Twin Challenges for the European Union
M Saeed Khalid

The Indus River Basin And Climate Change
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Zheng He—the Forgotten Chinese Mariner
S. M. Hali

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A. G. Noorani

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Tracing the Islamic State’s DNA
Sahar Pirzada

Countering Regional Extremism and Terrorism:
Pakistan’s Perspective
Air Commodore(R) Khalid Iqbal TI (M)
Articles
The Economics of Inequality                      Jamil Nasir            3
The Muslims Of India                             A. G. Noorani         33
Turkey, Pakistan and Secularism                  Yasser Latif Hamdani   61
Tracing the Islamic State’s DNA                 Sahar Pirzada          84

Essays
Countering Regional Extremism and Terrorism: Pakistan’s Perspective
Air Commodore(R) Khalid Iqbal TI (M)             113
Twin challenges for the European Union           M Saeed Khalid        128
The Indus River Basin And Climate Change         Shafqat Kakakhel      139
Zheng He—the Forgotten Chinese Mariner           S. M. Hali             147
THE INDUS RIVER BASIN AND CLIMATE CHANGE

Shafqat Kakakhel*

OVERVIEW

The impacts of climate change will lead to a net reduction in the water resources of the Indus Basin shared by India and Pakistan. Diminished water supply will adversely affect food production and hydropower generation, undermining efforts by India and Pakistan to achieve food and energy security, socio-economic growth and poverty eradication. Whilst water-related challenges might provoke recurring tension in Indo-Pakistan relations, they also offer considerable potential for cooperatively addressing them.

This essay refers to the negative effects of a higher temperature and climate volatility on the Indus Basin and argues in favor of concerted efforts by India and Pakistan to initiate wide-ranging cooperation in ameliorating the looming water crisis in the Subcontinent.

PARTITIONING OF A SHARED WATER RESOURCE

The Indus Basin (IRB) consists of six major rivers- the Jhelum, Chenab, Ravi, Beas, Sutlej and the Indus itself- and covers an area of 1.12 square kilometers (km²) of which 8% lies un China, 6% in Afghanistan, 47% in Pakistan and 39% in India. Pakistan draws 63% of the Basin’s water; India’s share is 36%. Some 300 million people depend on the IRB.

The IRB rivers pass through northern India and Jammu and Kashmir before entering Pakistan and eventually emptying into the Arabian Sea near Karachi in Southern Pakistan.

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* The author is a former Ambassador. He served as UN Assistant Secretary General and Deputy Executive Director of the UN Environment Programme (1998-2007)
Essay

Whilst India has access to over a dozen river systems, including the Indus, the Ganges, Brahmaputra, Godavari, Krishna, Mahandi, Cauvery etc. the IRB is Pakistan’s only and indispensable water resource for human consumption, agriculture, industry and hydropower production.

The water resources of the Indus Basin were harnessed by the British Raj through an extensive network of canal irrigation based on India being a single administrative unit. The partition of British India in 1947 and the drawing of borders in utter disregard of hydrology left the headworks of canals in India although 80% of the land irrigated by them were in Pakistan.

Efforts by Indian and Pakistani officials to agree on waters sharing arrangements having failed, in 1951 the World Bank facilitated Indo-Pak negotiations on a “cooperative development and use of the water resources of the Indus Basin viewed as a unit”. Soon it became evident that the World Bank’s hope for evolving a “comprehensive long-range plan for the integrated management of the Indus Basin” could not be realized due to irreconcilable differences between India and Pakistan.

In the event, an agreement called the Indus Waters Treaty (IWT) was reached and signed in September 1960 which partitioned the six rivers: the eastern rivers— the Ravi, Sutlej and Beas— were allocated to India for its exclusive use; the western rivers— the Indus, Jhelum and Chenab— were to continue to flow freely into Pakistan. India was allowed to use the waters of the western rivers for limited human consumption, irrigation and hydropower generation under stringent conditions stipulated in the Treaty. Pakistan accepted the total loss of the eastern rivers only after being promised financial assistance for building two large dams and several barrages for storing waters of the western rivers and eight link canals for carrying them to areas that had been irrigated by canals of the eastern rivers.

The IWT provides for a three-tier dispute avoidance and resolution comprising a Permanent Indus Commission comprising Indian and Pakistani Commissioners and arbitration by a neutral expert or the International Court of Arbitration. Apart from water sharing
arrangements, the IWT calls for exchange of data pertaining to river flows, water utilization, hydrology of the rivers, canals, or reservoirs sought by either party as well as “future cooperation” for the optimum development of the rivers of the Indus Basin.

Widely hailed as a spectacular triumph of water diplomacy, the implementation of the IWT has neither been smooth nor as full as envisaged. Since the mid-1970’s a number of disputes have arisen over the construction of Indian hydropower generation projects on the western rivers. Thus far, only one dispute (over the Salal Dam on the Chenab) was resolved through bilateral high-level discussions; one (over the Baglihar Dam also on the Chenab) was settled by an external “neutral expert”; a third (over the Kishanganga Dam on the Jhelum) was resolved by the International Court of Arbitration; whilst a fourth (the building of a dam on the Jhelum at the mouth of the Wular Lake, has been under bilateral discussion since 1986!

The IRB has a potential of producing electricity amounting to 34,000 mw and India has already built projects generating 11,113 mw of electricity representing 33% of the potential whilst projects capable of producing 4,700 mw electricity are under construction with many more in the “wish list”. India seems determined to construct additional hydropower projects as part of an ambitious energy plan. Pakistan has expressed reservations on almost all the projects notified by India which are under discussion by the Permanent Indus Commission. Pakistan’s main fear is that although Indian hydropower projects may be in conformity with the IWT, they would enable India to control river flows which could hurt Pakistan. India dismisses Pakistani complaints as inaccurate “breast-beating propaganda”. Pakistani print media and extremist groups frequently accuse India of a premeditated scheme to deny Pakistan’s water rights.

MULTIPLE USES OF THE INDUS BASIN WATERS BY INDIA AND PAKISTAN

The IRB water resources are crucially important for both India and Pakistan, the more so for Pakistan, especially for agriculture and food security and hydropower generation.
Essay

AGRICULTURE AND FOOD SECURITY

Although the IRB waters form only 7% of India’s total water assets, the areas irrigated by them are the country’s major food baskets. The Punjab alone contributes 12% of India’s 230 million tons of food grains. Agriculture’s share in India’s GDP is only 15-17% but the sector supports the livelihoods of nearly 50% of its large population of 1.2% billion!

In Pakistan, the Punjab comprises 70% of the country’s cropped area and produces 80% of its wheat, 97% of its high quality Basmati rice, 63% of sugar cane, 51% of maize and 83% of cotton. Pakistan’s agriculture and livestock sector contributes 22% of the country’s GDP, 45% of all jobs, supports the livelihoods of half of the country’s population of over 185 million living in the rural areas, and supplies over 80% of raw material for the predominately agro-based industry.

HYDROPOWER GENERATION

As already mentioned, the hydropower generation potential of the IRB for India is around 34,000 mw. In Pakistan, the potential is estimated at around 59,000 mw of which only 6,516 mw is being produced. Dams under construction will add 1,628 mw. Pakistan has embarked on an ambitious programme of hydropower generation, including the mega Bhasa Dam and several others for which it is desperately seeking funding from the international financial institutions and friendly countries.

THE INDUS BASIN UNDER STRESS

The water resources of the Indus Basin have come under relentless pressure due to exponential population growth in India and Pakistan; the over 90-95% share of waters utilized by the agriculture sector; economic development and consequent increase in the number of wealthy people who tends to use and waste more water; unregulated urbanization; construction of dams obstructing sediment flows; decaying water infrastructure; growing pollution from industrial and agricultural effluents and untreated waste and sewage; inefficient water use practices; mismanagement; and, increasingly climate change.
Essay

Both India and Pakistan have increased abstraction of ground water to enable intensive cultivation of crops needed for boosting food production for their growing populations.

Water scarcity is a major challenge for both India and Pakistan. Per capita annual availability of renewable freshwater declined to 1170 cubic metres (m³) in India (in 2010) and less than 850 m³ in Pakistan in 2012. In the absence of remedial steps, the situation is destined to worsen as populations continue to surge.

Studies carried out by Government agencies in India and Pakistan, UN and other multilateral institutions and local and international non-governmental organizations have linked the prospects of socio-economic development in both countries to their ability to carry out wide ranging reforms, including enhanced management and governance; reducing water use by the agricultural sector, increasing supply through rain water harvesting and floodwater storage; enlisting the support of all waters users for efficient integrated water management etc. The observed and anticipated impacts of climate change add urgency to these measures.

THE IMPACTS OF CLIMATE CHANGE ON THE INDUS BASIN’S WATER RESOURCES

Notably all the impacts of climate change identified by the Inter-Governmental Panel on Climate Change (IPCC) – the UN- appointed expert panel on assessing climate change– in its 4th and 5th Assessment Reports (2007 and 2013-14) would effect the quantity and quality of water. These include rising sea-levels causing salination of agricultural land and surface and ground water; the rapid melting of ice and snow in the Himalaya-Karakoram-Hindu Kush (HKH) glaciers which initially increase but subsequently diminish water supply; disruption of the monsoon precipitation patterns which would either cause droughts or flooding; and other extreme events such as storms and hurricanes which would threaten human settlements and water infrastructure, including the aquifers.

The consequences of receding glaciers and variation in the timing, duration and intensity of the monsoon precipitation are especially
ominous because far more than the other basins the Indus Basin depends on the glaciers for a much larger share (between 50-70%) of its water on these two highly climate-sensitive sources.

Diminished and degraded water supplies and higher temperatures which would accentuate the water thirst of crops, plants and trees as well as livestock will lead to reduced crop yields, especially wheat, rice, maize, sugarcane, threatening food production and the livelihoods of rural populations. Curtailed or excessive water during droughts and floods would also endanger dairy farming and fisheries.

Depleted water supplies would reduce hydropower generation capacity in India and Pakistan as has been observed during droughts. Reduced water and increased pollution caused by extreme events would lead to increase in incidence of infectious and water-borne diseases.

GAPS IN THE INDUS WATER TREATY (IWT)

Negotiated during the 1950’s, the Indus Water Treaty could not and does not address issues that have become more serious since, such as over abstraction and pollution of ground water which forms an integral part of the hydrologic system; the growing pollution of river waters especially in the western rivers flowing into Pakistan whose catchment areas are located across the border and the cumulative environmental effects of a large number of Indian run-of-the river hydropower projects on the western rivers which are allowed by the Treaty.

Similarly the IWT could not, and does not, address the negative effects of climate change which was unheard of in the 1950’s, such as the anticipated decrease in quantity and deterioration in the quality of shared water resources from the shrinking HKH glaciers and irregular monsoon precipitation as well as extreme events.

AREAS OF INDIA-PAKISTAN COOPERATION ON WATER RESOURCES OF THE INDUS RIVER BASIN

India-Pakistan discussions—which has been prone to frequent disruptions—whether in the framework of the so-called “composite
dialogue” or joint ministerial commission has not addressed climate change or water issues except in relation to the un-resolved issue of the construction of the Wular Barrage, as an agenda item of the “composite dialogue”. The void has been filled by a number of Track II dialogues between experts, former officials including diplomats, and civil society activists of the two countries encouraged by third party organizations and friendly governments. These dialogues have led to a broad agreement on the areas of cooperation on water within and beyond the ambit of the Indus Water Treaty. The proposals for cooperation include:

- Avoiding the delays and costs of external ad hoc neutral experts or recourse to the International Court of Arbitration through strengthening the authority and capacity of the Permanent Indus Commission (PIC) for resolving differences over the Indian hydropower projects on the western rivers and/or the setting up of an affordable and efficient alternative body of neutral experts to amicably settle differences over the projects. The strengthening of the PIC’s functioning could be facilitated by the timely provision of detailed technical information about the hydropower projects by India and use of modern means of communication between the two commissioners.

- Cooperation in the collection and sharing of river flow data using telemetry, sharing of information on the trans boundary aquifers, quality of water and regulations for abstracting groundwater.

- Adherence to the verdicts of the Neutral Expert and the Court of Arbitration on the Baglihar and Kishanganga projects in designs of future projects.

- Cooperation in the monitoring of river pollution, drains and aquifers in the catchment zones and adoption of remedial measures to curb the pollution.

- Agreement on modalities of sharing of water shortages in the western rivers during dry years.

- Cooperation in building up of a knowledge base for decision making and achieving enhanced understanding of the various impacts of climate change on the monsoons and the state of the Himalaya glaciers by setting up joint monitoring stations as well as securing data from third party scientific bodies with satellite
Essay

based remote-sensing capacity in the US, Europe, China such as NOAA, ESA and NSA.

➢ Joint assessment of the cumulative impacts of Indian hydropower projects on India’s ability to manipulate water flows.

➢ Cooperation in enhanced water resources management including introduction of modern, water-saving irrigation practices such as drip irrigation, water pricing, water apportionment among different user sectors as well as regions etc.

➢ Strengthening of the capacities of SAARC centres relevant to climate change and water resources such as the SAARC Disaster Management Centre in New Delhi, the SAARC Meteorological Centre in Dhaka, the SAARC Forestry Centre in Bhutan, and the SAARC Coastal Zone Management Centre in Maldives as well as the International Centre for Integrated Mountain Development and the regional offices of the Global Water Partnership.

➢ Sharing of Information on addressing the environmental and social implications of hydropower projects in both countries.

➢ Collaboration in development of less water intensive and heat-resistant crops, plants and livestock and in addressing disaster related challenges exacerbated by the impacts of climate change.

India and Pakistan should seriously consider initiating cooperation and collaboration for addressing the growing water –related challenges at a bilateral level as well as in the framework of the landmark decisions of SAARC Summits, in particular the Thimpu Statement on Climate Change adopted by the 16th SAARC Summit in Thimpu (Bhutan) in April 2010 which has remained un-implemented. Such cooperation is likely to pave the way for improving the overall state of Indo-Pakistan relations that has impeded the quest for peace and development in both countries and the South Asia region.