

Climate Change Water: South Asia's Lifeline at Risk

December 21, 2008 - The impacts of climate change in the form of higher temperatures, more variable precipitation, and more extreme weather events threaten the water supply to millions of people living near South Asia's numerous river basins.

The recently concluded **UN Climate Change Conference in Poznan** followed the Bali Roadmap, which set forth a negotiating timetable that seeks a successor to Kyoto protocol in Copenhagen 2009. The Kyoto Protocol expires in 2012.

N. Harshdeep, World Bank Senior Environmental Specialist for South Asia said, "*If climate projections are indicative of future trends, the risks associated with water-related climate variability are likely to intensify and worsen. Therefore it is vital for South Asia to find solutions that will balance its already stressed water supply with increasing demand.*"

Significance of water

The great civilizations of the world have evolved around water and South Asia is no exception. In South Asia, water encompasses the cultural, social, economic and political fabric in the lives of some 1.5 billion people. Water resources is key to agriculture, hydropower, and to sustain the aquatic environment. The region is endowed with great rivers that are the lifelines of the regional economy. Many of these rivers -Ganges, Brahmaputra, Indus, and Meghna- flow from the Himalayan-Hindu Kush "water towers."

The ice mass covering the Himalayan- Hindu Kush mountain range is the third largest in the world, after the polar icecaps. They are the source of the nine largest rivers of Asia. These glacial masses store precipitation in the form of snow and ice, regulating water distribution and providing continuous flows during the dry months.

The Ganges river basin alone is home to some 500 million people. The massive concentration of people around river basins, compounded by high and persistent poverty rates illustrates the vulnerability of the region to current hydrological shocks and longer-term climate change. The river basins, however, offer significant potential for water resources development and to better manage current and evolving climate risks.

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Heavy reliance on the monsoons

The region's economy and predominantly rural livelihoods heavily depend on the timely arrival and performance of the monsoons. The monsoon is the most significant climate event: it carries over 70 percent of the region's annual precipitation in only four months. Because of the dominance of the monsoons, the region's climate exhibits the highest seasonal concentration and variability of rainfall in the world.

The region is already highly vulnerable to droughts and floods

The region remains highly vulnerable to droughts and floods that not only devastate lives and livelihoods, but also undermine progress on economic growth and poverty alleviation. Every year, some part of the region is usually in the grip of a devastating drought or in the fury of a flood. *"Climate change is predicted to amplify current levels of variability, and may fundamentally change most hydrological systems,"* said **Harshadeep**.

It is difficult to predict their intensity and duration. Climate change might exacerbate the damage caused by such events. **Harshadeep** said, *"Monsoonal rainfall over India has decreased by approximately 5 to 8 percent since the 1950s, and combined with impending climate change, this might contribute to more intense, longer, or more widespread droughts across the region."*

The region's river systems are also highly flood prone. Floods are a natural and necessary feature of river systems with variable seasonal flows; however, when floods are excessive, they cause extensive damage. Flood-affected areas in South Asia might increase as a result of climate change. *"60 percent of Bangladesh is flood prone and the country has already recorded earlier arrival of flash floods,"* said **Harshadeep**.

Water scarcity is another challenge

The annual average water availability in South Asia appears to meet current consumption of the population. **Harshadeep**, however, contends, *"Averages conceal extreme seasonal and distributional patterns. Water availability is under threat both from variability in supplies and growing demands."*

To compound the problems of scarcity, newer stresses associated with rapid economic growth are adding additional strains on South Asia's water resources. *"Rapid industrialization increases water demands, pollution and unsustainable use of natural resources, including groundwater and surface water bodies,"* said **Harshadeep**. *"With its heavy reliance on the monsoons and snow-fed rivers, water availability in the region is highly sensitive to climate change."*

Outlook

Increases in temperature combined with predicted changes in precipitation could affect water availability in the region. This would have implications for domestic and industrial water supplies, hydropower generation, and agricultural productivity. Climate change, especially when combined with sea-level rise and land subsidence, is also predicted to increase the likelihood of both coastal and inland flooding, especially in Bangladesh.

There is general consensus that climate change is occurring and may be irreversible. *“However, the magnitude and precise timing of these changes is unknown, as the current generation of global circulation models lack accuracy at finer spatial resolutions and there remain large uncertainties in projecting local changes in climate,”* said **Harshadeep**. *“The precise consequences of these changes are currently hard to predict, but they will be significant.”*

Regional cooperation

Sadiq Ahmed, Acting Chief Economist for South Asia, World Bank said, *“However, the potential impacts of climate change could be alleviated through enhanced cooperation and dialogue among and within jurisdictions.”* The region will benefit from robust management and productive development of water resources.

As many of the rivers in the region are shared trans-boundary systems, regional coordination and cooperation will inevitably be required for both an increased understanding of the nature of climate challenges and the formulation of approaches to address such changes effectively.

“In the past, water has been a source of tension among countries that share trans-boundary rivers,” said **Ahmed**. However, the success of the Indus Water Treaty between Pakistan and India has demonstrated that cooperation that benefits people can withstand political obstacles.

India and Bangladesh have 54 transnational rivers. *“Managing a common problem will require a cooperative solution that would include data collection and exchange, analysis, and exploration of shared responses,”* said **Ahmed**.

Strategy for the Future

“Building more resilience to climate change – is critical to maintaining and expanding South Asia’s growth,” said **Karin Kemper, World Bank’s Sector Manager for Social, Environment & Water for South Asia**. In order to do so, the region needs to focus on knowledge base and investment.

Knowledge base: Widening the knowledge base will involve promoting national and regional initiatives that foster research, develop knowledge and data sharing among institutions, and establish a cooperative framework to advance a regional agenda aimed at increasing the exchange of knowledge and best practices.

Investment: Key to the overall climate change agenda is the availability of and access to financing to address the challenges associated with water resources and climate change. The critical areas that require immediate investment are water resource management, water infrastructure, water-efficient technologies, crop research, and education and enhancement of skills.

For more information:

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