

Third Upper Indus Basin Network–India Chapter meeting

Understanding the key drivers of change in science-socio-economic linkages

19 June 2020 | Platform: Microsoft Teams

Organizers: Jawaharlal Nehru University (JNU) and the International Centre for Integrated Mountain Development (ICIMOD)

Introduction

The third Upper Indus Basin Network–India Chapter (UIBN-IC) meeting was held online to further work on the progress and discussions that took place in the second chapter meeting. While the second meeting had emphasized on integrating the science and socio-economic components within the basin, this meeting focused on assessing the progress of the thematic working groups (TWGs) and explore how interdisciplinarity could be applied to some of the research areas.

The specific objectives of the discussions were:^{* 1}

- to integrate the findings from the various TWGs and prepare a collective UIBN technical policy paper;
- to explore the possibility of publishing research materials a special UIBN issue;
- to prepare suitable proposals for integrated funding towards collective research;

- to hold an international conference on the Upper Indus River Basin; and
- to prepare for the Regional Strategic Committee meeting on 25 June 2020.

The discussion points and the decisions on the objectives are noted below. Besides, the key discussion points are listed in ‘Key Decisions and the Way Forward’.

Key outcomes

Progress has been made on the further need to synergize TWG activities. The members have pointed out the areas of collaborative opportunities among the TWGs in their group work plans.

The India Chapter is presently working on a special issue where research covering areas of the Indian part of the basin has been turned into a concept note. The note has been sent to prospective journals for review.

¹ For more details, please see Annex 1 for the concept note and the agenda of the meeting.

The members of the group have suggested to convene a national-level conference on the Indus. The resources and funding for the same are still under discussion.

Discussions were held on capacity building opportunities where the chapter is exploring opportunities to hold a student exchange programme with the Afghanistan Chapter.

The chapter is also working on conducting a collaborative study with its Pakistan counterpart. The study will examine the impacts of climate change on the water management practices in Ladakh and Gilgit-Baltistan. Through this, the network hopes to build more synergy among the country chapters.

Updates from the Transboundary Working Groups

In his keynote address to the chapter, Anil Kulkarni from the Divecha Centre for Climate Change, Indian Institute of Science (IISc), urged the members to actively think and act on cultivating cross-linkages between the working groups. He said that although the members might have to create silos to address some of the emerging questions within the basin, collaboration would be inevitable to bring out the linkages between science and policy.

Referring to a study on the mass wasting of glaciers in the basin, Kulkarni pointed to the assessment of a recent paper on climate change in the Indian context. Drawing parallels with the objectives of the UIBN, he quoted the study as stating: “State-of-the-art climate models project a continuation of anthropogenic global warming and associated climate change during the twenty-first century, the impacts of which have profound implications for India.” (Krishnan et al., 2020) These impacts, he said, especially in terms of temperature change, become stark in the context of the Himalayas. Then he referred to a study on the disintegration of glaciers within the Chandra-Bhaga sub-basins (which feed the Chenab River, a tributary of the Indus) and said that glacial loss is occurring by way of meltwater from tributary glaciers due to increased temperatures. This, he said, would also impact the volume of ice in the main glacier body (Singh et. al, 2020). These findings, he said, are significant because they draw attention to the kind of impacts that would be felt by the communities who rely on glacial melt for their water needs.

Gender and socio-economic dimensions

Chanda Gurung Goodrich, from ICIMOD, stated that one of the mandates of the UIBN should be to include the preferences of the local communities and explain the factors of hazards and climate risks within the basin. She said that in order to better the human component within the network, it is essential to understand the identities of the different communities, on the basis of their orientation, age, ethnicity, education, and other markers. In this regard, she said it would be beneficial to increase the scope of social science research and researchers within the network. Mentioning that the Pakistan Chapter has shown the way by setting up a Gender Resource Group, she said the Indian Chapter would benefit from adopting a similar approach which aids advocacy that raises awareness on the societal components within the basin.

The intersectionality of these changes was briefly touched upon by Meeta Mehra in her presentation; representing TWG 6, she spoke about measuring the impacts of climate change in Ladakh households. Focusing on the district level, she dwelt on the increasing instances of flash floods and droughts, as cited by district-level agencies and the National Sample Survey Organization. She expressed the hope that such data would provide for a better understanding about climate change and its impacts on consumption patterns, education, and nutrition.

Data gaps and increased rainfall

The need to understand and build a comprehensive picture of changes within the Upper Indus Basin in India was the focus of Ashwini Kulkarni’s presentation. She drew attention to the sparseness of rain gauges and other meteorological observation systems within the Indian part of the basin. Representing TWG 2, said that it is necessary to have

data on the past 30 years in this region, with support given from TWG 1, while also reaching out to state-level agencies for the data sets.

Explaining about the key findings, Ashwini Kulkarni noted, for example, that there has been a significant increase in summer rainfall in places like Jammu and Kashmir. Historically, she said, the state has faced unprecedented levels of inundation, with the worst flood events going back to 879 AD (Ananth, 2014). So, she emphasized that rainfall projections will be valuable in comprehending rainfall patterns and in influencing disaster risk reduction management in the state.

Cryosphere impacts

In his presentation, Ranoj Thayyen, from the National Institute of Hydrology (NIH), spoke about the cryospheric dependence – on snow and ice – of the Indus River and how the complex interlinkages that are at play need to be understood better. He noted that given the difficulty to access the glaciers in the basin, the understanding about them is limited and only how methods like remote sensing are of help. Echoing Ashwini Kulkarni's concern, Thayyen pointed out the unknowns in glacial and permafrost research, which, he said, widens the gap in understanding the impacts of climate change on ice bodies.

Water assessment and demand

About 265 million people depend on the Indus River's resources. A recent National Geographic report highlighted this critical dependence that India has in showing that among other countries in the region, India faces high water stress (Morris et. al, 2020). D.S. Arya, Indian Institute of Technology,

Roorkee, said that understanding the reasons behind this stress is critical, but at the moment, the sphere of water assessment is lacking in cohesiveness.

Dwelling on the differences in findings about water yield in the region under different RCP scenarios, he said this is due to the use of different data types and that TWG 3 ought to address this issue of variability.

Further, he drew attention to the need for more information on water discharge and on extending the network of measuring stations. In this regard, he suggested a consortium kind of set-up and additional funding towards such research.

Dependence and risks

Giving a holistic perspective on water availability and demand in the Indus Basin, Christian Huggel, from the University of Zürich, described the basin as a hotspot and how irrigation is a significant factor in the water demand within the basin. The Indus River Basin, he informed, ranks high in terms of the supply and demand index, and also in terms of the vulnerability quotient of the people who rely on the basin's resources. He also pointed to the vulnerability of hydropower projects to the risk of glacial lake outburst floods (GLOF) within the Indian sub-basins and the states falling within the Indian basin.

In his presentation, Suraj Mal, from Delhi University, expanded on these risks and how they are a threat to croplands, roads, and populated areas within the Indian Himalayan region. Citing the case of a GLOF originating in Tibet, he said the impacts can be transboundary in nature. He informed that a comprehensive assessment of GLOF risks is currently being carried out and an upcoming publication will trace these events within the Indian Himalayan Region from the 1950s onwards.

A comprehensive review of research

Anil Kulkarni spoke briefly about the need to increase funding and the scope of research within the network in order to understand and address the

issue of knowledge gaps. Kulkarni recommended that through regular review of the research being conducted, it would be possible to work on a thorough research proposal; but before that, he said, a comprehensive review of the areas that the network is focusing on needs to be carried out.

Key decisions and the way forward

Regional Strategic Committee discussions

The Regional Strategic Committee meeting dates were discussed and the group was briefed on the attendance of the lead, co-lead, and advisors of the UIBN. Based on the governance framework, the lead of each country chapter will provide updates to the Regional Strategic Committee on the progress made by their respective chapter.

Special volume on the Indus basin

Most members have agreed to submit a chapter based on the progress of the thematic groups. A concept note has been drafted, finalized, and shared with potential journals for their response. The submission is to be made to journals that follow a rigorous peer review process.

Capacity building of students

Building on the objective of knowledge co-sharing within the network, it was recommended that it would benefit the network in investing in hosting master's and PhD students to carry out research in institutions that are part of the India Chapter. Utilizing the existing network of the Himalayan University Consortium at ICIMOD, JNU has also joined the ranks of institutions within the university network. Further discussion is to be held on understanding the logistical and funding requirements to host students under this programme.

As raised by one participant, one potential area to build capacity can be in the case of high-altitude, field-based skillsets. Observations also need to be made on the sublimation of glacial and ice volume in the Upper Indus basin through automatic weather stations.

Data sharing among the member countries

A concern raised by one of the members on the need for data sharing was discussed and it was mooted that ICIMOD should play a facilitatory role in this endeavour. The UIBN, in principle, looks to push for

further regional collaboration, but sharing of data among the member countries remains an area to improve upon. In this regard, it has to be mentioned that ICIMOD has a number of data sets available such as its Regional Database System and initiative-level products that have mapped downscale climate data at both basin and sub-basin levels.

As far as the sharing of country-level data is concerned, there needs to be a consensus on sharing primary data sets, an issue that has to be settled at the Regional Strategic Committee level. ICIMOD has recommended this matter to be put before the Regional Strategic Committee for further discussion and review.

National-level conference on the Indus basin

With increasing attention being paid to the Indus basin – by way of research materials and articles in popular magazines – this is an opportune moment to lobby for a national-level conference on the Indus Basin. Towards this, resources have to be pooled from like-minded organizations. It was suggested that such a conference could be held during the next country chapter meeting. Meanwhile, Anil Kuklarni advised that the conference could be conducted online in the light of the present pandemic.

References

- Krishnan, R., Sanjay, J., Gnanaseelan, C., Mujumdar, M., Kulkarni, A., & Chakraborty, S. (Eds). (2020). *Assessment of climate change over the Indian region*. doi:10.1007/978-981-15-4327-2.
- Morris, R., Berman-Vaporis, I., Chwastyk, M.W., & Treat, J. (2020, July). *Indus lifeline*. *National Geographic*. Retrieved from <https://www.nationalgeographic.com/magazine/2020/07/the-indus-river-is-a-lifeline-for-millions-this-map-shows-the-threats-it-faces-feature/>.
- Singh, G., Nela, B.R., Bandyopadhyay, D., Mohanty, S., Kulkarni, A.V. (2020). Discovering anomalous dynamics and disintegrating behaviour in glaciers of Chandra-Bhaga sub-basins, part of Western Himalaya using DInSAR. *Remote Sensing of Environment*, 246, 111885. doi:10.1016/j.rse.2020.111885.

Annex 1

Background

The upper Indus Basin stretches across Afghanistan, China, India, and Pakistan. Due to climate change and changing socio-economic conditions within the basin, equitable water use and access has become a pressing issue.

The Upper Indus Basin Network–India Chapter (UIBN–IC), as a chapter of the larger network, functions through six thematic working groups (TWGs). The chapter has been established to promote collaboration among government institutions, academia, and non-governmental agencies, and contribute to a better understanding of issues related to climate change, water availability, disasters, and sustainability, among others. This platform will provide cross-cutting understanding and opportunities to collaborate at a regional level, thereby fostering coordination among researchers working in the region.

About the workshop

The first and second country chapter meetings (held in April and December 2019, respectively) focused on identifying the key research areas relevant to the basin. The emphasis was on integrating both scientific and socio-economic impacts in research related to the basin. The chapter members deliberated on a number of issues emerging in the light of climate change, and contributed significantly to the network's objectives by volunteering to lead the six technical working groups.

Agenda

Time (IST)	Programme	Moderator
14:30–14:35	Log in to Microsoft Teams	Ashmita Shakya
14:35–14:55	Opening session Welcome and briefing on objectives of the meeting – A.P. Dimri, JNU, New Delhi (5 min.) Integration and perspective on UIBN – A.B. Shrestha, Regional Programme Manager, River Basins and Cryosphere, ICIMOD (5 min.) Keynote addresses Anil Kulkarni, Divecha Centre for Climate Change, IISc, Bangalore (10 min.)	A.P. Dimri

With the advent of COVID-19, the ability to conduct research has also been impacted. This has certain implications for the country chapters and the broader vision of the network. This third UIBN–IC meeting plans to deliberate on efforts to bridge research gaps and tackle emerging issues in a post-pandemic setting.

This third iteration plans to assess and analyse the discourses that recent research related to the Upper Indus Basin within the framework has proposed. The meeting will include discussions on flagship research by various researchers and explore an interdisciplinary dimension moving forward.

Specific discussion points

- Integration of findings from various TWGs and preparation of a collective UIBN technical policy paper
- Exploration of the possibility of publishing research materials in suitable journals and collecting them to be published as a special UIBN issue
- Preparation of suitable proposals for integrated funding towards collective research
- International conference on the Upper Indus River Basin
- Preparation for the Regional Strategic Committee meeting on 25 June 2020

Time

India	Nepal	Switzerland
14:30–17:00	14:45–17:15	11:00–13:30

Time (IST)	Programme	Moderator
14:55–16:05	<p>TWG presentations: Existing knowledge, know-how, and next course of action needed (10 min. each, including discussion) Lead/co-lead discussion</p> <p>TWG 1: G. Jeelani, University of Kashmir, Srinagar, India TWG 2: Ashwini Kulkarni, IITM, Pune TWG 3: R. Thayyen, NIH, Roorkee; and A.L. Ramanathan, JNU TWG 4: A. Pandey, NGRI, Hyderabad, and D.S. Arya, IIT Roorkee TWG 5: S. Mal, Delhi University, Delhi TWG 6: M.K. Mehra, JNU, New Delhi</p>	M. Mehra
16:05–16:45	<p>Open deliberations: Future course of action</p> <p>Regional Strategic Committee meeting on 25 June Student capacity development PhD programme on the Upper Indus River Basin with ICIMOD support International conference on the Upper Indus River Basin: Decision on dates, committee, domain, etc. Special issue Comparative study in Ladakh and Gilgit-Baltistan Other points</p>	A.B. Shrestha
16:45–17:15	<p>Closing session</p> <p>Integrated basin-scale water resource management – 10 min. Gender and social inclusion in the India Country Chapter – 10 min. Closing remarks – 5 min. Vote of thanks – 5 min.</p>	C. Huggel C.G. Goodrich A.P. Dimri F. Shaheen

Participants

Regional Strategic Committee members

A.P. Dimri (Coordinator)
 apdimri@hotmail.com

F.A. Shaheen (Co-coordinator)
 fashaheen@rediffmail.com

Technical Working Groups

S/N	TWG	Lead	Co-Lead
1.	Framework of data collection, quality, and standardization	Ghulam Jeelani, (KU, Srinagar) geojeelani@gmail.com	Pottakkal G. Jose, (NIH, Jammu) josepottakkal@gmail.com
2.	Climate change, air pollution variability, and black carbon	Ashwini Kulkarni, (IITM, Pune) ashwini@tropmet.res.in	Farhet A. Lone, (SKUAST, Srinagar) rfarooqlone@yahoo.co.in
3.	Cryosphere monitoring and modelling	Renoj J. Thayyen, (NIH, Roorkee) renojthayyen@gmail.com	Rajesh Kumar, (Sharda University, Greater Noida) rajeshkrsh.in@gmail.com
4.	Surface and groundwater hydrology, and water availability and demand	Anand K. Pandey, (NGRI, Hyderabad) akpngri@gmail.com	D.S. Arya, (IIT Roorkee) dsarya@gmail.com

5.	Understanding and managing hazards and risks	Suraj Mal, (Delhi University, New Delhi) surajdse@gmail.com	LNP/LEHO/LEDG(Ladakh)
6.	Managing gendered socio-economic impacts through adaptation measures	Meeta K. Mehra, (JNU, New Delhi) meetakm@gmail.com	Suresh Babu, (JNU, New Delhi) gssbjnu@gmail.com
7.	ICIMOD member	Chanda Gurung Goodrich, (ICIMOD, Nepal) chanda.goodrich@icimod.org	
8.	Cross-cutting: Knowledge management and communication	Debabrat Sukla, (ICIMOD, Nepal) debabrat.sukla@icimod.org	
9.	National advisor	Anil Kulkarni, (IISc, Bangalore) anilkulkarni@iisc.ac.in	
10.	International advisor	Christian Huggel, (University of Zurich, Switzerland) christian.huggel@geo.uzh.ch	

Members

A.L. Ramanathan
(Jawaharlal Nehru University)
alrjnu@gmail.com

Pyarimohan Maharana
(Jawaharlal Nehru University)
maharanapyarimohan@gmail.com

Shakil A. Romshoo
(University of Kashmir)
shakilrom@yahoo.com

Special invitees

Dericks Shukla
(IIT Mandi, Himachal Pradesh)
dericks@iitmandi.ac.in

Jheelum Sarkar
(Jawaharlal Nehru University)
jheelumsarkar123@gmail.com

Farooq Azam
(Indian Institutes of Technology)
farooqaman@yahoo.co.in

Megha Anand
(Jawaharlal Nehru University)
meghaanand67@gmail.com

ICIMOD

Arun Shrestha
arun.shrestha@icimod.org

Ashmita Shakya
ashmita.shakya@icimod.org

Brij Rathore
brij.rathore@icimod.org

Debabrat Sukla
debabrat.sukla@icimod.org

Sharmila Dhungana
sharmila.dhungana@icimod.org



ICIMOD gratefully acknowledges the support of its core donors: the Governments of Afghanistan, Australia, Austria, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Sweden, and Switzerland.

© ICIMOD 2020

**International Centre for
Integrated Mountain Development**
GPO Box 3226, Kathmandu, Nepal
T +977 1 5275222 | E info@icimod.org
www.icimod.org