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INTRA-REGIONAL GANGA INITIATIVE

Regional Cooperation on the Ganga Basin: Yet a mirage?

Dwarika N. Dhungel*

Take Me and Mine Into You Forever, O Mother Ganga

Pandit Jagannath on Ganga Laharai during 1500 AD
(<http://creative.sulekha.com>)

Introduction

Ganga or the Ganges is one of the important rivers of South Asia. It is a trans-boundary river between India and Bangladesh. Some rivers, originating in the Tibetan Autonomous region of the People's Republic of China and passing through Nepal, are the tributaries of this great river along with some Indian rivers. Its basin covers a little more than 1 million sq km and spreads over four countries—China, Nepal, India and Bangladesh (Table and Map). Cooperation among the countries of the basin, especially among Nepal, India and Bangladesh has been a subject of discussions at the political and professional levels for a long time for harnessing the water of the Ganges for the socio-economic betterment of the people of these three countries. Yet it has remained a mirage.

Of the Ganga-basin countries, India is the dominant user of the Ganges water and major player in regional cooperation. To fulfil her water requirements, India has been pursuing a policy of bilateralism with Nepal and Bangladesh in relation to the waters of this river and its tributaries for the last six

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decades. She seems to be thinking of changing her policy from bilateralism to regionalism in the context of the construction of the dams on the Brahmaputra river by People's Republic of China and her inter-basin water-transfer projects and India's own growing water demands in her northern heart land.

In such a backdrop, this paper dwells on the efforts so far made for regional cooperation, possible reasons for not happening it, latest developments and some personal reflections towards the regional cooperation in harnessing the waters of Ganges and her tributaries. Published public and other relevant documents, along with discussions with some knowledgeable persons in the field, form the basis of this paper. This paper is divided into three portions. The first portion dwells on the brief introduction and importance of the Ganges and efforts hitherto made on regional cooperation and hurdles faced. In the second portion, the current situation in the basin and other developments that could contribute to effective regional cooperation are discussed. The last portion deals with some perspectives in this regard.

Ganga in brief and Efforts made on Regional cooperation

Brief about the river and character of the basin

Originating from the Gangotari glacier at Gaumukh in the Indian Himalayas, Ganges flows 2,500 km (The World Bank 2012) across the northern India, fertile plains of this region of India and Bangladesh before finally meeting the Bay of Bengal. It is joined by several major tributaries from Nepal and India along the way to the Bay of Bengal.¹

The basin is a densely populated region on earth, home to 656 million people (Ibid) , with an average density of over 551 persons per sq km, while in delta it goes up to 900 million (www.panda.org). The Gangetic plains are considered the granary of northern India; its water is home to a variety of fish, the source of food for millions of people. The major north Indian industrial towns are also located on the banks of the river, as a result of which the river is facing pollution problem. Its delta area, *Sunderbans*, is considered to be home 'to a host of rare and iconic species' (The World Bank, 2012). The basin is also characterized by pervasive poverty, as a very large proportion, i.e. over 70 per cent of the population, lives on less than US\$2 per day (Ibid).

In addition to the availability of extensive ground water resources, the estimated annual run-off from the rivers of Nepal is 220 billion cubic meters along with her extensive groundwater resources, with an average annual precipitation of 1530 mm (WECS, 2002). The Ganges is the natural drainage of all the rivers flowing from Nepal. The overall contribution of the rivers of Nepal to this river is 46 percent of its flow and it is as high as 75 percent during the lean season (March to May) with that of the Farakka flows (Pun 2004).²

Efforts made so far

Nepal, in addition to her vast water resources, has suitable sites for large storage projects³ capable of 77 billion cubic meters of water, constituting about 68 percent of the total monsoon flow (Poudel 2009). Nepal, after meeting her water demands, is in a position to contribute to the down-stream countries during the lean period to meet their water demands in different sectors. Because of these facts, Nepal for the first time in 1977 offered a proposal to cooperate with her southern neighbouring countries in the water resources sector and, since then, she has been proposing this cooperation at both the government and Track II levels.

Late King Birendra Bir Bikram Shah Dev, while addressing a gathering of foreign delegates to the 26th Colombo Plan Consultative Meeting in Kathmandu in 1977, had:

'referred to abundant water resources of the country and expressed Nepal's readiness to develop and share resources—like the waters from the snow-capped Himalayas—for the collective benefit of all the people of the region' (quoted in Lohani 2013).

In the very first summit of the Heads of States or Governments of Association of South Asian Association for Regional Cooperation (SAARC) held in Dhaka in 1985 too, King Birendra had floated the following idea and emphasized the need for regional cooperation in the field of water resources. His statements in this regard were:

From the side of Nepal with the high Himalayas as one of our assets and a vast reservoir of yet untapped water resource that can give to the millions of our people a means to fulfill their basic needs, I wish to draw the attention to the fact that there exists this priceless resource waiting to be harnessed for the benefits of our people (STATEMENTS AND DECLARATIONS OF SAARC Summits of the Heads of State or Government [1985-2010] Institute of Foreign Affairs (IFA 2010).

Responding to the proposal of King Birendra, 'the Prime Minister of India indirectly hinted that the matters which are bilateral in nature are going to be dealt with bilaterally' (quoted in Upadhyay 2013). His actual response was:

'We have not sought to melt our bilateral relationship into a common regional identity, but rather to fit South Asian cooperation in our respective foreign policies as an additional dimension' (Ibid).

It may be mentioned that Bangladesh did support 'the offer of Nepal and mentioned it as a positive move' (Ibid), which however, was seen as ganging up by Nepal and Bangladesh against India.⁴ Despite such a feeling for regional cooperation from India whose role plays a crucial role in this regard, Nepal

thought it was worth pursuing the matter at the heads of the States and Governments level meeting of the SAARC⁵ and in the forums, such as South Asia Growth Quadrangle (SAGQ)⁶ and US-supported South Asia Regional Initiative for Energy (SARI/Energy).⁷

Some research institutions based in Nepal, India and Bangladesh, through their individual or joint studies and publications too, have made the plea for such cooperation.⁸ The Water Resources Strategy of Nepal (2002) and the National Water Plan of Nepal 2005 have also talked of the importance of the regional cooperation among the Ganga basin countries in the water resources sector.

However, the regional cooperation in the sector is yet to materialise. One could ask a question why initiatives made so far for regional cooperation are yet to bear the fruits. The answer has to be found in the mindset of the countries of the basin. Indeed the mindset of all the countries is important to make the regional cooperation a success. But of the basin countries, India is the largest one and her role and attitude play the vital role in this regard. So far India has been pursuing a strategy of bilateralism with her neighbouring countries (National Water Plan 2012⁹ and 2010 recommendation of a New Delhi-based think-tank Institution, Institute for Defence Studies and Analysis [IDSA]¹⁰ in the water sector.

Even in pursuance of the treaty provisions which she has signed with Bangladesh (Treaty of 1977¹¹ and 1996),¹² which seek to cooperate with the third country for augmenting the flow of Ganga at Farraka barrage, her policy has remained the same. For example, pursuant to Article IX of the Agreement on the Sharing of the Ganges waters at Farakka 1977 (footnote 12) India and Bangladesh, in May 1979 'decided to approach Nepal for study/investigation of the projects in Nepal...identify the specific areas where the cooperation of Nepal was necessary...' (Dhungel and Pun 2008).

'Prior to the Nepal visit, there was clearly a major difference between India and Bangladesh on the manner of approaching Nepal... It was only on 29–31 October 1986 [after the establishment of SAARC] that the Joint Committee of Experts (JCE) from India and Bangladesh finally visited Nepal to seek information and data needed for the study of the possibility of augmenting the Ganges flow at Farakka through the construction of 7 storage projects in Nepal...' (Ibid). When it became clear that the JCE had come to Nepal just to procure data from Nepal and it was not willing to involve Nepal in the joint study, Nepal expressed its dissatisfaction to the Indo-Bangladesh JCE. It clearly stated that the sharing of data was not a problem, provided it was involved in the joint study from the very beginning so that its interests would also be served (Ibid). The committee went back with no success in Nepal. Finally, its own period terminated in November 1986 and the efforts of the JCE did not bear any fruit (Ibid).

It is not clear as to why India does not want to go for regionalism, but from the side talks during the track II exercises, I think her relations with Pakistan and the People's Republic of China are the main reasons. Also my understanding is that she thinks it is easier for her to deal with neighbouring countries in a bilateral manner rather than dealing with it in a group, as she has been taking position of

lower riparian country with Nepal and has always raised her voice whenever Nepal wanted to seek foreign support to undertake a storage reservoirs or inter basin transfers for irrigation purposes in the medium rivers in her territory on the ground that the proposed project would 'cause adverse effects on the existing water use in the downstream riparian areas' (Bhattarai 2009). But in the case of Bangladesh, I think Indian stand is that of an upper riparian country. And India clearly knows that once she goes for regional cooperation, she would have to face a group which would not be an easy task to handle compared to dealing bilaterally.

Current Situation in the Ganga basin and other developments

Since the commissioning of the Farakka Barrage on the Ganges in 1975, Bangladesh has been trying to get more water in the Ganges to meet her growing demands for different purposes through augmentation measures in the upper reaches. In addition, the demand for water is increasing in each country of the Ganga basin.

But, withdrawal of water in its upper reaches for different purposes causing water scarcity in the lower reaches of the river, both in India and Bangladesh. In this regard, I am told by a Bangladeshi professional, who has been observing the flow of the river for a long time that the flow of the Ganges at the Farraka has been decreasing over the years, mainly because of the withdrawal in the upper reaches. In this context, the bilateral commission that exists between India and Bangladesh, Joint Rivers Commission (JRC) at the 37th meeting of held in New Delhi in 2010, Bangladesh had proposed that Article VIII of the 1996 treaty could be 'implemented by India, Bangladesh and Nepal, jointly building a reservoir at a satiable location in Nepal, to benefit all the three countries' (www.ipcs.org).

The Ganga basin is also facing high climate variability, which is 'seen most dramatically in floods, droughts, and the uncertain timing of the onset of the monsoons. Large areas of the basin routinely suffer from both droughts and floods. Floods already take a significant toll on lives and livelihood in the Nepal lowlands known as the Terai, as well as in Bangladesh and the Indian states of Bihar and eastern Uttar Pradesh. Floods account for 90 per cent of the economic cost of natural disasters in Nepal...' (The World Bank 2012). To address these issues and for harnessing the waters of the Ganges and her tributaries for the socio-economic betterment of the people of the region, the World Bank through its current study on the Ganges, entitled *Ganges Strategic Basin Assessment: A Discussion of Regional Opportunities and Risks*, drawing on the inputs and information provided by various institutes of Nepal, India and Bangladesh has suggested for cooperation among the three countries of the region.

For last few years, a Mumbai-based Indian think-tank institute, *Strategic Foresight Group*, has also been emphasizing the need for cooperation among the countries of the Ganga basin (2009, 2010 and 2011) in the context of the growing water scarcity and insecurity.

India seemed to be concerned about the basin water-transfer undertaking of the People's Republic of China (China), when, although she considered her own River Linking Project (RLP) was in the conceptual stage, India came up with the idea as a result of the order passed by her Supreme Court in 2002, Nepal and Bangladesh expressed their concerned to the Indian proposal.

It may be recalled that China has undertaken a South-North Water Transfer Project, which 'eventually aims to pipe 45 cubic km of water annually northward along three routes in eastern, central and western China... the eastern and central routes will be channelled under the Yellow River, while the western route entails pumping water over part of the Himalayan mountain range.' (Moore 2013). Furthermore, China has decided to go ahead with the three dams on the Brahmaputra River. This has also caused concern to India and she has raised the matter with China even at the highest-level political leadership (*Times of India*, Jan. 30, 2013 and *Business Line*, the *Hindu*, March 28, 2013).¹⁴

The resultant effect of the developments in China seems to have prompted India to move from her current strategy of bilateralism to regionalism in the water sector with neighboring countries. The signal of the policy shift was indicated by the *Hindu* daily in its April 15, 2013 issue. According to this daily, 'Nepal, India and Bangladesh (NIB) have decided to join hands to cooperate and exploit the hydropower sector and use water resources management for mutual advantage, including jointly developing and financing projects in the Ganga river basin.' In this regard, according to the newspaper, a note has been prepared by the Ministries of Power, Water Resources and External Affairs of the Government of India (GoI) indicating the tremendous potential for development of water resources and hydropower in the Ganga basin and Ganga having 'a role in the agriculture, hydro-power, fisheries, navigation, and environmental sectors and in the economy of the co-basin countries... The joint initiative will contribute to poverty eradication and better socio-economic integration' (Ibid).

The NIB initiative, as claimed, 'has been envisaged as the strategy to explore technically and geographically feasible means in the basin for augmentation and equitable distribution of augmented supply of water and power' (Ibid). For this purpose, Committees of Water Resources and Power Ministries of the NIB have been proposed as 'the highest decision-making body, subject to the approval of the respective governments'. In this regard, I understand, the Government of Nepal is yet to come up with its response.

Similarly, the *Hindu* daily writes that 'in order to derive optimum benefits from the Brahmaputra Basin, Bhutan, India and Bangladesh have agreed to work jointly towards cooperative development and management of water resources and hydropower in an integrated and holistic manner. For this, the three countries have agreed to cooperate on the Bhutan, Bangladesh and India (BIB)' (Ibid). The basic aim of these initiatives, as reported in the newspaper, 'is to implement programmes in partnership with member-states that will contribute to strengthening the cooperation mechanism and to long-term sustainable development, economic growth and sub-regional cooperation' (Ibid).

But, according to knowledgeable professionals, the supposed U-turn from the current policy of bilateralism to regionalism, will have to be watched very carefully. They think that we will have to wait to find out whether India was really interested for regional cooperation or declared this policy just to secure the support of the neighbors to pressurize China. Furthermore, they are of the opinion that even if the effort of India succeeded on the Brahmaputra river, only India that gains the maximum benefits, not the other supporting countries, as Bangladesh is downstream to India.

From what has come in the newspaper, Bangladesh wants to capitalize the changed attitude of India and to rope Nepal in the regional initiative once again. And she wants Nepal to act quickly and has expressed disappointment on the attitude of Nepal. According to the *Dhaka Tribune*, the foreign and water resources ministries of Bangladesh 'asked Kathmandu to attend a meeting of the Tri-Nation Joint Working Group at a convenient time, but the interim Nepalese authorities said they "have no mandate for approving such an initiative.' (May 11, 2013)

Furthermore the paper wrote, 'despite Delhi's nod, the sub-regional plan to augment the water flow of the Ganges River, on which more than 40% of Bangladeshis depend for agriculture, stumbles as the Nepalese government sought further time before approving the regional initiative' (Ibid). In this regard, it may be mentioned that Nepal is in a state of transition, and its current government is not in position to take any decision that would have long-term implication to the country and on its main natural resource, water. Thus, the countries of the region will, thus, have to wait till a new constitution is written, adopted and fresh election for the new government takes place in Nepal, as the new government alone would be able to take the decisions on matters that would have implications to the present as well as future generation.

Some perspectives on Regional cooperation

From the above discussions and facts cited, it should be clear where the regional cooperation for the Ganga basin stands. The countries of the basin have to traverse a long way to achieve the goal of regional cooperation in the Ganga basin, despite the fact that regionalism is being advocated for this basin by the scholars and different studies undertaken by the research institutions of the three countries. This has been accepted by an Indian writer Brahma Chellaney (2013), who writes: 'Indeed, Asia is one of only two continents, along with Africa, where regional integration has yet to take hold, largely because political and cultural diversity, together with historical animosities, have hindered institution-building. Strained political relations among most of Asia's sub-regions make a region-wide security structure or more effective resource cooperation difficult to achieve' (*The Kathmandu Post*, April 8, 2013). He further writes: 'this could have significant implications for Asia's ostensibly unstoppable rise- and thus for the West's supposedly inevitable decline. After all, Asian economics cannot sustain their impressive economic growth without addressing their resource, environmental, and security challenges- and no single country can do it alone' (Ibid). His suggestion to the countries of Asia for regional cooperation, applies to the countries of the Ganaga basin, too.

The World Bank through its study of 2012 has also called for 'significantly enhanced regional cooperation in water, weather and climatic information, modeling and warning system which are essential for the sustainable management of the basin and the safety and prosperity of the people'.

Nepal is aware that even after meeting all her current water demands and safeguarding the interest of the future generation in the wake of her geographical location, the amount of irrigable land (1.8 million hectares of land) (Poudel 2009) she has and huge hydro-power potentiality in her 28 large-dam sites, is in a position to 'cooperate with India and Bangladesh to obtain optimum benefits from her estimated runoff of more than 200 billion cubic meters of waters. Similarly her neighbors would benefit immensely if this resource were harnessed in such a way that the cooperating countries could be in a win-win situation. In other words, if the rivers flowing from Nepal are properly harnessed, they will make substantial contributions to the socio-economic development of not only the people of Nepal but also millions of people living in the Ganges belt of South Asia, i.e. India and Bangladesh' (Dhungel and Pun 2008). But there is a difference of opinion among the Nepalese stakeholders as to how she could cooperate with other countries of the region in the water resources sector. Some think that Nepal should go for the large hydropower projects, sell the energy to India and lead the country in the path of development. Others are concerned on the adverse impact of the large hydropower projects in the environment of the country.

It may also be mentioned that the World Bank in its study of 2012, has made the suggestion that Nepal should tap her untapped hydropower potential, which could meet her domestic demands and surplus to be used for trading in the region. In addition, the study says that it has examined 23 largest of these dams, which has the capacity of 'about 25,000 megawatts, generating an estimated 65-70 terrawatt hours of powers annually'. But the study goes on to add that the water stored in the dams would not contribute significantly in the fields of flood control and irrigation in the downstream areas.

As the large-dam constructions would cause the displacement of the large tracts of lands, and thousands of people and loss of the places of historical importance, a question naturally arises as to whether Nepal should go for large dams for meeting domestic demands and sale of surplus of energy to other country if the stored water in the dams would not provide benefits to the downstream countries in other sectors like flood control and irrigation. Mainly on this ground, I think, the Government of Nepal has rejected the study findings and notified the World Bank accordingly.

In the discussions with some knowledgeable professionals from within the region during the Mekong–Ganga Dialogue II discussions recently held in Vientiane, Laos and Ubon, Thailand (June 2013), they were of the opinion that India has a wide irrigation networks in the Gangatic basin areas. They are currently not running to their full capacity due to the shortage of water. In such a context, they further stated that they have failed to understand how the World Bank came to the conclusion that the large dams in the Himalayas would not have significant effect in the flood control and irrigation sectors. Also the stored water may help Nepal to get access to the sea through the Ganges¹⁵

contributing regional cooperation among the three countries of the Ganga basin, Nepal, India and Bangladesh.

Therefore what is needed is the serious home work by Nepal in terms of the benefits and costs of the large dams, get the costs and benefits discussed transparently among the all the stake holders concerned, take them into confidence and then decide whether or not to go for large dams (which would be possible only when the country will have a new constitution and duly elected government). In other words, without the thorough costs and benefits analysis and having open and transparent discussions about these matters with the domestic stakeholders concerned, Nepal should not go for large dams as suggested by the World Bank without being fully satisfied that benefits outweigh the costs.

Since Nepal has been pursuing the idea of regional cooperation for a long time, except for getting the recommendations on the benefits of the large dams further studied and examined, she should not close the door totally mainly on the basis of the findings of the World Bank. There are other recommendations, which she could pursue to promote regional cooperation on the Ganges. One such area could be sharing of water-related data and information and formation an institutional mechanism for this purpose. It may be mentioned that doubts are being raised whether there would be need for data and information-sharing at the government level in the context of the technology available to collect the data from the satellite. Also in the context of water related data being considered secretive by some countries,¹⁶ it is suggested that some arrangements need to be made at the non-government level to collect and exchange data among of the countries of the region.

However during the Mekong-Ganga Dialogue II, the importance of the data collected by the state machinery was realized, and it was emphasized that there was a need for exchange of data at the government-to-government level including signing of the required protocol for this purpose. The World Bank study (2012) has also indicated for the need of 'systematic collection and exchange of appropriate, modern water, weather, and climate data, cooperative efforts in advanced modeling, forecasting and communications and warning system; and a shared information base for basin planning will help the countries seize the basin's opportunities and manage its risks'. The study further adds that 'cooperation could take many forms, from a network of national institutions with an agreed information sharing protocol; to a dedicated task force or agency that would gather, analyze and then disseminate crucial hydromet and climatic data; to an inclusive river commission that could develop a shared knowledge base and operational model of the basin, establish norms and protocols for transparency and information sharing...'

Because of the historical legacy of the treaties and understanding reached on water resources with neighboring country, the water is a very sensitive issue in Nepal. As such whenever the water resource-related issue especially relationship with the neighboring countries comes up, stakeholders including political actors get emotional and suspicious. Same might be the case in other countries too. So what is needed is informing the stake holders about what has happened so far in terms of success and failure

with regard to cooperation among the Ganga basin countries and sensitizing them importance of the regional cooperation. To attend these purposes, sustained effort is needed through the arrangement for series of dialogues for the different groups—political, government, professional, academic and at the level of journalists—to help them to understand each other's concerns and interests. In the process total transparency has to be maintained. Also countries that have signed bilateral treaties and understanding should honor the commitments made through such arrangements as confidence-building measures.

For initiating dialogues to help to build trust among the countries of the basin, mainly Nepal, India and Bangladesh, and to contribute to the regional cooperation among the Ganga-basin countries in a sustained manner, the professionals and institutions working in the field may like to come together and form a group, which might be called as G-power along the line of the M-power.

So far China is not being considered as a part of the Ganga-basin discussions. When her involvement was proposed during the recent Mekong-Ganga Dialogue II, this contributor was asked as to why to bring in matters that is mainly concerned with Nepal, India and Bangladesh. My contention was that when India herself has raised concern on the developments in Brahmaputra river and China's basin transfer schemes, there may be no need to feel shy to involve China in the Ganga-basin regional cooperation exercise. Also in the context of the climate change-related issues, i.e. change in 'water's time-space distribution and increase risks on floods & drought...' (XIA 2010), time has come to bring China on board in all regional cooperation efforts for the Ganga basin. So she should be invited to join the proposed G-power.

In addition to initiating series of dialogues to help the Ganga-basin nations develop trust amongst them in the field of water resources, the G-power could also lead them to start data sharing and coordinating the studies and researches. The proposed forum could also work out an institutional framework¹⁷ for the cooperation in the Ganga basin in the water sector, get them discussed openly by the stakeholders concerned and then act as advocacy group to lobby with the governments for adoption of the framework. It may be mentioned that the cooperation framework for the Mekong river has been developed for a totally trans-boundary river. Its total copy may not be relevant for the countries of the Ganga basin in designing its own institutional framework, as Ganges is only a trans-boundary river between India and Bangladesh. So the framework for the Ganga has to be designed in such a way that it becomes relevant to the Ganges as a trans-boundary river and to her tributaries. But the experience of the Mekong institutional framework could be taken into account so that its strength could be used and weakness avoided.

Conclusion

Being a river whose catchment lies in a number of countries, regional cooperation for the Ganges has been subject of discussions at the government, non-government levels including research and academic institutions for a long a time. But concrete shape is yet to take place. India being the main

player, whose attitude becomes the critical factor in the whole exercise, has been following the bilateralism in relation to her water-resource relationship with her neighbouring countries. It seems that she has started changing her attitude in this regard, and Bangladesh wants to capitalise the situation. But Nepal, because of her current transitional political scenario, is not in a position to take a decision on the regional cooperation in the water-resources sector till a new constitution comes into force and a duly elected government takes control of the country. It should, however, be no problem for her to agree for data-sharing arrangements, participate in the dialogues being organized through the proposed G-power and help it in the development of framework and institutional mechanism for regional cooperation.

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Table, Map and Annex

Table 1: Ganga Basin Area Distribution

	Country	Basin Area km ²	Percentage of Total Area
1	China	33,520	3.08
2	Nepal	147,480	13.56
3	India	860,000	79.10
4	Bangladesh	46,300	4.26
	Total	1,087,300	100

Source: Hari Man Shrestha and Lekh M. Singh, The Ganges-Brahmaputra System: A Nepalese Perspective in the Context of Regional Cooperation, Asian International Waters 1996 (Quoted in Iswer R Onta, Harnessing the Himalayan Waters of Nepal: A Case for Partnership for the Ganges Basin: An Invited Paper for Ganges Forum, Sponsored by IWRA and UN University, Tokyo, March 18-20, 1998, Calcutta).

Map of the Ganges River and her Tributaries + Brahmaputra and Meghna Basin



Source: www.sciencedirect.com

Annex

Some of the Relevant portions of Major findings of the World Bank study

- i) There is a potentiality of large water storage structures in the Himalayas, but 'full range of structures under consideration in this report would provide additional active system storage equivalent to only about 18 per cent of annual average flow, which is not very significant on a basin wide scale'

- ii) The upstream water storage is 'unlikely to significantly reduce flooding because it generally not level of peak flows in major (usually embarked tributaries that causes flooding but rather localized rainfall, high flows in smaller tributaries, and embankment failures
- iii) As to the contribution of upstream water storages, if all the large dams under consideration were built, approximately doubling low follows in the driest months. Storing even a minor portion of the flood flows until the dry season could significantly increase low flows especially in a very dry years... However the economic value of this additional low flow augmentation is unclear because of soil water logging and low agricultural productivity in India and Bangladesh. Water is not crucial constraints to agricultural productivity in the specific parts of the Ganges Basin that could receive additional flows...'
- iv) As to development of hydropower, the largest 23 in Nepal [considered by the report] 'would have an installed capacity of about 25,000 megawatts producing an estimated 60-70 terrawatt hours of power annually (and saving up to 52,000 to 56, 000 tons of carbons equivalent per year). The net value of this potential hydropower is estimated at some 5 billion annually, quite significant relative to Nepal's 2009 GDP of 12.5 billion'.

Source: Ganges Strategic Basin Assessment: A Discussion of Regional Opportunities and Risks, 2012

ABOUT THE AUTHOR

Dr. Dhungel is the Senior Research and former Executive Director of the Institute for Integrated Development Studies (IIDS), a Kathmandu based think tank.

Endnotes:

1. Nepalese rivers are the four large [the Kosi, Gandak, Karnali and Mahakali] and five medium [Kankai, Kamala, Bagmati, West Rapti and Babai] rivers flow down to this river. Indian rivers are: Bhagirathi, Yamuna, and Ramganga.
2. Pun (2004) writes 'Nepal' four large and medium rivers contribute a total of 5,675 cubic meters per second to the Ganga, or an annual volume of 179,000 million cubic meters. Based on an annual discharge of 382,000 million cubic meters at Farakka, Nepal's medium and large rivers alone contribute an astounding 47 per cent of the Ganga's annual flow at Farakka. Even through Nepal represents just 13 per cent of the Ganga's total basin area, during the three lean months between March and May, the volume of water flowing through Nepal represents an incredible 75 per cent of the flow reaching Farakka'
3. As per the World Bank study of 2012, the number of large dams sites indentified in Nepal 23 and the aggregate water storage on the river system would be ... about 130-145 million cubic meters. But according to the secretariat of the Water and Energy Commission of Nepal, there are 28 dam sites in the country (WECS bulletin, Volume 7:1, December 1995) , whose estimated water storage capacity, as already indicated, is 77 billion cubic meters (bcm)(Poudel 2009).
4. In this regard the former foreign secretary of Government of India, Maharaja Rasgotra has written: There actually was a gang up of sorts on the part of Nepal and Bangladesh on the question of Ganga waters and the construction of reservoirs in Nepal to ensure greater flows into Bangladesh and both countries were unjustifiably accusing India of an obstruction attitude. They wanted tripartite negotiations on water related problems, with Nepal occasionally suggesting China's participation as well. These were politically motivated moves, primarily on Nepal's part to extort concessions or simply to pressure or embarrass India. For good reason, we took the view that the issues between India and Nepal on the one hand and between India and Bangladesh on the other were bilateral and unrelated to one another and that China, at any rate, had no role in either case (ORF 2004).
5. During the third summit held in 1987, King Birendra had stated: Each year during the summer the seas in our neighbourhood in South Asia send their monsoon clouds towards the Himalayas. They cool off, precipitate, supply and make provision for water which is the source of sustenance for the millions of people in our region. Their failure causes drought. Their fury causes flood. Precisely, this is what happened this year. For years, we in Nepal have been consistently stressing the need for a comprehensive plan to tackle the problem through a common endeavor, maximizing the benefits through the optimal use of this, the most important of our natural resources in this part of

our region. The time has therefore come for us to see the light of reality and think in terms of broader interest' (IFA 2010).

Similarly, at the 11th Summit, Nepal stressed the imperativeness to deepen technical cooperation in the broad areas already identified and believes water resources should be a major component under the energy sector. Some of these areas have been also picked up for sub-regional cooperation. 'SAARC ought to explore all these avenues to consolidate economic cooperation and promote regional complementarities and the economies of scale' (Ibid). The SAARC, at its 15th Summit, had adopted the Colombo Declaration entitled Partnership for Growth for our People, which states: The Heads of State or Government expressing their deep concern at the looming global water crisis recognized that South Asia must be at the forefront of bringing a new focus to the conservation of water resources. For this purpose they directed initiation of processes of capacity building and the encouragement of research, combining conservation practices such as rain water harvesting and river basin management, in order to ensure sustainability of water resources in South Asia (COLOMBO DECLARATION "Partnership for Growth for Our People". The Declaration of the 15th SAARC Summit, August, 2008, [(Ibid)].

6. Knowing the difficulty in taking up the issues of the trans-boundary Rivers through SAARC, because of its charter, which does not allow the member countries taking up bilateral matters/issues in its formal discussion, SAGQ, with Nepal, Bhutan, Bangladesh and India was started in 1996, but it, too, failed to make head way mainly due to lukewarm attitude and mindset of member countries to go for sub regional cooperation.
7. The South Asian Regional Initiative for Energy (SARI/Energy) program was launched in 2000 by the US government through USAID to promote energy security through increased trade, investment and access to clean sources of power and fuel. The countries participating in the initiative are Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal and Pakistan (www.Sari-energy.org). From the point of helping the development of a regional grid, it had launched a four border project, which could not take off because of the lukewarm attitude of the principal player in South Asian regional cooperation.
8. The research institutes such as Institute for Integrated Development Studies (IIDS), in Kathmandu, Bangladesh Unayan Parishad (BUP), Centre for Policy Research (CPR), New Delhi and Panos Institute South Asia, a Kathmandu based organization have done works on regional cooperation on the Ganges, Brahmaputra and Meghna Basins and have come out their suggestion on the subject matter. Some of the major publications that have come out so far are: 1. Q.K. Ahmad, B.G. Verghese, R.R. Iyer, B.B. Pradhan and S.K. Malla (Eds). *Converting Water into Wealth: Regional Cooperation in Harnessing the Eastern Himalayan Rivers*. Kathmandu: Institute for Integrated Development Studies, 1994. 2. K.D. Adhikari, Q.K. Ahmad, S.K. Malla, B.B. Pradhan, K. Rahman, R. Rangachari, K.B.S. Rasheed and B.G. Verghese (Eds) *Cooperation on Eastern Himalayan Rivers: Opportunities and Challenges*. Kathmandu: Institute for Integrated Development Studies (IIDS). 2000, 3. Q.K.Ahmad, A.K. Biswas, R. Rangachari and M.M. Sainju, (Eds). *Ganges-Brahmaputra-Meghna Region: A Framework for Sustainable Development*. Dhaka: The University Press Limited 2001, and *Disputes Over the Ganga: A Look at Potential Water-Related Conflicts in South Asia*, Panos Institute South Asia, Kathmandu, 2004.
9. Indian National Water Plan of 2012 also clearly indicates country's preference to deal with her neighbours on a bilateral framework. According to that Plan, India would pursue the following polices:

'Even while accepting the principle of basin as a unit of development, on the basis of practicability and easy implementability, efforts should be made to enter into international agreements with neighbouring countries on bilateral basis for exchange of hydrological data of international rivers on near real time basis

'Negotiations about sharing and management of water of international rivers should be done on bilateral basis in consultative association with riparian States keeping paramount the national interests. Adequate institutional arrangements at the Center should be set up to implement international agreements'
10. The Institute for Defence Studies and Analyses (IDSA), in its study entitled *Water Security for India: The External Dynamics* (2010), has suggests that, in relation to Nepal, 'the efficacy of the bilateral cooperation needs to be increased by improving the working of the existing bilateral mechanism, including the Joint Committee on Water Resources'. However the study alerts the GoI to the growing water stress in the country by 2025 and scarcity by 2050. The IDSA in its report writes that the: 'Salience of water in India's relations with its neighbours will increase in the years. Whether water turns out to be a source of conflict or cooperation will depend upon the policy choices made by India and its neighbours. If South Asia remains in turmoil, cooperation will become difficult. The challenge before India in the coming years will be two-dimensional: to manage its water resources better; and simultaneously to manage its riparian relations with its neighbours'.

The existing bilateralism mechanism referred to by the IDSA in relation to Nepal is the high-level committee headed by the water resources secretaries of the two countries constituted to provide guidance and solve the issues faced by other committees.

11. Article IX of the Agreement on the Sharing of the Ganges waters at Farakka 1977 stipulated that the two countries: 'shall carry out investigation and study of the schemes relating to the augmentation of the dry season flows of the Ganges, proposed or to be proposed by either Government with a view to finding a solution which is economical and feasible. It shall submit its recommendations to the two Governments within a period of three years'.
12. Article VIII of the 1996 Treaty reads: The two Governments recognize the need to cooperate with each other in finding a solution to the long-term problem of augmenting the flows of the Ganga/Ganges during the dry season.
13. Following an order passed by the Supreme Court of India on 31 October 2002 in response to an application filed by a senior advocate Ramjet Kumar in a public litigation on the basis of a reference made by the then President A P J Kalam on the eve of India's independence day to the interlinking of rivers, the Government of India had passed a resolution for such interlinking and formed an eight member task force to get thirty seven major river interlinked by 2016. Since the adoption of the resolution and formation of the task force, the proposed inter linking of river project with 30 inter basin transfer links. The overall proposal of the river-linking project was to construct a total of 30 links, which are divided into two connections: Himalayan connection with 14 links and Peninsular Connection with 16 links, with a target of total annual water transfer of 174,271 million m³, comprising 32,983 million m³ for Himalayan Connections and 141,288 million m³ for Peninsular Connection.' (Iyer, quoted in Shrestha 2009) Of the proposed Himalayan 14 links, five links (i) Kosi-Mechi link, (ii) Kosi-Ghagra (Karnali) link, (iii) Gandak-Ganga Link, (iv) Ghagra-Yamuna Link, and (v) Sarada-Yamuna Link are Nepal-related ones. (Dhungel and Pun 2008). This project has attracted attention of the different stake holders. Some stakeholders feel that the project is ambitious and environmentally not feasible, while other thinks that India will go ahead of the project. While Nepal is concerned with the Himalayan components, the Jogighopa-Tista-Farakka link, which is to transfer water from Brahmaputra, is a matter of concern to Bangladesh (Mirza and Ahmad, 2008).
14. During the Fifth BRICS Summit in Durban in March 2013 Prime Minister Manmohan Singh of India met President Xi Jinping of China and raised the issue of Beijing's proposal to construct three dams across the Brahmaputra river on its side (Business line, the Hindu, March 28, 2013).
15. The National Water highway no. 1 of India intends to connect Patna with Allahabad through the navigation in the Ganges. This waterway could provide access to Nepal to the sea through her rivers, Kosi, Gandak and Karnali, all flows to the Ganges. The Kosi treaty signed between the two governments, Nepal and India has a provision on navigation, although not solely for providing Nepal with access to the sea. Similarly the Gandak barrage built on the Gandak as per the treaty signed by two governments, Nepal and India has navigational locks. Some officials of the then Ministry of Water Resources (MoWR), now Ministry of Energy (MoE), of the GoM had told this contributor that the study on the navigation possibility on the Kosi River would be undertaken as part of the study of the Multipurpose Kosi High Dam and Sun Kosi Diversion Scheme, but the officials did not know if the Gandak and Karnali Rivers would also be studied along with the study of the Kosi River.
16. Regarding data sharing matter, it may be mentioned that Government of India is not open compared to other countries in the region. During the World Bank study also, I am told that the study team had the access to measured data form official and other sources in the in case of Nepal and Bangladesh, whereas, in case of India, all the data are assumed because of unwillingness of Indian side to share the data.
17. So far my information goes; the idea of a regional institutional framework for the Ganges was discussed during the Ganges Forum held in Calcutta in March 1998 under the sponsorship of IWRA and UN university, Tokyo. In this forum, Iswer R. Onta, a water resources expert from Nepal had proposed for a supra national institutional framework for the purpose of regional cooperation in the Ganga Basin in his paper on Harnessing the Himalayan Waters of Nepal: A case for Partnership for the Ganga Basin



Observer Research Foundation,
20, Rouse Avenue, New Delhi-110 002
Phone: +91-11-43520020 Fax: +91-11-43520003
www.orfonline.org email: orf@orfonline.org



The Asia Foundation
465 California St., 9th Floor, San Francisco, CA 94104
Tel: 415-982-4640 Fax: 415-392-8863
www.asiafoundation.org email: info@asiafound.org