Water Security and Climate Change: Challenges and Strategies

Overview:

Water is a fundamental human need and a critical national asset. It is the key to socio-economic development and quality of life. As the pressures of population and economic activities converge on water requirement, the water sector will increasingly face the challenge of bridging the demand-supply gap. Water covers most of the planet but only 3 per cent of it is fresh water of which 2 per cent is frozen in ice caps and glaciers. A mere 1 per cent in the form of lakes, ponds, rivers, streams, swamps, marshes and bogs, is readily accessible and relied on for human consumption. It is this amount that truly matters when sizing up the water challenge. Water security implies affordable access to clean water for agricultural, industrial and household usage and is thus an important part of human security. Water along with food and energy forms a critical part of the 'new security agenda' and redefines the understanding of security as a basis for policy-response and long-term planning. Water security for India implies effective responses to changing water conditions in terms of quality, quantity and uneven distribution. Unheeded it can affect relationships at the inter-state level and equally contribute to tensions at the intra-provincial level.

The Union Ministry of Water Resources has estimated the countries water requirements to be around 1093 BCM for the year 2025 and 1447 BCM for the year 2050. With projected population growth of 1.4 billion by 2050, the total available water resources would barely match the total water requirement of the country. In 1951, the annual per capita availability of water was 5177 m³, which reduced to 1342 m³ by 2000. India is facing a serious water resource problem. The facts indicate that India is expected to become 'water stressed' by 2025 and 'water scarce' by 2050. The National Commission for Integrated Water Resource Development (NCIWRD) has estimated that against a total annual availability of 1953 BCM (inclusive of 432 BCM of ground water and 1521 BCM of surface water) only 1123 BCM (433 BCM ground water and 690 BCM surface water), i.e., only 55.6 per cent can be put to use. The high-level of pollution further restricts the utilizable water thus posing a serious threat to its availability and use.

Ensuring fresh and pure water to every individual is a significant tool of empowerment for the poor and vulnerable society of the globe. However, inadequate knowledge of policy and regulatory framework and its poor implementation, combined with a non-transparent and non participatory water management process is proving to be the root cause of many water related problems. Hence, it is necessary to deliberate these issues both scientifically and socially with policy makers, international and national water experts. This seminar endeavors to share latest as well as traditional water knowledge and best practices on this issue, and discuss the possible options available for integrated water resource management. The conference will encompass the issues that are mentioned as the priorities in the 'National Water Mission' which is one of the eight national missions that are part of the National Action Plan on Climate Change. The seminar will provide a space for discussion, interaction, dissemination of information to policy-makers, water managers, academics, students and the public in general.

Venue of the Seminar: Conference Hall of Guru Nanak Bhawan

Guru Nanak dev University, Amritsar-143005

Duration and Dates: Three days (November 4 to November 6, 2011)

Language of the Seminar: Official language of the seminar will be English

Organizer of the Seminar: Guru Arjan Dev Institute of Development Studies

14-Preet Avenue, Majitha Road, PO Naushera, Amritsar-143008

Accommodation: Accommodation will be provided to all the registered delegates in various guest houses on share basis during the seminar period. Hotel accommodation can be arranged against advance payment .For further detail contact 3rd IDSAsr Seminar Secretariat

Registration:

The registration fee details (excluding travel) are as follows:

Category	•	istration on or before 5th ctober, 2011	Late registration		
	Indian (Rs)	International(US\$)	Indian (Rs)	International(US\$)	
Professional delegates	1000	150	1500	175	
Student delegates	750	100	1000	150	

^{*} The conference registration fee includes conference kit, lunch, dinner and coffee breaks at the conference venue.

Mode of Payment

Please send by post/e-mail duly filled in registration form along with the fee (in cheque/bank demand draft / bank transfer).

Bank transfer (mention IDSAsr-2011 in subject)

Name of the beneficiary: The Director, GAD Institute of Development Studies

Account No.: 1182151020110

Name of the Bank: Oriental Bank of Commerce

Address of the Bank: Diamond Avenue, Majitha Road, Amritsar.

OR

Local cheque/bank draft

Cheque/demand draft in favour of The Director, GAD Institute of Development Studies payable at Amritsar(mention IDSAsr-2011 on the reverse)

Contact

In case of any query regarding registration, you may please contact the

3rd IDSAsr Seminar Secretariat, Guru Arjan Dev Institute of Development Studies 14-Preet Avenue, Majitha Road, PO Naushera, Amritsar-143008

e-mail: idsasr09@yahoo.com

Tel: 91-183-2426045

ABOUT AMRITSAR





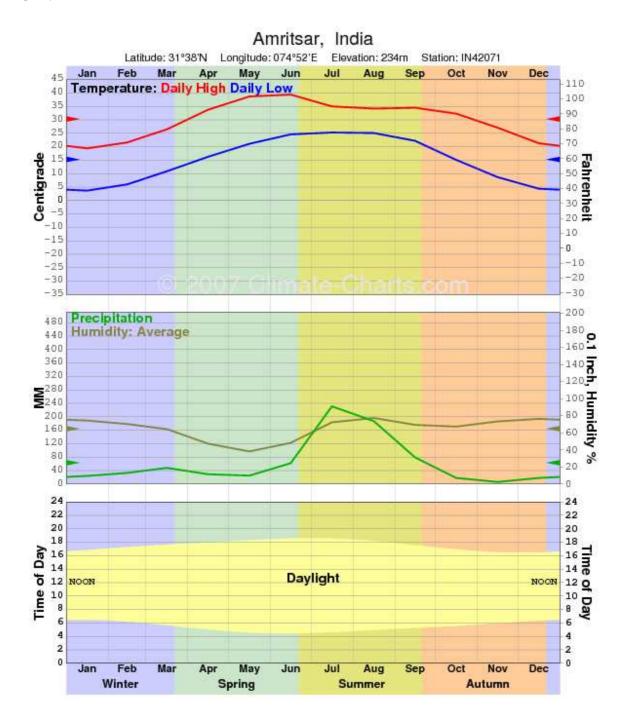
LOCATION

Amritsar city situated in northern Punjab state of northwestern India lies about 15 miles (25 km) east of the border with Pakistan. Amritsar is an important city in Punjab and is a major commercial, cultural, and transportation centre. It is also the centre of Sikhism and the site of the Sikh's principal place of worship.

CLIMATE

Amritsar is located at $31.63^{\circ}N$ $74.87^{\circ}E$ with an average elevation of 234 meters (768 ft). Amritsar has a semiarid climate, typical of Northwestern India and experiences four seasons primarily: winter season (November to March) with temperature ranges from $4^{\circ}C$ (39 °F) to about 19 °C (66 °F), summer season (April to June) where temperatures can reach $45^{\circ}C$ (113 °F), monsoon season (July to September) and post-monsoon season (September to November). Annual rainfall is about 681 millimeters (26.8 in). Since 1970, the lowest temperature, $-2.6^{\circ}C$ (27 °F), was recorded on 21 Jan 2005 and the highest temperature,

47.7 °C (117.9 °F), was recorded on 21 May 1978. There are on average 3,200 sunshine hours per year in Amritsar.



HOW TO REACH?

BY AIR

The Amritsar (**Rajasansi**) airport, about 11 km. from town, is connected by domestic flights from Delhi, Srinagar and Chandigarh. You can get to town by a pre-booked rented car, taxis or autorickshaws.

BY TRAIN

Amritsar is connected by direct trains from major Indian cities like Delhi, Jammu, Mumbai, Nagpur, Calcutta and Puri. For more details visit http://www.indianrail.gov.in

BY ROAD

You can drive to Amritsar from neighboring states. Bus services also connect Amritsar with most north Indian towns, including Chandigarh (235 Kms), Delhi (450 Kms), Shimla, Kulu, Manali, Dharamshala and Dalhousie in Himachal Pradesh, Dehradun and Rishikesh in Uttar Pradesh and Jammu. There is also a bus service to Lahore, 35 km away, which is the only land route connection between India and Pakistan.

Hotels in Amritsar

<u>Ista Amritsar</u> ★★★★★

Hotel Ista is situated very close to the Golden Temple in Amritsar and is a hotel exuding warmth and class thanks to its staff and modern design and facilities. Hotel

more



Best Western Merrion is located in the up-market region of Ranjit Avenue in Amritsar. The contemporary style and high-quality fixtures and fittings make for a premium experience at one of

more



Aay Kay Hotel is located on Albert Road, close to the Circuit House in Amritsar. The hotel is in the radius of 2 minutes from Railway Station and Inter State

more



Amritsar forms one part of the Golden Triangle and is a city that has many wonders you can explore, and Airlines Hotel offers the best launching base from which you



★★★Hotel Heritage Inn Amritsar

The Hotel interiors, right from the reception to your room, spin a mystery of its own. All rooms are airconditioned with 24 hrs. power back up. All the rooms are exceptionally furnished....

View Detail »



★★★Hotel Shiraz Regency Amritsar

Hotel is less than five minutes away from all major Shopping Complexes and corporate towers & is just 8 kilometers from Amritsar Airport and few meters from Railway Station...

View Detail »



**Hotel Majha Continental

The hotel is ideally located from major tourists attractions and is well known for its warm & friendly service and exceptional Food and Beverage standards...

View Detail »



*****Hotel Ritz Plaza

Hotel Ritz Plaza is 1.5 kilometers from Amritsar Railway Station and 11 Kilometers from International Airport. The pride of Punjab and the most holy Sikh shrine is just 10 minutes drive from Hotel Ritz Plaza...

View Detail »



★★★★Hotel Mohan International

Hotel Mohan International is one of the most prominent icon in the historic city of Amritsar. Be it the grandeur accomodation in the posh & stylish rooms or the exquisite multicusine delicacices, at Mohan International Amritsar you savour it all in luxury and comfort...

View Detail »



Hotel Astoria Amritsar

1 Queen's Road, Amritsar

Rating: **

CONCEPT NOTE

Water Security and Climate Change: Challenges and Strategies

For centuries, food production and hence social development has depended heavily on access to the water needed to grow crops or rear livestock. Having enough water is only part of the issue, however, it must also be available when and where it is most needed. In the past few decades, the balance between water supplies and human need has come under increasing threat from growing population, urbanization and, most recently, climate change. One of the biggest impacts of the build-up of greenhouse gases in the atmosphere is expected to be a significant increase in rainfall variability and in the frequency and intensity of extreme events, such as droughts and floods. Climate change is being widely blamed as a significant contributor to the devastating floods in Pakistan, for example, as well as recent mudslides in China and fires in Russia. The likely increase in rainfall variability could have equally devastating, though less obvious, effects on food production and rural livelihoods. Even a short dry spell during the growing season where farmers rely almost entirely on rainfall to water their crops, can devastate food supplies.

Freshwater is a scarce resource. Only 2.5 per cent of the 1.4 billion km3 of water on Earth is freshwater fit for human consumption, and most of this is inaccessible — nearly 70 per cent is locked up in glaciers, snow and ice. Our greatest source of freshwater is the 8 million km3 of groundwater, with only 0.3 per cent of freshwater (105,000 km3) being found in rivers, streams and lakes. Issues about freshwater availability increasingly focus on water security, which refers to people's access to enough safe and affordable water to satisfy their needs for household use, food production and livelihoods.

Water insecurity can arise from physical scarcity, resulting either from climatic or geographical factors, or from unsustainable consumption or overexploitation. It can also have economic origins, with poor infrastructure or capacity preventing access to the water resources available, or occur where pollution or natural contamination renders water resources inaccessible. Water insecurity and scarcity already affect large parts of the developing world. The past century has seen a six -fold increase in global water demand. Nearly three billion people (about 40 per cent of the global population) live in areas where demand outstrips supply. This situation is set to worsen in the coming decades as populations grow, economies develop and agriculture and industries expand.

An additional threat to water security comes from climate change. The world is experiencing unprecedented warming, with temperatures now approximately 0.5 degrees Celsius warmer than the 1961–90 average. Climate change has already affected water resources across the world. It has, for example, increased the global mean sea level by 1.75 mm each year in the second half of the twentieth century, caused the widespread retreat of non-polar glaciers, reducing dryseason water flows, and increased borehole and marine temperatures.

Solar energy trapped in the atmosphere by greenhouse gases drives the hydrological cycle, so any increase effectively intensifies the cycle, changing rainfall patterns and exacerbating extreme events such as droughts and floods. The effects of climate change on water security can

already be seen. Globally, the area of land classified by the IPCC as 'very dry' has more than doubled since the 1970s. This has been accompanied by greater flooding in the mid-high latitudes, longer and more frequent droughts in parts of Asia and Africa, and more frequent and intense El Niño events — all of which change the balance between demand and supply of water resources.

Water security in the developing world is particularly vulnerable to the impacts of climate change, partly because their locations mean these nations feel the brunt of climate change, partly because their low incomes and poor institutional capacity limit their ability to cope with changing water supplies, and partly because they rely heavily on water-based industries, such as agriculture. Unless national policymakers and local communities in these regions can adequately anticipate, prepare for and adapt to such shortages, the result could be starvation for millions. Water *consumption* also must be addressed. Agriculture accounts for more than 70 per cent of water use in the world. Agronomical research and technical innovations are crucial to maximizing water efficiency in this sector, and they must be taken much further. But addressing scarcity will inevitably imply revising agricultural practices and policies worldwide to ensure their sustainability. Policy attention, by national governments and trans-national bodies will, increasingly, have to focus on the coordination of water uses across trans-boundary river-basins and across different sectors, and arbitration in increasing conflicts over water.

Humanity must begin to resolve this water dilemma. Waiting will be suicidal

Ensuring fresh and pure water to every individual is a significant tool of empowerment for the poor and vulnerable society of the globe. However, inadequate knowledge of policy and regulatory framework and its poor implementation, combined with a non-transparent and non-participatory water management process is proving to be the root cause of many water related problems. Hence, it is necessary to deliberate these issues both scientifically and socially with policy makers, international and national water experts. The seminar endeavors to share latest as well as traditional water knowledge and best practices on this issue, and discuss the possible options available for integrated water resource management. The conference will encompass the issues that are mentioned as the priorities in the 'National Water Mission' which is one of the eight national missions that are part of the National Action Plan on Climate Change. The seminar will provide a space for discussion, interaction, dissemination of information to policy-makers, water managers, academics, students and the public in general. Various sub themes planned to be discussed during the three days seminar are outlined below:

Session-I: Challenges and Opportunities for Water Security: An overview

Climate change is the most severe long-term threat to development for the present and future generations. The changing climate will exacerbate water management problems worldwide through its impact on melting glaciers, rising sea levels, variable rainfall and extreme events like floods and drought. The consequences of climate change are a major challenge to the management of natural resources and barriers to the transition from poverty to prosperity. The session will address these issues from a global perspective and identify the broad parameters for sustainable adaptation strategies.

Session-II: Regional Water Security, Resource Use & Allocation

The session will focus on the challenges in water resource use and allocation in view of the increasing water scarcity and regional water stress combined with the prospective risks of climate change. Discussions would provide insights to various scenarios on competing water demand amongst the agriculture, industry and domestic sectors. It shall highlight the mechanisms and prospects on water use, allocation and sharing in different hydro-geological regimes. Some of the issues to be deliberated include

- ➤ The present and prospective scenarios of water stress in the global and regional perspective in light of changing climate.
- ➤ The existing coping mechanisms for the competing water demand amongst various sectors.
- ➤ The challenges and benefits through joint management of trans-boundary water resources.
- The mechanisms for optimal use and allocation of water resources in river basin systems.

Session-III: Climate Change Impacts on Natural Water Systems

Climate change will continue to have a significant impact on water resources, particularly in the South Asian region, by virtue of its influence on natural water systems and the hydrological cycle. This session will focus on various components of natural water systems like melting glaciers and their influence on river flow patterns, rainfall variability and impacts on monsoon system affecting water availability and sea level rise. The discussions shall deliberate on existing capacities, limitations and knowledge gaps in modeling and prediction scenarios, including:

- ➤ The current and future scenarios of climate predictions and variability in different hydrogeological systems and the downscaled scenarios in the region.
- > Current status of glaciers in the region and their influence on the river basins and flows.
- ➤ Developments and bottlenecks in the science of climate predictions and the options available to address them.

Session-IV: Water and Food Security

Food security in the developing nations across the globe is a major challenge. It is a complex phenomenon which comprises of a range of factors from access to utilization of the food products

.The session will identify the key challenges in managing water for food security and specifically deliberate on regional disparities in crop-water productivities as also the trade dimensions of food and water security. It would enable discussion on regional perspectives on water governance for food security including the following key questions

- ➤ What are the known implications of impacts of climate change on agricultural water security in the river basins of South Asian region?
- ➤ What are the innovations and mechanisms to enhance crop productivity under prospective climate change scenarios?
- ➤ What are the various issues involved in prevailing irrigation practices impinging on water security?
- ➤ How the current water and food policies are ensuring 'food for all' in South Asia?

Session-V: Role of Science and Technology in Water Security

Application of science and technology in improving water use efficiency has a major role in complementing the efforts to ensure water security of a region. This session shall bring in the latest technological developments and innovations in tackling water contamination, improving water use efficiency and water conservation. It will also explore the avenues of technological interventions needed to respond to challenges in water security. Some of the issues to be deliberated include:

- ➤ What are the available options for effective technological intervention to improve water use efficiency?
- What are the innovations and constraints in development of cost effective technologies?
- ➤ What role can science and technology play in improving the water security of the region?

Session-VI: Policy, Governance and Regulatory Framework

Effective governance and responsive policies are of paramount importance in defining the course of sustainable water management. The issue of governance is multidimensional and a holistic institutional framework that encompasses the social, economic, political, and legal structures is essential. Developing an appropriate and responsive policy framework for governance is essential for ensuring water sustainability and adaptability to climate change. Some of the issues to be deliberated include:

- To understand the policy implications of climate change and identify measures for innovative adaptive governance that reduces vulnerability and increases capacity.
- ➤ To emphasize the significance of mechanisms like climate-centric development, mainstreaming climate change into institutional reforms and strategic development activities.
- > To recommend renewed policy priorities in response to water security under changing climate.

Registration Form

1. Name			
2. Date of Birth			
3. Passport No.			
4. Address			
Official			
Residence			
5. Contact Nos.			
Office	Residence		Mobile
Fax:	E mails:		
6. Food habits	Veg/Non Veg		
7. Whether presenting paper	or not		
7. Whether presenting paper Tile of the paper	r or not		
	or not	yes/no	
Tile of the paper	or not	yes/no	
Tile of the paper 8. Accommodation required	or not	yes/no	

Your own (Against payment)										
9. Audio Visual Aid Required:										
10. Detail of registration fee*										
Amount in INR		DD No		date		Bank				
11. Mode of Travel Air/Road/Rail										
Arrival Information										
Date	Time	Mod	e							
Departure Information										
Date	Time		Mode							
12. Will you join Dinner with us on										
November 3, 2011 yes/no										
November 6,2011 Yes/No										

• DD may be drawn in favour of Director, GAD Institute of Development Studies payable at Amritsar

Signature

Date