tenure and vulnerable livelihoods. A few of the several key findings, were as follows; temperature has been increasing across all four research sites, and Kathmandu shows the highest rise, while rainfall has been increasing in Bangladesh, and is reducing in Gurgaon. The issue here is related to rainfall pattern variability and not intensity. At all four research sites, people's perception indicates that rainfall has been declining.

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Apart from rainfall, local perception is consistent with secondary data. Although local perception was in some cases found to vary along with gender and economic status, the poorer communities were found to be more knowledgeable with regard to various aspects of changing climate. It has also been felt that lower water availability in peri-urban areas will lead to resource use conflict. The last presentation in the session was given by Mr. Rajesh Sada (Nepal Research team member) on climate change implications and responses by drawing

from field perspectives. He expressed that in Kathmandu most people perceive that the temperature has been increasing and cooler days are reducing. One of the perceptions of the locals has been captured through this quote "*the maximum temperature has been rising in such a manner; I assume there won't be a winter season during my grand-daughter's time*'. Expanding on the methodology he explained that a mix of focus group discussions and household surveys have been conducted to ascertain community perceptions. People perceive rainfall to be decreasing and correspondingly 76 percent of respondents reported that crop production had gone down. They also reported that the infestation of weeds and pests is rising due to climatic factors.

Mr. Rajesh Sada, while elaborating upon the adaptation strategies by communities to this perceived reduction in rainfall mentioned that communities are relying on newer and simpler techniques like, capturing rain water through roof top harvesting, relying on market solutions and increasing the number of dug-wells at the household level. The change in practises is also seen in the agricultural sector. Farmers are now shifting towards growing low water demanding crops and are also trying to find means for livelihood diversification. A Livelihood Vulnerability Assessment was undertaken, based on five different forms of capital, using eleven different variables that best defined each of these broad capitals and for which, data had been collected at the household level. The computation was done by using the balance weighted approach. The results showed that out of the four study villages in Nepal, Lubhu was the most vulnerable. Mr Rajesh Sada commented that future work should focus on disseminating the knowledge around climatic uncertainty to the local communities, while also replicating successful adaptation measures to help them scale up.

Post presentation discussions focused on a very critical issue of whether there was a need to actively try and alter local perceptions, based on research findings, to which Dr Mondal responded by saying that the study was too limited to confirm the point with surety that local perception regarding rainfall was false; to ascertain this, the sample would have to be increased and data extrapolation required. Concerns were also raised on the techniques and methods that can be used to garner the attention of policy makers to the needs of the peri-urban residents. The key challenges towards using local perceptions to influence policy were an integral part of the discussions in this session.

During the closing session, several questions regarding the project as a whole were raised by participants, which included conceptual questions on peri-urban, perceptions about nature by the stakeholders, and changing gender roles and relations and factors governing the same, like labour relations and class and caste interlinkages.

Inter Linking Research to Policy and Practice - Session 2

Jasveen Jairath, Navdeep Mathur, Seema Kulkarni, Ajaya Dixit, Sultan Ahmad

Summary

The post lunch session comprised of a panel discussion on the importance of researchers making an impact at the policy level. There was a consensus amongst the panelists on the significance of linking research to policy. The panelists expressed the need for researchers to engage with the policymakers in order to bring about change in the society. To engage with them effectively they need to think creatively and devise different ways of collaboration. Effective communication and engagement was identified as a necessary tool to address this challenge. Very importantly, it was suggested that the engagement with policymakers cannot be sporadic. For this there is a need to adopt a consistent and long term strategy and think creatively. Only such an approach could bring about change at the policy level. Finally, Mr. Mark Redwood concluded the session by reiterating the necessity of a multidisciplinary approach to research, which will entail an integrated approach and would help influence and uptake of policies more effectively.

During this session, the panel discussed the importance of researchers making an impact at the policy level. Dr. Jasveen Jairath opened by stating that there were brilliant laws and policies that have been crafted and put into place. However, the effective implementation of these laws and policies has been an issue. To set the ball rolling for discussions, she raised the question on how in such circumstances, research can be carried forward at its best, to see effective changes on the ground. She went on to talk about such research in the context of peri-urban areas. She stated that peri-urban areas are an outcome of the process of rapid urbanization. Spatially, this zone may be located anywhere, but has to exhibit very basic characteristics. However, what matters most is that it is often characterized by monopolization of resources in the hands of a few and marginalization of others. Thus there is a need to question the growth paradigm itself. Going back to her previous point about making effective changes on the ground, she stated that to take research to the field, there is a need for a

multipronged approach. It is imperative that there be involvement of all stakeholders, including the government, the media, local communities, judiciaries and so on.

In continuation to this, Dr. Ajaya Dixit another pannelist, spoke about the impact of research on policy. He stated that research should lead to impact at the policy level. For this purpose, one has to think of innovative ways to approach the state. One possible way could be to incorporate engagement with policymakers as a long term objective of any research project, right from the initiation stage. Ms. Seema Kulkarni then narrated her own experiences of engaging with policy makers. She expressed the need to be ready for long term and consistent engagement regarding a particular issue, stressing the fact that researchers' engagement with the issue should not be restricted to the duration or life of the project. She then expressed the need to develop a strong dialogue with other civil society organizations, to be part of the network of organizations addressing this issue and to identify social carriers.

Continuing the thread on working with policy makers, Navdeep Mathur expressed his views on engagement of researchers with the government. He described the various phases of researchers' relationship with the government that could be observed in the Indian context, since independence. He said that in the initial phases, researchers and government programmes were working in silos, with limited interaction with each other. However, as a result of several social movements and protests by people, the Government has started paying attention to public opinion sometimes because it is forced to. He continued by stating that, while conducting research in the development sector, the political dimensions also need to be kept in mind. This in turn can help research play a role to reinforce the power of the marginalized. He also stressed the need to incorporate local knowledge into modern research methods to make it relevant and meaningful to the local communities. Dr. Sultan Ahmed, a former SAWA fellow, from the Crossing Boundaries Project of SaciWATERs, spoke about the concept of peri-urban in Bangladesh. He stated that there was no clear understanding of the concept of peri-urban in Bangladesh, anything that is peri-urban is considered rural. He suggested that peri-urban issues should be considered in the process of urban planning.

Finally, the panellists agreed that there was a need for strategic, consistent and long term political action and programme based activities if progress is to be made in this direction. They expressed the need to formulate best practices for engaging with policy makers. Further, it was emphasized that researchers need to recognize that values differ. Values cannot be defined by data, however, values define data. The panel stressed that this fact is to be considered while conducting research. When research is built beyond boundaries, it has credibility. Additionally, for research to be impactful and meaningful, it is essential to invest in knowledge and in people. Thus it is necessary to have a balanced approach towards communication, it is not enough to just build capacities of the stakeholders, but equally important to build researchers, own capacity.

On the challenges faced in interlinking research to policy and practice, the general consensus was, that there needs to be put in place strategies for grounded action and increased support for building of capacities of both researchers and stakeholders. It was pointed out that it was not possible to deal with challenges in isolation. There is a need to form alliances within bureaucracy as well as with civil society through which there can be concerted action on multiple counts, such as multiple sources of interventions to help research have an impact on the ground. An important step in this direction is the creation of strategies. Also, it was considered critical to be ready with policy inputs so that whenever the opportunity arises, it can be used for implementation.

The programme for the day was concluded with a vote of thanks to all participants who were present in the hall, and had come out of their busy schedule only to attend the Dissemination Workshop from Sri Lanka, Bangladesh and India.

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Annexure 1 - List of Participants

Muhammad Shah Alam khan	BUET	Bangldesh
Mohammad Rezaur Rahman	BUET	Bangldesh
Mohammad shahjahan mondal	BUET	Bangldesh
Uthpal kumar	BUET	Bangldesh
Hamidul huq	ILS	Bangldesh
Dilip Kumar Datta	Khulna University	Bangldesh
Kushal Roy	Khulna University	Bangldesh
Masudur Rahman	Khulna University	Bangldesh
Prosun Kumar Ghosh	Khulna University	Bangldesh
Nulufa Islam	WARPO	Bangldesh
Sultan Ahmed	Department of Environment	Bangldesh
Nimal Gunawardena	University of Peradeniya	Sri Lanka
Nitya Jacob	Centre for Science and Environment	India
Purnamita Das Gupta	Institute of Economic Growth	India
Jasveen jairath	Save Our Urban Lakes	India
Chetan kumar	DFID	India
Priyani Amarasinghe	ICRISAT	India
Seema Kulkarni	SOPPECOM	India
Navdeep Mathur	IIM	India

S. Ravi Chandran	CWR	India
Awadhendra Sharan	SARAI	India
Vishal Narain	MDI	India
Neena Rao	SaciWATERs	India
Anjal Prakash	SaciWATERs	India
Aman Dewan	SaciWATERs	India
C. Sreenivas	SaciWATERs	India
Sreoshi Singh	SaciWATERs	India
Prof. Ashutosh Shukla	NEC	Nepal
Rajesh Sada	NEC	Nepal
Aditi Mukherjee	ICIMOD	Nepal
Ekalbya Prasad	ICIMOD	Nepal
Philippus Wester	ICIMOD	Nepal
Khem raj Sharma	NEC	Nepal
Hari Shrestha	NEC	Nepal
Neeraj Praksh Joshi	NEC	Nepal
Jeevan kasula	CIUD	Nepal
Jagam Shrestha	EPHO	Nepal

Annexure 2 - Programme Schedule

Time	Theme	Presentations	Speaker	Chair/Moderator
Day 1				
9:00-9:30	Registration, Tea\Coffee and Networking			
9:30-10:00	Opening session	Opening remarks	**Mark Redwood** Program Leader, Climate Change and Water (CCW), IDRC, Canada	**Anjal Prakash** Executive Director, SaciWATERs, India
		Setting the context of the conference	**Sara Ahmed** Senior Program Specialist, Agriculture and Food Security, CCW, IDRC New Delhi	
		Project overview: context, objectives and research design	**Vishal Narain** Associate Professor, Management Development Institute (MDI), Gurgaon, India	
10:00- 10:30	Research site presentations	Khulna, Bangladesh	**M Shah Alam Khan** Professor, Institute of Water and Flood Management (IWFM), Bangladesh University for Engineering and Technology (BUET), Dhaka, Bangladesh	**Sara Ahmed** Senior Program Specialist, Agriculture and Food Security, CCW, IDRC, New Delhi

10:30-11:00	Research site presentations	Kathmandu, Nepal	**Ashutosh Shukla** Professor, Nepal Engineering College (NEC), Kathmandu, Nepal	
11.00-11.30	Tea\Coffee break			
11.30-12.00	Research site presentations	Hyderabad, India	**Sreoshi Singh** Research Fellow, SaciWATERs, India	**Sara Ahmed** Senior Program Specialist, Agriculture and Food Security, CCW, IDRC, New Delhi
12:00-12:30		Gurgaon , India	**Vishal Narain** Associate Professor, MDI, Gurgaon, India	
12:30-12:45		Major issues, concerns , learning and way forward from the research sites	**Anjal Prakash** Executive Director, SaciWATERs, India	
12:45-1:15	Discussions and reflections			
1:15-2:30	Lunch break			
2:30-3:00	Cross-cutting issues	Economics of climate variability – a case of Khulna in Bangladesh	**Purnamita Dasgupta,** Ford Foundation Chair in Environmental & Resource Economics Institute of Economic Growth (IEG),University of Delhi, India	**Philippus Wester,** Chief Scientist, Water Resources Management ICIMOD, Nepal
3.00-3.30		Climate, water and vulnerabilities	**Shahjahan Mondal,** IWFM, BUET, Dhaka, Bangladesh and **Rajesh Sada,** NEC, Kathmandu, Nepal	

3.30-3.45	Discussions and reflections		
3:45- 4:15	Tea\Coffee break (Water security in Khulna and Gurgaon: Documentary show)		
4:15 - 5:45	**Panel Discussion: Interlinking research to policy and practice**		
Talukder Abdul Khaleque Mayor, Khulna City Corporation, Khulna, Bangladesh **Aditya Nath Das, IAS** Principal Secretary, Irrigation and CAD Department Govt. of AP **Kishore Thapa** Secretary at Ministry of Urban Planning, Government of Nepal			**Jasveen Jairath** Save our Urban Lakes, Hyderabad, India
5:45-6:00	Concluding Remarks	**Mark Redwood and Sara Ahmed**	
Dinner (7 pm onwards)			

SaciWATERs

South Asia Consortium for Interdisciplinary
Water Resources Studies

IDRC | CRDI

International Development Research Centre
Centre de recherches pour le développement international

Canada

SaciWATERs

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