

## Conference Report



Year 2018

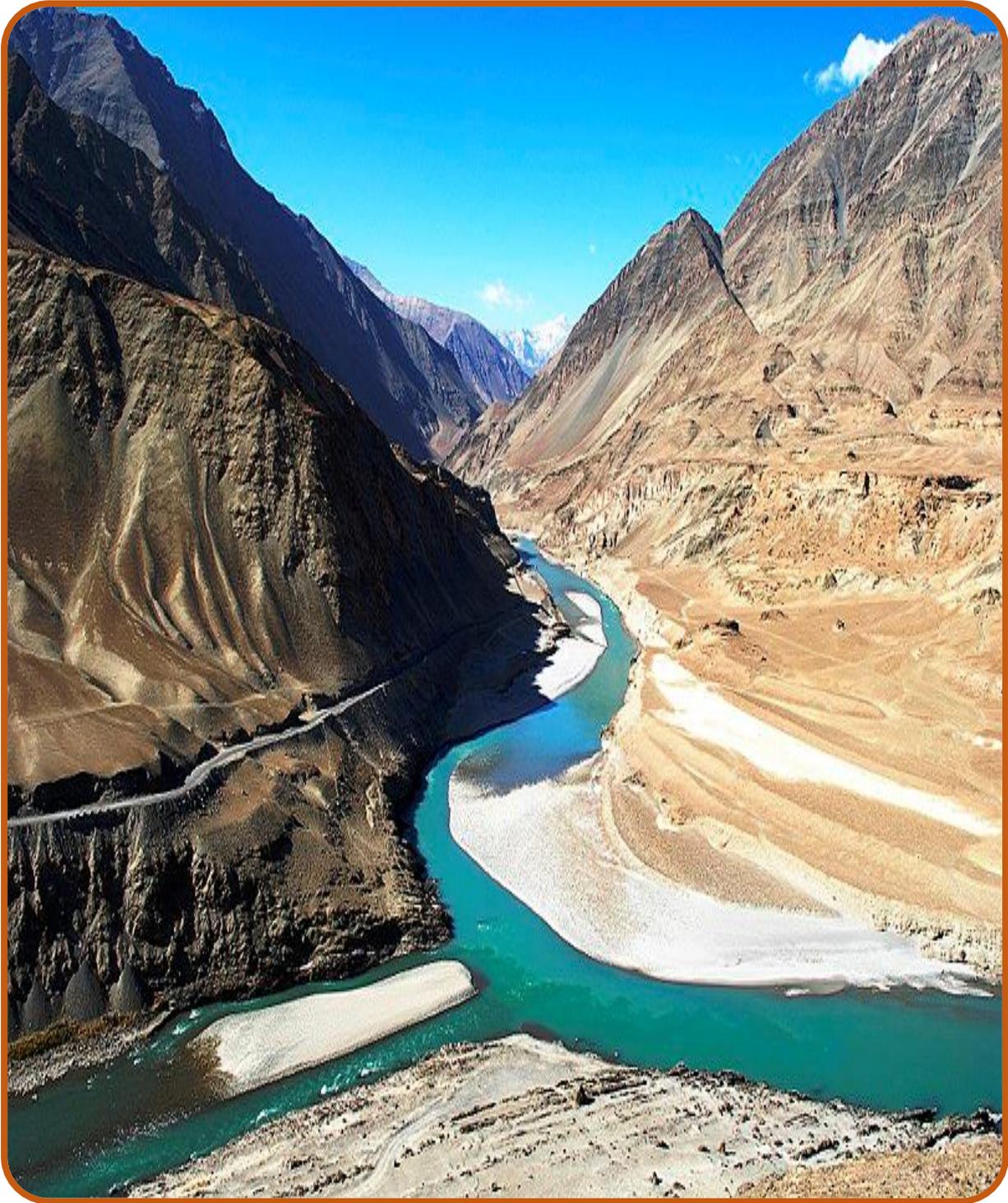
Convened by:



Nepal Water Conservation Foundation (NWC)



Hanns-Seidel-Stiftung India (HSS)



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Water is a vital resource, needed to support life, economy, culture and civilisation. The water sources of the eight countries in the Himalayan region—Afghanistan, Pakistan, China, India, Nepal, Bhutan, Myanmar and Bangladesh—mainly depend on the annual monsoon rains and intermittent streams from the Himalayas. Climate change and global warming have heavily affected rainfall patterns, the concentration of snow and ice and eventually the flow of streams in the Himalayas. Consequences are regular droughts, floods and crop failures in the Himalayan countries. Aquifers are depleting, floods and droughts have become a regular occurrence. In addition to, and often time preceding climate change impacts are man-made impacts from poor water management: ground water overdraft, springs drying in the Himalaya, river turned into practically sewers, exploding urban population that have stressed available water supplies beyond limit etc. Climate change will only make things much worse if these drivers of water stress are not addressed.

The estimated 50,000 glaciers in the Himalayas are a blessing as well as a looming danger for the mountainous countries like Bhutan and Nepal. Although these glaciers are a major source of irrigation water in summer months especially for the lowland plains, they are melting and retreating at an alarming pace which can lead to unpredictable devastating glacial lake outbursts, floods and—in the long run—amplified water stress. Glaciers of the third pole are also indicator of global health.

Major rivers in the region—including Mekong, Ganges, Indus and Brahmaputra—emanate from the Third Pole: Himalaya–Tibet Plateau–Hindukush–Pamir. Downstream basins of these rivers cover huge swathe of land. Almost one fifth of the world's population depends on them. Many of these rivers are transboundary in nature and have potential to effect conflict as well as cooperation. Tensions over sharing of river water often surface between the countries. These persistent tensions may escalate and pose threat to the peace and stability in the region. There exist bilateral treaties between some of the Himalayan countries on sharing of river water, for example the Indus Waters Treaty between India and Pakistan; the Ganges Water Treaty between India and Bangladesh; Gandak, Kosi and Mahakali treaties between Nepal and India. However, given that some rivers (such as Brahmaputra) are flowing into more than one country, multilateral treaties following the principle of equity and based on a basin-wide approach are required. Cross-border dialogues and cooperation have shown success elsewhere such as in the Mekong and Rhine and are necessary to put in place an effective cooperative mechanism to find and promote amicable solutions to the river water sharing problems.

The population in Asia is growing exponentially. India's population will rise from 1.33 billion in 2017 to 1.66 billion in 2050. In Pakistan, there will be 55 percent more people in 2050 than

today. Besides that, urbanisation continues to be rapid in all Asian countries and industrialisation maintains its fast pace. Put together, these factors will have immense pressure on the already stressed water resources in the region.

Farming practices in the Himalayan countries are water-intensive. In India, for example, farming uses over 90% of fresh water. More and more water will be required to produce food to support for the growing population in the region, *ceteris paribus*. Keeping these factors in mind, there are predictions that some of the Himalayan countries such as Pakistan and India would turn into “water scarce countries” between 2025 and 2035.

Apart from food, governments will also have to meet the energy demand of their growing population. Fortunately, the ecosystem of the Himalayan region has the potential to meet such demand, provided the potential is harnessed sustainably. Currently, the relation between economically viable hydropower potential and actual generation is abysmally low. For example, Nepal’s current installed hydropower capacity is 776 MW when a suppressed demand currently is between 3000 to 5000 MW, whereas its identified economically viable potential is 43000 MW. Harnessing the energy potential of water stream to the optimum level in the region will enhance energy security net and reduce poverty. However, while installing such structures for water storage and hydro-energy, consideration should be given to multi-purpose use such as for increasing use for navigation, flood risk management, irrigation use as well as upstream-downstream linkages. Joint scientific collaboration for both data generation and use in scientific research and joint monitoring of such structures will strengthen cooperation among the countries in the region.

Water quality issues, especially from the perspective of human health, are also a growing concern in the Ganga–Brahmaputra basin. Besides the presence of pathogens in drinking water, arsenic is found in groundwater in countries like India, Pakistan, Bangladesh and parts of Nepal. Arsenic in water can cause severe health problems—high blood pressure, glycosuria, cancer etc. In Bangladesh alone, about 35 million people are at risk of ingesting unsafe levels of arsenic in drinking water. In India and China, the population-at-risk are 5 million and 5.6 million respectively. The multifaceted challenge that the Himalayan region as a whole faces in the water sector requires that water be managed in an integrated and holistic manner. Integrated Water Resources Management could prove to be a reliable tool to augment water resources, improve quality of water and bring countries together to manage transboundary basins collectively.

South Asia has the lowest per capita water storage compared to Europe or North America. A focus on different types of storages that use natural—such as lakes, groundwater and wetlands—and constructed infrastructure that retains water and can include ponds, reservoirs, groundwater, check dams and even retained soil moisture is required.

Against the above backdrop, this fifth South Asian Conference aims at initiating a regional dialogue to promote and strengthen cooperation among the countries in the Himalayan region

to manage, govern and share their water resources. Potential areas of cooperation include study of monsoon and westerlies, flood risk management, irrigation needs, study of proper management of transboundary aquifers, river navigation, migratory aquatic species and cooperation with Rhine, Danube and other experiences.

Day 1: Thursday, 6 December 2018	
09:00 h – 10:00 h	Registration
10:00 h – 11:00 h	<p>Inauguration Opening Remarks <i>Mr. Ngamindra Dahal,</i> <i>Chairperson, Nepal Water Conservation Foundation</i></p> <p>Welcome remarks <i>Mr. Kristof W. Duwaerts,</i> <i>Resident Representative, HSS Pakistan</i></p> <p>Inaugural address <i>H.E. Roland Schäfer,</i> <i>Ambassador of the Federal Republic of Germany to Nepal</i></p> <p>Guest Speaker <i>Dr. David James Molden</i> <i>Director General, ICIMOD</i></p> <p>Key note speech <i>Dr. Sanjay Sharma</i> <i>Secretary, Ministry of Energy, Water Resources and Irrigation, Government of Nepal</i></p> <p>Vote of Thanks <i>Mr. Anil Pokhrel</i> <i>General Secretary, Nepal Water Conservation Foundation</i></p>
11:00 h – 11:30 h	Tea Break
SESSION I – Managing Water Resources in the Himalayan Region: Opportunities & Challenges	
11:30 h – 12:00 h	<p>Keynote Speech (Nepal) <i>Mr. Dipak Gyawali</i> <i>Pragya (Academician) of the Nepal Academy of Science and Technology</i></p>
12:00 h – 13:00 h	Interaction and Q&A
13:00 h – 14:00 h	Lunch Break
SESSION II – Integrated Water Resources Management: Local Level Initiatives in the Himalayan region	
14:00 h – 14:30 h	<p>Keynote Speaker (Bhutan) <i>Mr. Kesang Jamtsho</i> <i>National Environment Commission, Thimphu</i> <i>Mr. Tsheten Dorji</i> <i>Royal Society for Protection of Nature, Thimphu</i></p>
14:30 h – 15:30 h	Interaction and Q&A
15:30 h – 16:00 h	Tea break
SESSION III – Joint Collaboration for data generation and use in scientific research: Initiatives and Challenges	
16:00 h – 16:30 h	Keynote Speech (Bangladesh)

	Mr. Muhammad Shakil Ahmed <i>Research Associate, Center for Environmental and Geographic Information Services, Dhaka</i>
16:30 h – 17:30 h	Interaction and Q&A
17:30 h onwards	Networking Dinner (Hotel Himalaya)
Day 2: Friday, 7 December 2018	
SESSION IV – Inland Navigation: Opportunities & Challenges	
09:00 h – 09:30 h	Keynote Speech (India) Dr Uttam Kumar Sinha <i>Senior Fellow, Nehru Memorial Museum &amp; Library, New Delhi</i>
09:30 h – 10:45 h	Interaction and Q&A
10:45 h – 11:15 h	Tea Break
SESSION V – Sedimentation in Dams: Opportunities & Challenges	
11:15 h – 11:45 h	Keynote Speech (Pakistan) Brig. (r) Fiaz Hussain Shah <i>Director General, National Disaster Management Authority, Islamabad</i>
11:45 h – 13:00 h	Interaction and Q&A
13:00 h – 14:00 h	Lunch Break
SESSION VI – <i>Pani Satsang</i> : EU–South Asia Dialogue on Water Resource Management: Where can we find mutual areas of collaboration?	
14:00 h – 14:30 h	Keynote Speech (Germany) Prof Martin Grambow <i>Director General, Department of Water &amp; Soil, Bavarian Ministry of Environment and Consuming Protection</i>
14:30 h – 15:00 h	Sharing of South Asian Experiences
15:00 h – 16:00 h	Public Dialogue
16:00 h – 16:10 h	Valedictory Remarks Mr Volker Lennart Plän <i>Resident Representative, HSS India</i>
16:10 h – 16:30 h	Tea & End of the day
18:00 h onwards	Dinner
Day 3: Saturday, 8 December 2018	
WATER TOUR – Visit to Field sites to observe the management of spring recharge in mountain system	
08:00 h – 09:00 h	Travel to field sites
09:00 h – 12:00 h	Travel to field sites to observe the management of spring recharge in mountain system
12:00 h – 13:00 h	Return travel
13:00 h – 14:00 h	Lunch and End of the Conference
14:00 h onwards	Departure of the delegates begins

Nepal Water Conservation Foundation (NWCF) and Hanns-Seidel-Stiftung (HSS) jointly organised the 5<sup>th</sup> South Asia conference on the theme of “Integrated Water Resources Management in the Himalayan Region” from 6th to 8th December 2018 at the Hotel Himalaya in Kathmandu. This conference drew participation of academia, civil society, government and non-governmental organisations. In addition to the participants and experts from Nepal, the conference was joined by the experts from India, Pakistan, Bangladesh, Bhutan and Germany.

In the first two days, a total of six technical sessions were organised to discuss the major challenges and emerging opportunities in the Himalaya region with regard to the water resources management, local level initiatives to effect IWRM, joint collaboration for data collection and analysis, inland navigation and sedimentation. The last session facilitated European Union-South Asia dialogue on water resources to explore potential areas of cooperation. The keynote speaker of the first session, Mr. Dipak Gyawali, stated that hydropower and building dams are not the only way through which development happens. There is a need for a holistic developmental approach which includes environmental factors also. Impact of landslides and floods on the health of local people in rural areas is often ignored. One reason for this is the current federal structure which is highly urban focused, he claimed. For environmental concerns to be taken into account while charting out the developmental plan, Mr Gyawali said that hydrological data and monitoring of environmental flows are must.

The second session was on the local level initiatives in the Himalayan Region with regard to Integrated Water Resource Management (IWRM). Mr. Kesang Jamtsho from NECS, Bhutan and Mr Dorji from RSPN, Bhutan together made a presentation on the general environmental practices exercised in Bhutan. They stated that the impact of climate change is severe in Bhutan. Due to climate change, glacial lakes, which are a major source of irrigation in the summer, are decreasing at an alarming rate. The communities dependent on glaciers are more likely to be impacted by such changes. They cautioned that the outburst of glacial lakes as a result of the increase in temperature may prove to be devastating for the country.

The third session was in the area of joint collaboration of data generation and its use in scientific research. Mr. Muhammad Shakil Ahmed from CEGIS, Bangladesh stated that there are 57 transboundary rivers in the Ganga-Brahmaputra-Meghna river basin, which are subject to regular floods, droughts and cyclone every year. As far as the forecasting is concerned, he stated that Bangladesh Water Development Board uses data from Nepal and India. He requested Nepal and India to give more real time data in order to avoid flood disaster by making people alert.

In the fourth session Dr Uttam Kumar Sinha from NMML, India presented his view on inland navigation and its opportunities and challenges. He started by saying that in South Asia, rivers are becoming more valuable method of connecting due to its size and nature. He added that

India wants to play the role of facilitator or partner in the economic gains and prosperity of South Asia. He further stated that there should be more dialogues in the field of navigation and data sharing. As far as providing security in the fields of navigation is concerned he said that there should be effective and efficient penetration from participating countries.

In the fifth session Brig. (Retd.) Fiaz Hussein Shah from NIDM, Pakistan presented his views on the issues of sedimentation in dams. He gave brief description about the sedimentation process and the forms of sediments in various dams of Pakistan. Talking about Indus River basin, he suggested that changes be made in the Indus Water Treaty (IWT) between India and Pakistan to effect climate proofing in the basin. He also underlined the importance of IWT in the peace building process in South Asia.

The sixth session was on the European Union-South Asia dialogue on water resource management and finding the areas of mutual collaboration. The keynote speaker was Professor Martin Grambow from the State Ministry of Environment and Consumer Protection (STMUV), Bavaria, Germany. He stated that for a mutual collaboration, complete understanding on the land use, water use, dam retention areas, rain water harvesting structures and hydrological, geological, geographic, topographic descriptions are needed. For this, the countries sharing the same river should work together. He stressed on the need of strict supervision of governing authorities regarding implementation of policies.

The last day saw a field visit by the delegates to Dhulkheli, a place next to Kathmandu valley, to see and experience the IWRM practices on the ground. In the text to follow, a more detailed description is given about the three-day proceedings of the conference.

## Inauguration Session

The inaugural session started with Opening Remarks from Mr. Ngamindra Dahal, Chairperson, Nepal Water Conservation Foundation. Mr. Dahal spoke on the issues of climate and water nexus. Mr. Kristof W. Duwaerts, Resident Representative, HSS Pakistan gave welcome remarks.

In the inaugural session, His Excellency Mr Roland Schäfer, German Ambassador to Nepal, emphasized on the need of strengthening regional cooperation to cope with the emerging water problems and further made a call to the delegates to come together to act on the scientific research outcomes of the ICIMOD, a regional level organisation with the mandate from the Himalayan countries to do scientific research on the Himalayan ecosystem.

Dr Molden from ICIMOD said that there exists strong imperative to de-emphasize the national boundaries when it comes to water resources management in the Hindu Kush Himalaya region. He said it is proven that regional cooperation leads to better development outcomes. What happens in the Himalayas affects one-fifth of the world, he pronounced. Dr. David Molden highlighted various work areas of ICIMOD on the Hindu Kush Himalayan basin, the major being the Koshi Basin. He also said that China occupies one third of the Koshi basin stressing that China

**“Working across borders on knowledge for development helps in regional cooperation”- Mr. David Molden, ICIMOD**

should also be brought under the table of discussion. He also warned that there is a great danger of glacial lake outburst especially on the hydropower projects which are under construction in various parts of the region. He also displayed through pictures on how community based flood early warning system is working in the Koshi basin areas. He particularly mentioned about the role women are playing in the community based flood early warning system. That is why he claimed that mountains are critical in water discussions.

In the key note speech, Dr. Sanjay Sharma, Secretary, Ministry of Energy, Water Resources and Irrigation, Government of Nepal talked about the government action and preparation regarding climate action. One of the problems he discussed that water based dialogues is technocratic in nature. He stressed that water based dialogues should not only be technocratic in nature. Being social issues, various water based sociological issues should also be discussed. He also



storage for water harvesting. Thinking about water from hydropower and dam perspective should go in the interest of more inclusive and comprehensive water use and storage planning to realize the true potential of development. Excess emphasis on hydropower has compromised on the e-flow regimes. No one is monitoring e-flow; companies are ignoring e-flow norms. Water from intake to turbine is only what is considered.

What do we really need the water for? It is essential for biological, economic, aesthetic/spiritual life. Villages are being abandoned all over Nepal (silent disaster) even without earthquake, due to drying of water sources. Currently Nepal's federal structure is highly urban focused. This encourages people to abandon village and come to urban centres. Traditional livestock and agriculture have declined due to lack of access to water. There is a need to get back to virtual water and energy footprint. This is where environmental activism needs to come in, and talk about locally produced food with minimum water footprint.

Rivers are supposed to be sacred in the Hindu Kush Himalayan (HKH) region. In meeting the water demand for irrigation and cities, spiritual use is totally ignored. This has led to less flow to no flow of water in the rivers causing destruction of aquatic lives and denying the possibility for navigation. Mr Gyawali said that we need to apply holistic approach to deal with the simmering water crisis in the region. For that we have to go one step ahead of the IWRM planning and strategy and adopt nexus approach (water-energy-food linkage). This will mobilize the business community, the propagator of the nexus approach. It would be pointless to talk about water in today's scenario, without talking about its linkages with other internalities and externalities.

### Summary of Q&A by the participants and Speaker:

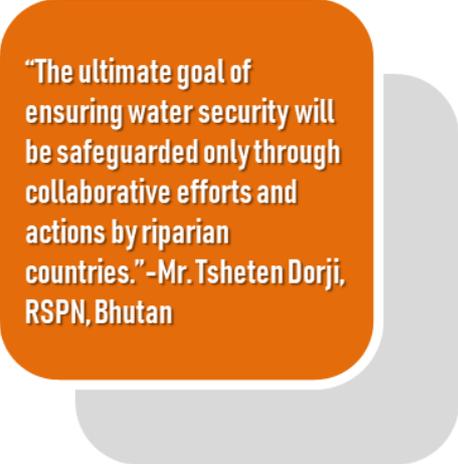
Earlier, water used to be considered emotive/sensitive issue between the countries to be discussed but now countries are openly discussing about it and collectively searching for solutions. Water-energy-food nexus is very important for the region as a whole to support the sustainable development. However, to establish the linkages data are required which we lack in the region. Best practices need to be documented, shared and replicated. For example, the region can learn a lot from ground water recharge practices from the Indian state of Sikkim.

Most cities depend on springs for their livelihood. Central Bureau of Statistics (CBS) of Nepal has done rapid assessment and found that 74% of respondents said water has reduced in springs and 48% of springs gone completely dry in the last 25 years in Nepal. Thus conservation of critical water zones in and nearby cities is important. One thing is now pretty clear: without managing land, we cannot manage water. Watershed management is a must to augment the water resources in Nepal. To do better and effective water resources management, focus should be made on gender factor and social inclusion.

## Session - II

### Integrated Water Resources Management: Local Level Initiatives in the Himalayan region

In this session, presentation was made by Mr. Tsheten Dorji and Mr Kesang Jamtsho. Highlighting the increasing importance of water resources, they said that water has become a vital resource because of the climate change and the increase in the population of every country falling in the region.



**“The ultimate goal of ensuring water security will be safeguarded only through collaborative efforts and actions by riparian countries.”-Mr. Tsheten Dorji, RSPN, Bhutan**

The impact of climate change is even severe in mountainous countries like Nepal and Bhutan. Especially the 50000 glaciers that we have in the Himalayan region have been severely affected by the climate change. Although these glacial lakes are the major source of irrigation especially in the summer region, they are decreasing at an alarming pace. They added, the outburst of glacial lakes due to the increase in the temperature has proved to be devastating in Bhutan as well as other Himalayan countries. It is clear that the communities dependent on glaciers are more likely to be impacted by climate

change.

Coming to the aspects of water resource management in Bhutan, they informed the audience that water is a state property governed by National Environment Commission. Water Act 2011 provides directions to manage water resources in integrated manner to ensure sustainability and conservation of water. For managing water in holistic manner, there exists IWRM Plan 2016. Increasing pressure on quantity and quality of water is exacerbated by impacts of climate change. Bhutan has been constantly fighting the battle of climate change by conserving their forests and adopting environment friendly practices. Bhutan is the only country with zero-carbon. On water front it has taken many steps to improve water situation in the country. It harvests the water resources sustainably and has been making efforts to provide 24/7 safe drinking water by 2023. Bhutan is also preparing national inventory of water resource to put in place a data base on water resources in the country.

Bhutan’s development policy is based on gross happiness index, not on the gross domestic product. However, in the face of emerging climate change issues, it seems to be a difficult choice. It is one of the most vulnerable countries to climate change and its impacts. Bhutan has a fragile mountain ecosystem, and lies in the seismic zone 4 and 5 and prone to GLOF, flash floods, drought and forest fire risk. It has high dependence on climate sensitive sectors such as hydropower. They reiterated concerns that climate change is going to have impact on

agriculture, forests, biodiversity and human health. The number of natural disasters may increase due to formation of GLOF, accelerated melting of glaciers, changes in hydrological cycle and extreme climate. The government has taken steps to effect GLOF mitigation through hazard zonation, installation of automatic early warning systems, awareness and advocacy to vulnerable communities and do disaster management with the help of landslide management, efficient water supply systems and rainwater harvesting, community-based forest fire management, water users associations' capacity building, watershed and spring shed management, water quality testing and water budgeting.

In Bhutan, population of which is 681,720 (PHCB 2017), hydropower and agriculture form core of the economy. It has 10 major rivers and three transboundary river systems. To protect the aquatic life, there exist guidelines for maintaining the e-flow in the water bodies. Under the Constitution of Bhutan (Article 5), it is the duty of the government to protect, conserve and improve the environment. Bhutan maintains sustainable forests and pristine environment biodiversity hotspot by having 72% forest coverage, 9% biological corridor.

### **Summary of Q&A by the participants and Speakers:**

Bhutan's Happiness Index is supported by four pillars—good governance, environment conservation, preservation of tradition and culture. Nepal and India should take this seriously. This is a way forward for better governance. Though prima facie Bhutan performs well when it comes to protecting environment, Environmental Performance Index by Columbia University, Bhutan is ranked in global index 141 out of 180 countries (environmental health, water and sanitation and air pollution) which is very bad.

In Bhutan digging bore wells are also prohibited. However, ban may not persist in long term, if technology is decentralised and local people see benefits in bore-well. What is needed is to make people aware of the importance of preserving ground water. Bhutan and other countries in the region also need to follow some global framework on disaster risk reduction such as Sendai Framework and protocol of COP 21. CC adaptation and disaster risk reduction need to be integrated at State level. If integrated would create synergy and if not, it would cause economic loss. In Bhutan, policies for disaster risk and climate change are synchronised to some extent.

## **Session - III**

### **Joint-Collaboration for data generation and use in scientific research: Initiatives and challenges**

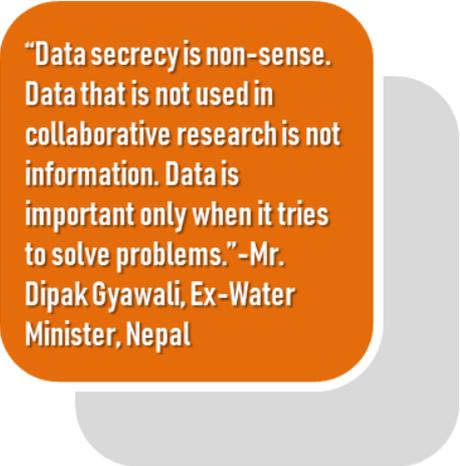
Mr. Muhammad presented his views on data generation and use and it works for Bangladesh. He began with Ganges- Brahmaputra-Meghna River basin and how it is regularly subjected to flood, droughts and cyclone every year. The major problem in basin is flooding, river bank erosion, scarcity of water and droughts. Brahmaputra river is changing streams every year,

leading to erosion every year in both left and right banks of the river. Water level frequently crosses the danger level and inundates lot of areas in the country. Flash flood is another problem in the country. Sharing of data by India and Nepal with Bangladesh has helped a lot in early warning and readiness to deal with floods.

Bangladesh water board generates data on the water level and forecast the floods etc. on the basis of data received from India and Nepal. However, frequency of real time data need to be increased to produce better hydrological modelling that would help to make people aware and plan for any such eventualities. Growing pollution and sedimentation in the rivers are some other challenges that need to be dealt with. Huge sediments are carried by Ganges and Brahmaputra rivers, especially in monsoon time.

#### Summary of Q&A by the participants and Speaker:

We are so occupied with the large rivers that we tend to ignore the marginalised rivers (small rivers) which are 56 in numbers between India and Bangladesh. They cause sever flood damage collectively. But unfortunately, the governments do not pay sufficient attention to these rivers. Studies on cross border flood regarding early warning system show that there is lack of trust to communicate the flood information from one country to another. Providing flood information is a security issue. Communication was taken as political security across countries. This problem needs to be addressed in information sharing. Information is shared only after the event. Now we have to share the information by the time you predict it. So that downstream communities can get prepared. Cross border sharing has to focus on this in the adaption interventions. Also, downstream to upstream cyclone forecast information system is needed from climate perspective. Satellite based, drone-based, remote sensing monitoring of hydrological and meteorological data are more relevant today.



**“Data secrecy is non-sense. Data that is not used in collaborative research is not information. Data is important only when it tries to solve problems.”-Mr. Dipak Gyawali, Ex-Water Minister, Nepal**

## Session - IV

### Inland Navigation: Opportunities and Challenges

Dr Uttam Sinha presented his views on the opportunities and challenges of inland navigation. He said that in South Asia, rivers have emerged as valuable connectivity option. He took India as an example for the inland navigation. Navigation for India is a very important issue and is going to champion the issue in the years to come. Indian waterways are crucial in sub-regional context and building transit facilities especially between Nepal-India and Bangladesh-India could strengthen the connectivity. This will also support the view that South Asia should not just be seen as a geopolitical construct but a riverine neighbourhood. India could play role of a facilitator in making this happen—transformation from geopolitical construct to riverine neighbourhood, as it acts as transitory to all rivers in South Asia. Potential for inland navigation is quite high in India and other South Asian countries should carry out an assessment of their potentials. India has 14,500 km of potentially navigable waterways. India runs in 18% high logistic costs. Navigation waterways will act as huge enabler to reduce freight traffic. India requires investigation, assessment, scoping activities on navigation and need to substantiate with solid research and understanding to realise its inland navigation potential. Citizens and aquatic lives cannot be ignored in this process. In 1877, there were about 1, 80,000 registered boats in Calcutta. That was the kind of level of navigation in the public imagination and also the way the infrastructure was developed in India. Now, we have only 500 registered ships. So, you can imagine, what a dive that India water waves has taken. It has completely forgotten mode of transporters. There is so much of drive and over drive on rails and roads, that you completely forgot that you have river also. And they could be in Indian water waves. India will now have 111 rivers as national water waves. Prior to that, only 6 rivers were considered as national water waves in India. So, this is a big dramatic leap, from 6 to 111. The Indian government has allocated Rs.500 crore for the development of water ways.

Water is a political and emotive issue in South Asia. We need to transcend this, Dr Sinha advocated. There should be sub-regional thinking and sub basin dialogue. We should not look at it from volumetric view, but from benefit sharing approach. The benefit sharing should be in the field of navigation, data sharing etc. It is good note that riparian behaviour is changing. There should be more dialogues and issues of securitization need to be rethought and phobia on water issues should go.

## Summary of Q&A by the participants and Speaker:

Often the environmental balance in navigation is overlooked. We need to restore it. Navigation may open plethora of security challenges such as border security etc. But everything should not be linked with security issues. If any security threats arise, countries will find the solution. We should do away with unnecessary border phobia. South Asia can learn navigation system from Europe. European water framework directive can be useful to South Asia. Inland navigation is cheaper, cost-effective and environment friendly. The politicians should understand that inexpensive transit for goods is more important than rapid transport for people.



Dr. Sinha delivering his speech

Maybe for all the South Asian countries, inland navigation is not possible (Bhutan could be the one), at least India, Bangladesh and Nepal can come together to develop a network for inland waterways and connect to each other. Their national water plans should fit into regional plan and need to be synchronised. Politics cannot be taken out of water. Water is politics—how you make the politics healthy is the question. Water dispute between India and Pakistan is one such example. Even in the events of wars, Indus Water Treaty between these two countries remained intact, rhetoric apart. The treaty has clearly defined provisions for India and Pakistan and the restrictions India and Pakistan should follow.

One good thing in the inland waterways would be that it will be necessary to maintain sufficient amount of water for navigation throughout the year. Navigation in Rhine stopped due to lack of water. Though it may not be compared with e-flow, at least it will give some relief to the creatures in the water bodies. Navigation would force that quality is maintained. Another option to necessitate the maintenance of water in the rivers etc. is to move from e-flow to s-

flow i.e. spiritual flow! In addition to the flows in the water bodies, energy conservation and financial viability are other factors to support inland navigation.

## Session - V

### Sedimentation in Dams- Challenges and Opportunities

Brig Fiaz Hussain Shah presented his views on the challenges and opportunities of sedimentation in Dams. He said that sedimentation is a physical process in watershed due to weathering of rocks and erosion. Sediment Yield is the amount of eroded sediment discharged by a stream at any given point; it is the total amount of fluvial sediment exported by the watershed tributary to a measurement point and is the parameter of primary concern in reservoir studies. He gave example of Tarbela Dam which is world's largest fill-type dam, completed in 1976. Live storage capacity of Tarbela reservoir has declined by more than 33.5% because of sedimentation. When storage is reduced, overflow would be more in monsoon. Sedimentation causes loss of storage, loss of navigable depths in upstream, degradation of channel in downstream and reduction in hydropower-capacity of reservoir. He said that there are five elements of the sediment management and they are: reduce sediment inflow, route sediments, remove sediment, provide large storage volume and place the sediment. Proper sedimentation can lead to land fertility and fluvial transition.

In his presentation, he also talked about climate proofing the Indus Water Treaty, signed in 1960. Defining climate proofing in this case, he described it as a tool to incorporate climate change related clauses and provisions in a water agreement with a view to ensure its sustainability. The emergence of new phenomenon of Climate Change has added a new dimension to water availability. Over the years, water quantity and water quality have immensely changed. He added that Pakistan is one of the most water stressed countries in the world, water, not the money is Pakistan's biggest problem and urged India and Pakistan to come together to promote poverty reduction and equity, economic benefits, sustainable water management and peace.

#### Summary of Q&A by the participants and Speaker:

To bring climate proofing into the treaty is important. Treaty can be modified through mutual consent between India and Pakistan. There are other aspects of climate proofing such as disaster risk reduction and economic loss of sedimentation. We need to talk about them as well. Major driving factors behind the sedimentation are both natural (rainfall) as well as anthropogenic (roads and constructions). Afforestation can reduce the sedimentation. Trees planted would help in stabilisation, change in climate, precipitation, temperature and economy as whole in Pakistan. Without trees, environment is bound to be degraded. Brig. Shah stated that the present Prime Minister of Pakistan is directed to plant 10 billion trees which would not only Pakistan but the whole region and neighbouring countries.

## Session - VI

### Pani Satsang: EU-SA Dialogue on Water Resource Management - Where can we find mutual areas of collaboration?

**“To win the battle about environment one needs an administration organized like a mixture between an army and a university.” - Prof. Martin Grambow, STMUV, Bavaria, Germany**

This session focused on finding out a common ground on which experts from European Union and South Asian countries can come together to cooperate in effective water resources management. It also worked as an interface of mutual learning and experience sharing. Rejuvenation of rivers is one of those areas where cooperation is needed and possible, given the rich experience of European Union’s countries in that regard.

In this session, Prof Martin Grambow presented his view on river rejuvenation. He appealed the audience that we need to protect the environment like never before. To win the battle of environment, we will need an organisation to fight, which will require to hire, train and pay the people. He added, we need to upscale the strength/capacity of administration, make it responsive, innovative and committed, to have in place an effective water management practice.



Prof. Grambow delivering his speech

The study on land use, water use, dams, retention areas, rain water harvesting structure and hydrological, geological, topographic description of South Asian countries is needed. Discharges from point and non-point sources and discharge from agriculture are ruining the

ecosystems. Though it is difficult to set the benchmark for the chemical pollution, the drinking water quality should be ensured in all the surface water. Another challenge worldwide is the issue of irrigation. France, Croatia, Tunisia are trying new approaches to find better ways for irrigation. Talking about the existing engineering, he discussed about the use of technical engineering in tackling the climate change. He said that technical engineering will not suffice to deal with climate change but biological climate engineering by introducing wetlands, forests for restoring ecosystem.

#### Summary of Q&A by the participants and Speaker:

Though good organisation requires good training and good payment for people to work, often the donor agencies run behind financial constraints and leave the projects in between without taking it to the self-sustainability level. So what can we do about it? Is there any strategy to financially support the countries having lack of fund to manage water resources properly? One thing we should understand that donor agencies do have constraints. Their priorities keep shifting. The governments need to change their priorities and balance out the economy versus ecology binary.

As we know, water administration in many countries is completely fractured, though people are passionate about topics such as soil and water. What we need to do is find right people to take the initiative. One such example is Community Forest in Nepal. It was managed by communities and they used to get in-kind payment. It worked out well. Later Community Forests (CFs) were nationalised, leading to the tragedy of commons. To manage the CFs, guards were appointed from the community themselves and paid salary by the World Bank gave salary. It did not sustain and forests were destroyed. Big donors have failed to realise that there is something more other than money in governance. Community to community dialogue is required across the country and between the countries. One such dialogue could be on Rhine-Ganga. This can bring about changes in the areas of rejuvenation process, inland navigation, environmental flows, livelihood etc.

#### Key recommendation from this dialogue forum:

- ◇ Lecture series, webinar and students exchange programmes between South Asia and EU.
- ◇ To bring countries together in water, joint research by university students of relevant fields. Visits can be planned to related countries.
- ◇ Internship for the students from the water fields be encouraged at the regional level
- ◇ India and Nepal should also think to become signatory to the UNECE Water Convention
- ◇ A conference beyond South Asia level to include other countries outside South Asia
- ◇ Bring in private sector and lobby government to give private sectors enough support

- ◇ Corporate Social Responsibility (CSR) should be promoted and government should prioritize the sectors for CSR investment
- ◇ Networking- a web portal can be developed or social network can be used to create a virtual platform to facilitate the interaction among the participants.

## Field Visit

After the two days of the conference, the participants went on a field visit to Dhulikhel to observe the water management system in Dhulikhel of the Kavre District of Nepal. Dhulikhel lies in the mid-hill region of east-central Nepal. Dhulikhel is part of the Kavre Valley in Kavrepalanchowk district, which comprises Dhulikhel, Banepa and Panauti as major urban centres with a population of 66,405.

Dhulikhel Municipality is a rapidly emerging satellite city of Kathmandu—the capital city of Nepal and it bears prime importance from commercial point of view and trade link to Tibet—the autonomous region of China. Kathmandu University, Dhulikhel community hospital, hotel/restaurant/lodge, business, agriculture and a local users managed drinking water system are an integral part of the local economy. Dhulikhel municipality was previously divided into nine wards. As per the decision made by the Cabinet on 2015, it is now divided into 13 wards annexing Kavre Nitya Chandeswori Village Development Committee.

The central Dhulikhel gets drinking water from a community managed drinking water supply project. The system has been operational since 1991. It provides a best practice example of water management in Nepal, yet there are several issues and challenges to be addressed in terms of climate adaptive equitable water management strategies and practices in the context of its rapid urbanization, expansion of infrastructure development and tourism services, and changing climate and farming practices.

## Summary and Conclusion

Water is a vital and depleting resource in the world right now. Especially the countries benefitting from the Himalaya watershed basin are also experiencing such phenomenon. In the very context, the conference was organized aiming at finding out common coherent perspective on areas of common working ground so that problems of water scarcity could be mitigated in the future. The Conference became successful in shedding light on the issues such as common working ground on areas such as water navigation, data sharing; water management practices from the participating countries; learning from successful examples of Rhine and Danube Rivers in water conservation and sharing; issues, problems and common grounds of water sharing from South Asian rivers such as Brahmaputra (India and Bangladesh), Ganga (Nepal and India) and Indus (India and Pakistan), and sharing of the results and research data to policy makers and general people. From the participants representing different countries and regions of the

world, the Conference became very fruitful in terms of getting a general viewpoint of the IWRM situation of South Asian Region. The conference created a great platform for participants for various regions of South Asia and also helped to bridge the knowledge gap between IWRM situation in South Asia and Europe. The convening expressed solidarity in IWRM and committed to further the collaboration amongst the actors in future.

## Abbreviations

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### **C**

CC: Climate Change · 12  
CEGIS: Centre for Environmental and Geographic Information Services · 6  
CFs: Community Forests · 19  
COP: Conference of Parties · 12  
CSR: Corporate Social Responsibility · 19

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### **E**

e-flow: environmental-flow · 10  
EU: European Union · 19

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### **G**

GLOF: Glacial Lake Outburst Flood · 11, 12

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### **H**

HSS : Hanns-Seidel-Stiftung · 4, 5, 8, 21

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### **I**

ICIMOD : International Centre for Integrated Mountain Development · 4, 8  
IWRM: Integrated Water Resources Management · 6, 7, 9, 10, 21  
IWT: Indus Water Treaty · 7

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### **N**

NECS: National Environment Commission Secretariat · 6  
NIDM: National Institute of Disaster Management · 7  
NMML: Nehru Memorial Museum and Library · 7

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### **P**

PHCB: Population and Housing Census of Bhutan · 12

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### **U**

UNECE: United Nations Economic Commission for Europe · 19

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