


Technical Working Group (2)

Climate change and air pollution

Second Regional Upper Indus Basin Network Annual Meeting (RUAM)

27 January 2021



An aerial photograph of a mountain valley. A river flows through the center, surrounded by terraced fields and a suspension bridge. The mountains are steep and rocky, with some snow-capped peaks in the distance. The trees are mostly yellow and green, suggesting autumn. The sky is clear and blue.

**Filling critical
knowledge
gaps in the
Indus basin**

Key knowledge gaps

Discussion question :

What are the critical knowledge gaps in Indus basin related to the respective TWG and how to fill those gaps?

India:

1. chemistry of rainfall and snow in UIB needs to be done
2. Health issues regarding air pollutants and environmental containments
3. Carbon sequestration potential of forest in UIB
4. Climate variability in the UIB
5. Black carbon in cryosphere

Key knowledge gaps

Pakistan:

- Shortage of monitoring stations
- Data is not available to the scientist working on different issues
- Study of climate variability, no effective climate services in mountain areas are not available
- Fine resolution CC projections not available for the region
- Lack of capacity building and concerning institutes
- Difficulties to tackle the difficult terrain, in climate modelling is the great challenge

Key knowledge gaps

Afghanistan

- Difficulty in filling missing data for the period of 1980-2000/2004 (historical)
- COVID management

General

- Impact of westerly in cooling cryosphere

Filling the gaps

- Data monitoring network scarcity, motivation of member countries to enhance the monitoring network in UIB
- Research base has to be widened, collaboration between the institutes
- Retention of trained manpower/graduates in UIB area, institution capacity should be enhanced so that local should graduate from local institutions and serve their region, institutional strengthening to train their younger generation and create the environment: can be proposed that needs to be done as the solution to the problem: general problem,
- Enabling local institution to retain the qualified manpower



Potential bilateral/regional collaborative interventions

Discussion question: What are potential bilateral/regional collaborative interventions the group should focus on during the coming years?

- Effective Knowledge sharing among different TWGs
- TWG2 can have webinars before the main meeting (2/3 years) about the issues
- Climate variability comes from local weather and seasonality so there is a need of common platform for regional climate services in the area on climate change, air pollution, black carbon monitoring
- Interactive data portal for UIB from the 4 regional countries



**Potential capacity enhancement
and offerings to other country
chapters**

Discussion question: What are the potential capacity enhancement and offerings to other country chapters?

India

- Sharing of information regarding the academic programs
- MSc, Ph.D. and scientific exchange program between regional countries

Pakistan

- Pakistan is lacking in climate modelling education and training, and NWP capacity, strong base in hydrology and meteorology, offering courses
- Gap in air pollution studies, capacity is lacking, Masters and PHD in air pollution and cryosphere are required
- Agreement with Chinese universities, graduated, have joined the team

Afghanistan

- Work together from the scientific side, more collaboration for exchange work, data gaps, simulation can be done and find the value for the Afghanistan
- Joint research works and share the data, similar request for the chapter member countries



Key TWG focus areas in the respective country chapters

Discussion question: What are the key focus areas for the TWG to consider in their respective country chapters plan?

India

- Development of climate profiles using multi-model ensemble
- LULC in future warming scenarios
- Impact of air pollution and CC on biodiversity, agriculture and human health

Pakistan

- CC profile of UIB
- CC impacts studies to be undertaken, some are carried out independently, try to integrate to get the consolidated results
- CC on water resources in the UIB
- Understanding snow and glacier melt under black carbon cover

Afghanistan

- CC studies, CC modelling, its impact on Water resources of the Kabul river basin
- Climate related disaster –flood, drought
- CC impact on Land cover and cryosphere
- The air pollution – black carbon and environmental pollution
- Working to have station to collect data, and rely more on modelling on air pollution- more setup is required: studies and investigation on the air pollution

Discussion question: What are the key focus areas for the TWG to consider in their respective country chapters plan?

- Air pollution, Black Carbon network is also poor- needs to be enhanced, landmark stations can be established
- The stocktaking working related to air pollution and identify the gaps



Thank you