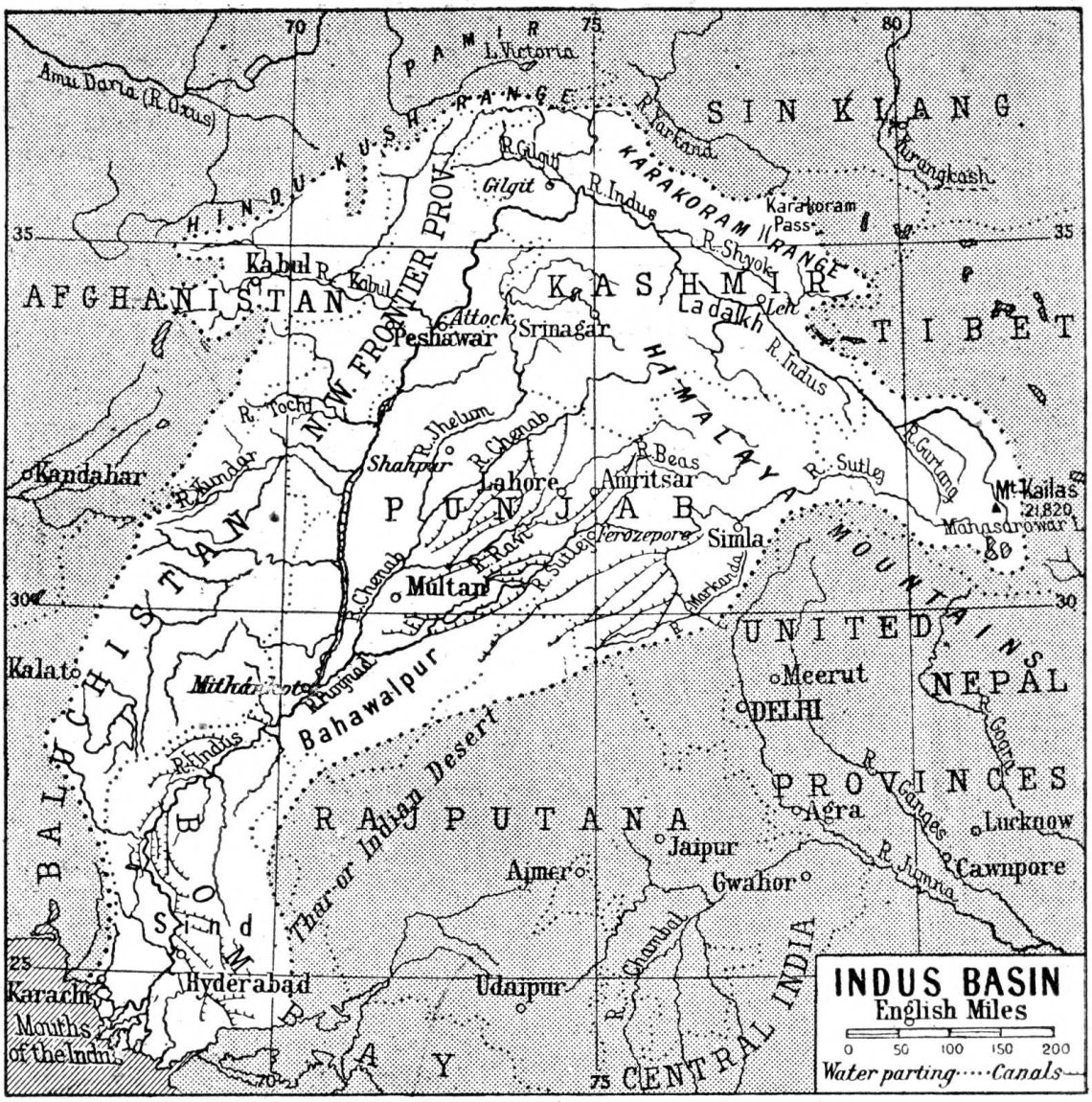
The Indus Water Treaty in Light of Climate Change

Mahe Zehra Husain
Transboundary Water Resources Spring 2010



“There is insufficient data to say what will happen to the Indus,” says David Grey, the World Bank’s senior water advisor in South Asia. “But we all have very nasty fears that the flows of the Indus could be severely, severely affected by glacier melt as a consequence of climate change,” and reduced by perhaps as much as 50 percent. “Now what does that mean to a population that lives in a desert [where], without the river, there would be no life? I don’t know the answer to that question,” he says. “But we need to be concerned about that. Deeply, deeply concerned.”

Introduction:

In August 1947 India were granted independence and two new countries were born. At this time Pakistan consisted of two units, East Pakistan and West Pakistan. In 1971 East Pakistan gained independence and is known to the world today as Bangladesh, leaving West Pakistan as the Pakistan we know today.

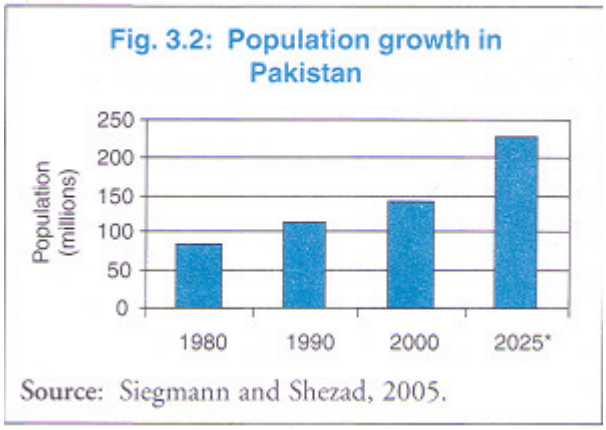
Hence the Indian Subcontinent was broken up into three countries. The same fate befell the Indus River Basin and system which by virtue of the partition of 1947 was due to be formally 'divided' between India and West Pakistan. This great river system, the cradle of the Indus Civilization and home to ancient cities such as Harappa and Mohenjo-Daro, was a vital resource for the new-born state of Pakistan. However, it was fed by its major tributaries, five of which have their sources in Indian-held Kashmir. In addition the irrigation canals were all in Pakistan but the head works were in India and due to the inimical relations between the two countries Pakistan was eager to reach a formal agreement about the water sharing. In 1948 Pakistan's worst fears came true and India cut off the water supply to all the canals which almost drove Pakistan to war. The need to reach a formal accord was absolutely urgent. Following much negotiating among the two sides and intervention by the World Bank the Indus Waters Treaty (IWT) was signed in 1960 (IWT 1960).

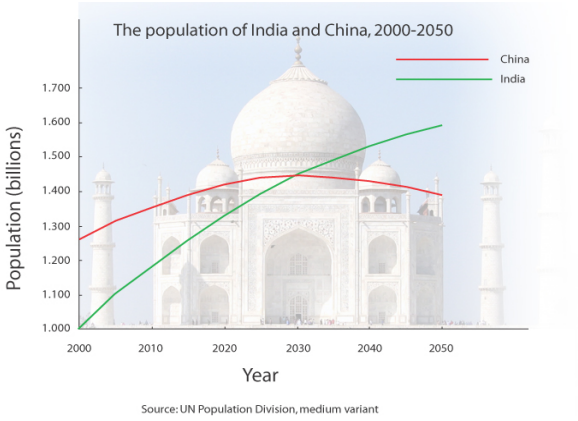
This treaty gives Pakistan control over the western rivers, the Jhelum, Chenab and Indus, while India controls the eastern rivers – the Ravi, Beas, and Sutlej. The water had to be controlled and diverted to the fields in order to meet the agricultural demand of the country, and Pakistan began adding to its irrigation system and today has one of the world's largest contiguous irrigation systems. This system consists of 3 storage reservoirs, 23 barraged head-works, 45 canals spanning 60,800km, 12 inter-river link canals, 600,000 tube wells and 1.6 M km of water courses.

Now let us focus on inter-provincial disputes. There has always been, even before partition and some say as early on as 1856, a dispute between the provinces of Punjab and Sindh on the issue of sharing the waters of the Indus. Even after the construction of the Tarbela Dam, water from which was supposed to be used by both the Punjabis and the Sindhis, this dispute carried on. So much so that a water sharing accord between the provinces of Pakistan was signed in 1991. Unfortunately the accord is not followed and due to the feudal lords of Punjab being influential the water is mostly diverted to the lands of Punjab. This has led to wide spread degradation of the Indus Delta and is having severe economic and health implications for the Sindhis. Similar provincial disputes exist in India such as the Kaveri water dispute between the states of Karnataka and Tamil Nadu. This is an illustration of the fact that there is not enough water within either country which is leading to tensions within each state and so there is talk on both sides of the IWT being unsatisfactory and a treaty that needs to be renegotiated.

The IWT is recognized to be a very successful treaty by experts all over the world. It has been upheld even after three wars between India and Pakistan. "Without a treaty, there would have been five or six wars between them" Kishor Uprety, Senior World Bank Lawyer. Disputes have been settled amicably and, until recently in the case of the Baghlihar Dam, there was no need to invoke the clause in the IWT that called for the help of a neutral expert. It was negotiated with the help and financial support from

the WB in about 10 years and it seems very difficult that a more satisfactory division of water can be arranged under the present circumstances.





The population of both countries is growing at an alarming rate. This means not only more water for urban use but also more food needs to produced i.e. more agriculture, more water for irrigation which is the highest use. Water is needed to supply electricity to the growing population and more water is also needed for environmental purposes to rescue the Indus Delta. More water is needed but instead we are looking to a future that will bring less.

Climate Change to Water Wars?

The Indus Basin depends heavily on the glaciers in the western Himalayas. The mountains act as water reservoirs holding the water and releasing it over time. These glacial reservoirs actually constitute the base river flow in dry periods.

These glaciers are now at the mercy of climate change and that does not bode well for the Indus Basin. Even though the science of climate change is still in its infancy predictions are that the glaciers will retreat for the next fifty years during which time there will be an increased flow in the rivers. This will come along with flashier rainfall and will not bode well for the lower parts of the basin where there are already problems due to flooding and drainage. This will continue for the next few decades and then due to the depletion of the glacial reserve there will be an alarming 30-40% decrease in the flow of the River Indus.

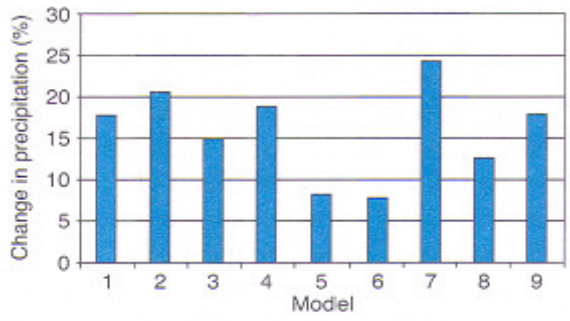
The IPCC uses 10 GCM to predict the changes that will occur due to climate change. 9 of those models predict a high precipitation rate while the regional model chosen is, curiously enough the one model that predicts decrease in precipitation in the summer monsoon. This model was analyzed to see what the future holds for India and by extrapolation, Pakistan. It was found that there would be a decrease in the number of rainy days but an increase in extreme precipitation events. This means that the already volatile summer monsoon pattern will become even more complicated. This means that more flood and water scarcity management will have to be undertaken.

The Indus Basin weather is dominated by the South Asian monsoons, which have not as yet been properly modeled in the GCMs. In some scenarios the monsoon shuts down completely. A more realistic future would be one in which precipitation and temperature increases leading to a higher intensity monsoon.

Any disruption in the flow of the Indus will be catastrophic for both India and Pakistan. “The Indus water system is the lifeline for Pakistan, as 75 to 80% of water flows to Pakistan as melt from the Himalayan glaciers. This glacier melt forms the backbone of the irrigation network in Pakistan, with 90% of agricultural land being fed by the vastly spread irrigation network in Pakistan, one of the largest in the world” Dr. Muhammad Irshad, Executive Director of Global Change Impacts Studies Centre in Pakistan.

What then will the future bring?

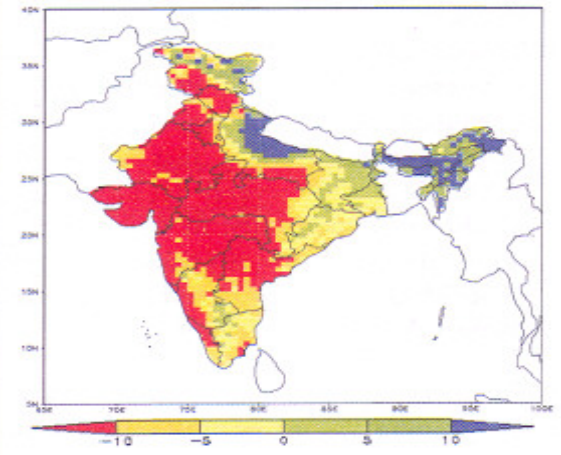
Fig. 3.7: Change in South Asia summer rainfall predicted by nine General Circulation Climate Models



Source: IPCC, 2004.

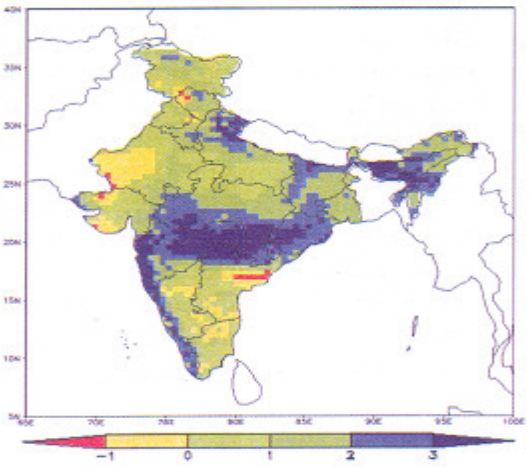
In what way can the sub continent prepare for this climate? Dams should be part of the agenda as ‘harvesting’ the increased run-off due to glacial melt is very important. Managing this water over the coming dry years is also imperative. In comparison to the Murray-Darling and Colorado rivers, which have a storage capacity of 900 days, the Indus Basin has a capacity of thirty days. Investments will need to be made to store water in small (rainwater) dams and larger dams, in surface and groundwater reservoirs. In addition to this strategies and policies need to change. This water needs to be used for existing or historical demands and is not to be used to bring extra land under cultivation. All this water will be needed when the flow of the Indus reduces. Instead conservation techniques should be practiced. A more flexible and adaptive management policy will have to be adopted in this coming era of variable climate, where there will be more floods and more droughts. The infrastructure and management policies that are equipped to deal with this erratic climate regime should be put into place before it is too late.

Fig. 3.8: Predicted change in number of rainy days from the 'decreased rainfall' IPCC model



Source: IPCC.

Fig. 3.9: Predicted change in rainfall intensity (in mm per day) from the 'decreased rainfall' IPCC model



Source: IPCC.

Looking to the Future

The Indus Waters Treaty might be in grave danger in light of the coming climate change. Both India and Pakistan need more water for their burgeoning populations and yet both are at capacity as far as their fresh water sources are concerned. Furthermore instead of more or constant water, the flows in the Indus will be diminished in the coming years. This will put pressure on both governments to renegotiate the treaty. Even today the Indian people think the treaty is unfair as it allocates 75% of the water to Pakistan and the Pakistanis believe it to be unfair based on the fact that they have 90% of the irrigable land and the Indus system is their only source of water.

To add further complications both nations have an extremely inimical past and present. Even as I write this the headlines in the Pakistani newspapers are: 'India's water theft' and 'Five dams being built in occupied Kashmir'. Dams are being built by the Indians on the rivers, Jhelum and Chenab, which were allocated to Pakistan under the IWT. Increased storage capacity owned by India on these rivers is a threat to Pakistan as they can cut off water at any time, as was done in April 1948. Add to that the fact that the military might of both nations is more or less equally matched and both are nuclear states and the situation quickly becomes even more complex.

Is the water wars rationale valid in this setting?

What does the future of the treaty look like in the light of climate change?

Will there be an IWT 2? Or will it be better to stick to the current protocol? Is that even possible given the dams India is building on the Chenab and Jhelum?

What should India and Pakistan do to combat the coming changes in their water supply?

Will they work together or turn on each other?

Required Readings:

Reduced Himalayan Snowfall could spark water war: Inter Press Services
http://ipsnews.net/news.asp?idnews=50014

Water's Edge by William Wheeler
http://awards.earthjournalism.org/finalist/the-waters-edge-indus

References:

Wescoat, James L. Halvorson, Sarah J. Mustafa, Daanish (2000) Water Management in the Indus Basin of Pakistan: A Half Century Perspective.

Wescoat, James L. (1991) Managing the Indus Basin in Light of Climate Change: Four Conceptual Approaches.

Briscoe, John Qamar, Usman (2009) Pakistan's Water Economy Running Dry.

Jaitly, Ashok (2007) South Asian Perspectives on Climate Change and Water Policy

Wasi, Nausheen (2009) Harnessing the Indus Waters Perspectives from Pakistan

Ali, Saleem H. Tabassum, Shaista Dabelko, Geoffrey (2007) Environmental Conflict and Cooperation in South Asia: Prospects for Transboundary Dispute Resolution with Shared Water Resources.

Iyer, Ramaswamay (2002) Was the Indus Waters Treaty in Trouble?

Iyer, Ramaswamay South Asian Water Concerns

Verghese, BG Political Fuss over the Indus, The Tribune 25th May 2005

Inter Press Service Reduced Himalayan Snowfall could spark water war 19th January 2010

Wheeler, William The Water's Edge

Akram, Agha Ali Indus Basin Water Resources

Kiani, Khaleeq 3rd February 2010 DAWN Five dams being built in occupied Kashmir

Dinar et al, Bridges Over Water