**CENTRE FOR ENVIRONMENT ENERGY & CLIMATE CHANGE (CEECC)**
**ASIAN DEVELOPMENT RESEARCH INSTITUTE (ADRI)**
(An ENVIS Resource Partner, under the aegis of Ministry of Environment Forest & Climate Change, GoI)
ADRI, BSIDC Colony, Off Patliputra Boring Road, Patna-800013 (Bihar)

## Virtual Seminar

# Vulnerabilities of Wetlands and Its Impact on Climate Change: Special Reference to the Indian Wetlands

Friday, December 04, 2020
3:00 p.m – 4:30 p.m, IST

### Background

Wetlands are amongst the most productive ecosystems on the earth and also provide many important services to society. However, they are also ecologically sensitive and adaptive systems. Wetlands exhibit enormous diversity according to the genesis, geographical location, water regime and chemistry, and soil and sediment characteristics. Wetlands sustain all life forms and perform useful functions in the maintenance of ecological balance and also the interface between land and water systems.They are highly productive and biologically rich ecosystems.

Natural wetlands in India consists of the high altitude Himalayan lakes, followed by wetlands situated in the flood plains of the major river systems, saline and temporary wetlands of the arid and semi-arid regions, coastal wetlands such as lagoons, backwaters, and estuaries; mangrove swamps; coral reefs and marine wetlands, and so on.According to the National Wetland Atlas, prepared by Space Application Centre (SAC) in 2011, India has about 757.06 thousand wetlands with a total wetland area of 15.3 million ha, accounting for nearly 4.7% of the total geographical area of the country. Out of this, the area under inland wetlands accounts for 69% coastal wetlands and 31% other wetlands (an area smaller than 2.25 ha)[1].

However, Patna (Bihar),being highly populous and one of the fastest-growing cities in India,has been transforming persistently in the last couple of decades due to urbanization. Interestingly, wetlands have been observed to have shrunk significantly. The area of water body comprising ponds, lakes, and canals have almost halved from 1.26 $km^2$ to 0.611 $km^2$ from 1989 to 2014 in Patna[2]. Besides urbanization, the shrinking of wetlands can also be attributed to climate change. According to a study, wetlands in Europe have been identified to be vulnerable to climate change mostly through higher temperatures, higher evapotranspiration, and altered precipitation pattern and amount which ultimately change the hydrological regime.

[1]Space Application Center (ISRO) and Institute of Environmental Studies & Wetland Management (IESWM, Kolkata), (2011), MOEF (GOI) & NWIA (GOI), SAC/RESA/AFEG/NWIA/ATLAS/23/2010.

[2]Ashraf M (2014). An Assessment of Land Use Land Cover Change Pattern in Patna Municipal Corporation Over a Period of 25 Years (1989-2014) Using Remote Sensing and GIS Techniques. IJIRSET, 3(10), 16782-16791.

In this regard, to stimulate thoughts on this very important issue in all parts of India, the Centre for Environment, Energy, and Climate Change, at Asian Development Research Institute is organizing a virtual seminar to discuss and build scientific understanding about vulnerabilities of wetlands and climate change, with special reference to the Indian context.

**Objective**

The objectives of this virtual seminar are as follows:

- Highlighting the scientific as well as practitioners perspective on degrading wetlands,
- Highlighting the prospects of wetlands and its impact on climate change
- Getting inputs on devising a roadmap for the long-term sustainability of wetlands in Bihar's context

**Discussion Themes**

The distinguished speakers will be expected to speak on the following agenda:

**Theme I:The vulnerability of wetlands**

Vulnerability assessment of wetlands is a very important early-stage task for wetland protection, pollution treatment, ecological restoration, and water resource utilization. It is a crucial step to identify the factors that wetlands are vulnerable to. In this session, the speaker will highlight the importance of assessing the vulnerability of wetlands, what are the factors that wetlands are vulnerable to, what is the impact of those factors on wetlands, how it is impacting humans and the environment, and what are the frameworks to assess such vulnerabilities.

**Theme II: Vulnerabilities to the urban wetlands**

Rapid urbanization has severely contributed to degrading the surface area of existing urban wetlands. Over the years, they have gradually depleted, leading to a number of problems in urban areas such as flooding, water scarcity, and waterlogging. In this session, the speaker will try to highlight the urban wetlands challenges, why it is important to assess the vulnerabilities of urban wetlands, what are the emerging threats that can significantly impact the ecosystem of urban wetlands, how vulnerabilities of urban wetlands can impact urban dwellers, and the environments, and what are the framework for assessing such vulnerabilities.

**Theme III:Impact of wetlands on Climate Change**

Climate change is recognized as a global threat to all health of natural systems on the Earth. Inland, freshwater wetlands are likely to be affected by increased temperatures and changes to precipitation and more frequent or intense droughts, storms, and flash floods. Freshwater wetlands have a major role in climate change adaptation, through capturing and storing carbon to reduce atmospheric greenhouse gases and providing resilience to hazards such as

flooding. In this session, the speaker will put stress on highlighting the impact of wetlands on climate change and how wetlands can play a role in climate change adaptation.

**Theme IV: Government perspective on degrading wetlands and management in Bihar**
In this session, the speaker will bring the perspective of government and governance to wetland management. The speaker will also highlight the key initiatives of the Government of Bihar to restore and conserve the wetlands in Bihar. Furthermore, the speaker will also talk about the roadmap of the newly constituted Wetlands Authority of Bihar.

**Prospective Audience**

It is aimed that this webinar will bring together scientists, researchers, policymakers, and grassroots practitioners to understand scientific and practical aspects of wetland as well as climate change management

## SEMINAR AGENDA

### Vulnerabilities of Wetlands and its Impact on Climate Change

Friday, December 04, 2020

| Session Plan (03:00 p.m- 04:30 p.m) | |
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| 03:00– 03:10 p.m. | **WelcomeRemarks**<br>Dr. Prabhat PGhosh<br>Director, Centre for Environment, Energy and Climate Change (CEECC), Asian Development Research Institute (ADRI), Patna |
| 03:10 – 03:25 p.m. | **Presentation Theme I: The vulnerability of wetlands**<br>Dr. Ashok K. Ghosh<br>Chairman, Bihar State Pollution Control Board |
| 03:25 – 03:30 p.m. | **Q & A** |
| 03:30 – 03:45 p.m. | **Presentation Theme II: Vulnerabilities to the urban wetlands**<br>Dr. Meenakshi Dhote<br>Professor, School of Planning and Architecture, New Delhi |
| 03:45 – 03:50 p.m. | **Q & A** |
| 03:50 – 04:05 p.m. | **Presentation Theme III:Impact of wetlands on climate change**<br>Dr.Ritesh Kumar<br>Director, South-Asia,Wetlands International |
| 04:05 – 04:10 p.m. | **Q & A** |
| 04:10 – 04:25 p.m. | **Special Address: A government's perspective on degrading wetlands and management in Bihar**<br>Shri Dipak Kumar Singh, IAS<br>Principal Secretary, Department of Environment, Forest & Climate Change, Government of Bihar |
| 04:25 – 04:30 p.m. | **Concluding remarks**<br>Dr. Ashok K. Ghosh<br>Chairman, Bihar State Pollution Control Board |

## SPEAKERS BIO-NOTE

### Vulnerabilities of Wetlands and its Impact on Climate Change

Friday, December 05, 2020

**Shri Dipak Kumar Singh** is Principal Secretary, Environment and Forest Department. Mr. Singh is an IAS officer of 1992 batch of Bihar cadre. He held the post of Principal Secretary, Labour Resource Department cum CEO, Bihar Skill Development Mission (Jan, 2016 to 8th Aug, 2019); Secretary, Department of Environment, Forest and Climate Change (Nov, 2011 to June, 2014); Secretary, Water Resource Department (June, 2014 to Nov, 2015); and Secretary, Bihar State Electricity Board (May, 2001 to Jun, 2004). Infield posting, he held the charge of District Magistrate of Khagaria and Purnea. He was the Director of the Department of Economics Affairs, Ministry of Finance, Government of India (Oct, 2005 to Feb, 2010). He worked in the World Bank, Washington DC under the voice secondment.

**Dr. Ashok Kumar Ghosh**is a Chairman of Bihar State Pollution Control Board (BSPCB) and a Member of Regional Empowered Committee (REC), MoEF&CC, GoI. He is also working as Professor and Head of the Research Wing at Mahavir Cancer Institute and Research Centre, Patna.The main area of his research is groundwater quality and quantity.Dr.Ghosh is currently working on International Project DELTAP supported by NWO Wotro of The Netherlands,Project INNOWATER supported by DST,Government of India,Project NUTRI-SAM supported by DST-UKIERI, and FAR-GANGA supported by DST-NERC Newton Bhabha Fund.

**Dr. Meenakshi Dhote** has about 30 years of teaching, research, and professional experience in the field of Environmental Planning, with a special interest in the biodiversity of urbanized ecosystems. Currently, she is heading the Department of Environmental Planning at SPA Delhi and is also a coordinator of the Environmental Information Center on Human Settlements supported by MoEFCC. She has been a member Delhi State Environmental Appraisal Committee and is a member of Delhi Biodiversity Foundation under DDA. Some projects, EIA of Mayur Vihar District Center, Regional Environmental Assessment of IWDP, Zonal MasterPlan for Mt. Abu Eco-Sensitive Zone, Sustainable Development of Andaan and Nicobar Islands, Vision Document for Taj Trapezium Zone.

**Dr. Ritesh Kumar**is aDirector of South-Asia at Wetland International (WI-SA). He is a natural resources economist by training andhas nearly two decades of work experience on wetlands of South Asia, specifically on the aspects of integrated management planning, ecosystem services assessment and valuation, and mainstreaming wetlands in development. He has led multidisciplinary projects on the formulation of management action plans, environmental flows assessment, wetlands and climate change adaptation, and ecosystem-based disaster risk reduction. Dr. Kumar is also a nominated member of the Scientific and Technical Review Panel of Ramsar Convention, and a coordinating lead author at the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).