Webinar on Understanding WASH Challenges at the Urban Fringe

Based on a case study of Bijnor City in Uttar Pradesh

Session Title: About CSE and Understanding Peri-Urban Dynamics and the Underlying Hypotheses

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Presentation Structure

01 About CSE

02 Understanding Peri-Urban Dynamics and the Underlying Hypotheses

03 About the Webinar

Centre for Science and Environment

Four Decades of Environmental Leadership

40+
Years of Experience
(Est. 1980)

8
Programmes in Environment

10,000+
Water Programme Alumni Database

- A premier Indian policy research organization
- Working in collaboration with various stakeholders — NMCG, CPHEEO, AMRUT, State Governments, multilaterals, academia, researchers and practitioners
- Active member of alliances, international forums and committees
- Recognized with the Indira Gandhi Peace Prize and the Stockholm Water Prize and many more
- Equipped with state of the art laboratory, training centre and strong media presence

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Centre for Science and Environment

Pollution monitoring

- **Environment Monitoring Lab**
  Pollution, toxins in food, waste, water, FSM
- Independent information in public domain

Research & advocacy

Programmes

- Air Pollution & Mobility
- Climate Change
- Industry: Pollution & Energy
- Environment Education
- Sustainable Food Systems
- Sustainable Habitats & Cooling
- Municipal Solid Waste
- **Water, Wastewater, Sanitation**

Education, Training

Anil Agarwal Environment Training Institute

- Build capacities on environment (India & across global South)
- Green campus

Communication

Media resource centre

- Strengthen reportage of mainstream and regional journalists on environment

Down To Earth (since 1992)

- English, Hindi & Digital editions

Websites, E-newsletters, media

- Campaign tools for outreach
- India Environment Portal

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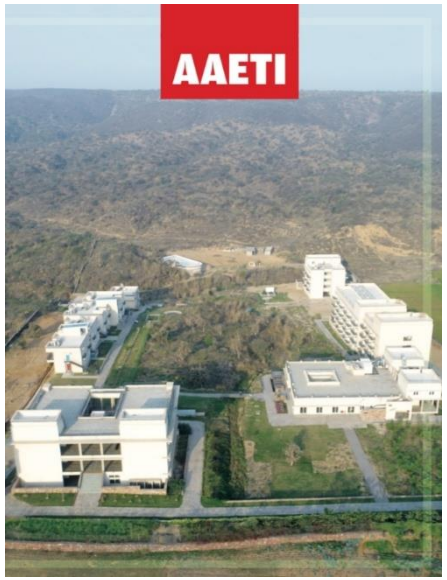

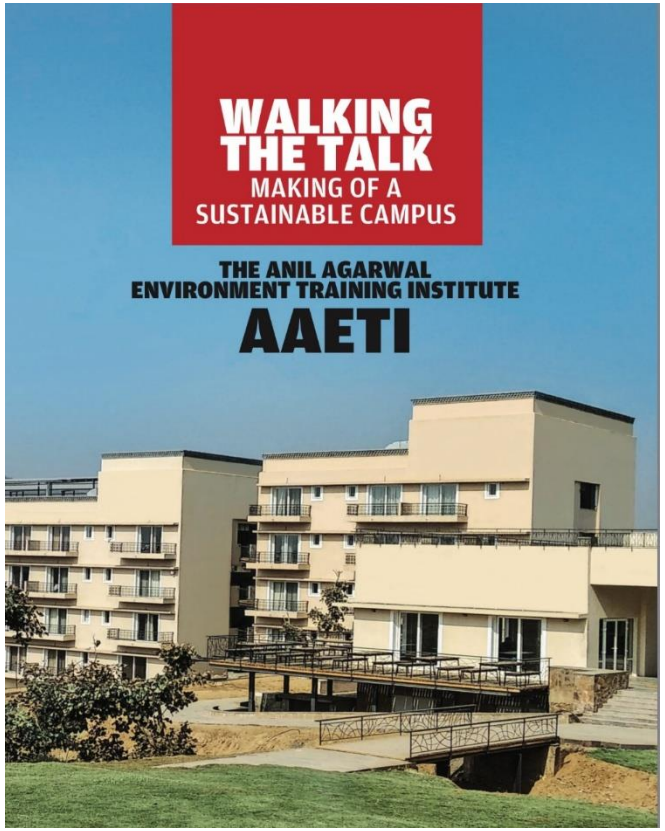

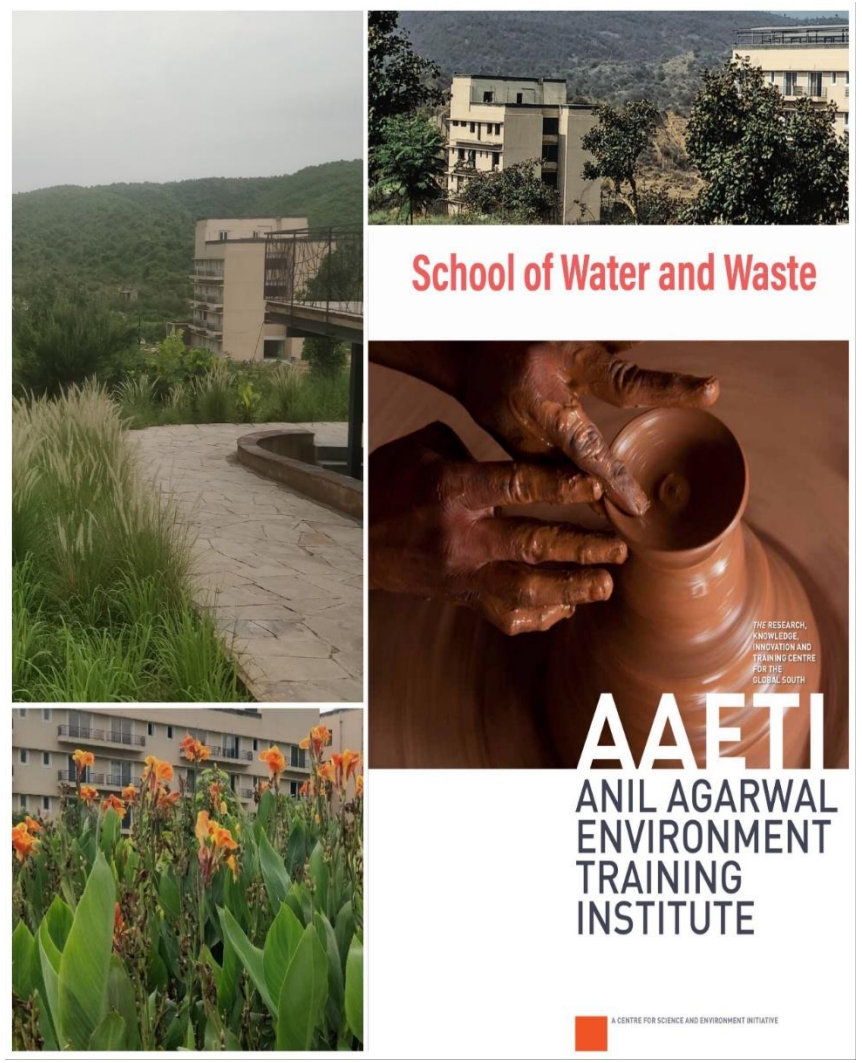

A teaching - learning and innovation centre that is designed to find appropriate and affordable solutions for key problems of India and the global south.

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Global Partnerships

United States of America

- University at Buffalo
- Columbia University
- Global Water and Sanitation Partnership

United Kingdom

- University of Leeds
- Loughborough University
- Lancaster University
- WEDC — Developing knowledge and capacity in water and sanitation

The Netherlands

- UNESCO — United Nations Educational, Scientific and Cultural Organization
- IHE Delft — Institute for Water Education in partnership with UNESCO

Germany

- giz — Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Switzerland

- World Health Organization
- eawag aquatic research

Ghana

- Ministry of Water Resources and Sanitation

Rwanda

- Ministry of Infrastructure and
- Rwanda Water and Forestry Authority
- WaterAid

Ethiopia

- Ministry of Water and Energy

Nepal

- Ministry of Physical Planning and Works
- guthi
- CIUD — Centre for Integrated Urban Development

Bangladesh

- WaterAid
- BRAC University — Inspiring Excellence

Republic of South Africa

- Water Research Commission
- University of KwaZulu-Natal
- Inyuvesi YaKwaZulu-Natali

Egypt

- NWRC — National Water Research Centre

Kenya

- Kenya Water Institute
- Jomo Kenyata University of Agriculture and Technology

Sri Lanka

- Ministry of City Planning and Water Supply
- Lanka Rainwater Harvesting Forum

Thailand

- Asian Institute of Technology

Webinar Agenda

Time	Session Details
15:00 - 15:20	Welcome note and Understanding Peri-Urban Dynamics and the Underlying Hypotheses **Dr. Sumita Singhal, Programme Manager, CSE**
15:20 - 15:40	Findings from CSE's study on Recently Transitioned Peri-Urban Areas of Bijnor **Mr. Jyoti Parsad Dadhich, Deputy Programme Manager, CSE**
15:40 - 15:50	Governance Shifts in Peri-Urban Areas: Implications for WASH Service Delivery **Dr. M N Roy, Founder President, Sigma Foundation**
15:50 - 16:15	Panel Discussion **Panelists:** **1. Dr. M N Roy, Founder President, Sigma Foundation** **2. Dr. Rumi Aijaz, Senior Fellow, Observer Research Foundation** **3. Prof. Chetan Vaidya, Independent Urban Advisor, Ex-Director of NIUA and SPA Delhi**
16:15 - 16:25	Q&A Session
16:25 - 16:30	Closing Remarks **Harsh Yadava, Programme Officer, CSE**

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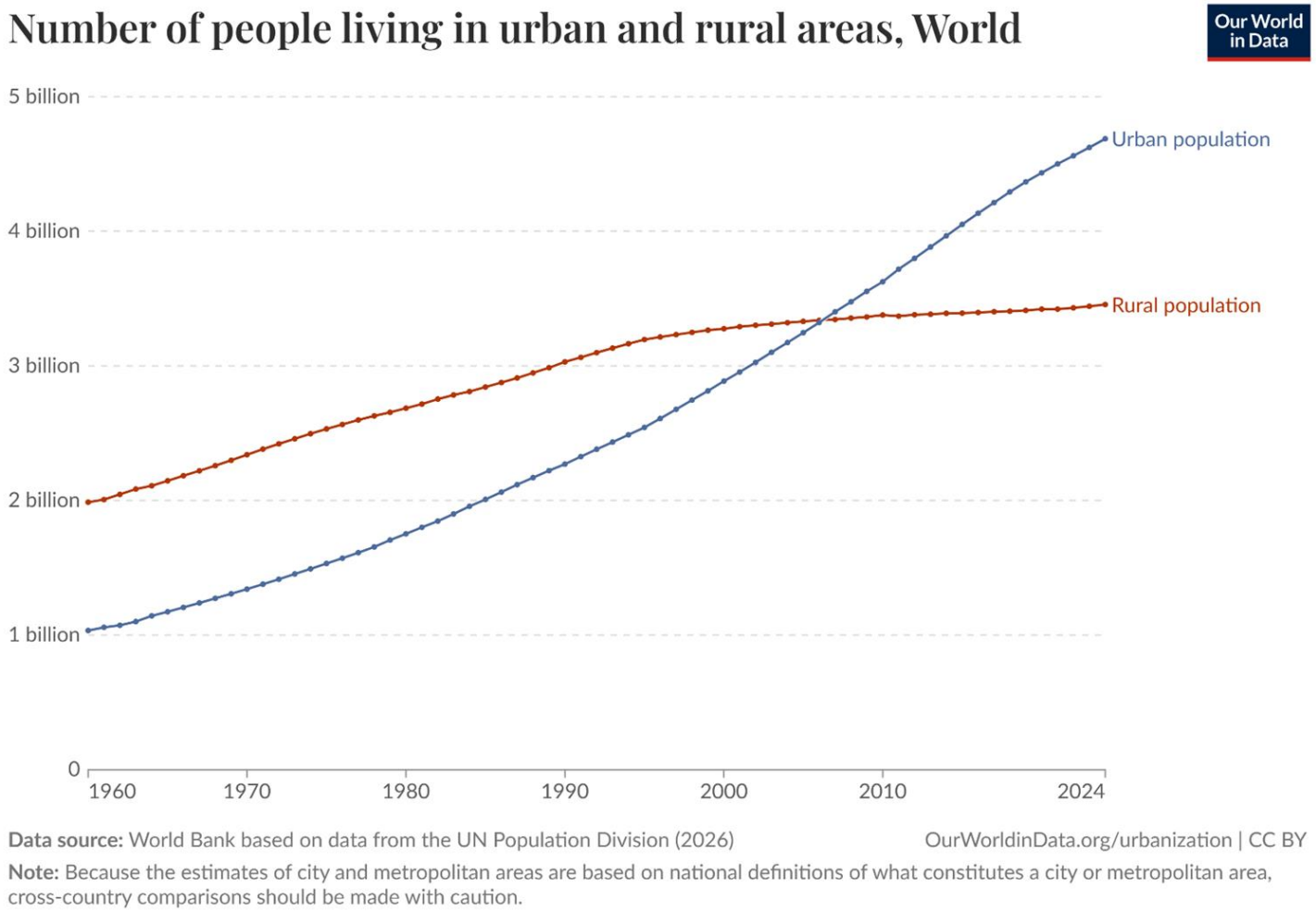
Understanding Peri-Urban Dynamics and the Underlying Hypotheses

Urbanization in the world

- Around **56–57%** of the world's population lives in urban areas (2023–2024 estimates)
- Expected to reach **~68% by 2050**
- Nearly **90%** of future urban growth will occur in Asia and Africa
- Every week, 1.4 million people are moving into the cities.

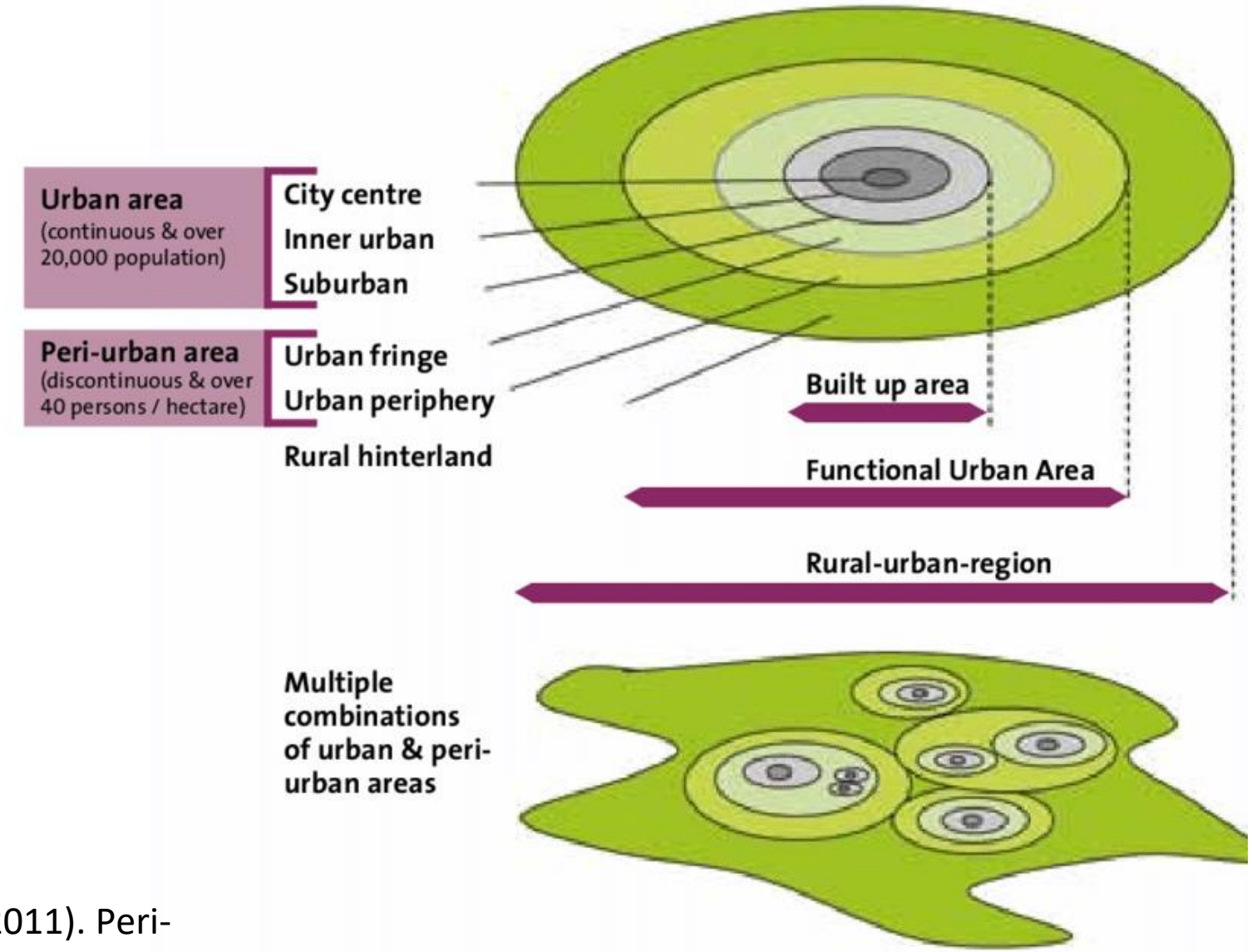


Urbanization in the India

- 31.1% urban population (2011 Census)
- Estimated ~35–36% urban (2023–2024)
- Expected to reach ~40% by 2036
- Mumbai, Delhi, Bengaluru, Chennai, and Hyderabad are the world's largest urban agglomerations by population.
- Over 70% of the urban population resided in Class I cities in 2011, and the country's 52 cities (more than 10 lakh population) alone accounted for 42.3 per cent of all urban residents.
- ~18.9% of total migration occurring from rural to urban areas during July 2020 – June 2021 (ECONOMIC SURVEY OF RURAL-URBAN POPULATION)

Peri-Urban Areas

- Urban fringe
- Urban–rural interface
- Rurban areas
- Transitional zones
- City outskirts
- Census towns
- Urban villages



Piorr, Annette & Ravetz, Joe & Tosics, Iván. (2011). Peri-Urbanisation in Europe.

Peri-Urban Areas by Definition

- Peri-urban areas are geographical areas near the city or outskirts of the city, essentially transitional areas, changing from rural to periurban and may become urban. Located between the outer limits of urban and regional centres and the rural environment, they represent a wide range of uses, such as water catchments, forestry, recreation and productive farming, as well as offer a unique ambience and lifestyle. (GEAG, 2016)

- The Urban Fringe: "The space into which the town extends as the process of dispersion operates…an area with distinctive characteristics which is only partly assimilated into the growing urban complex" (Adell, 1999 citing Carters 1981 definition).

- As a Lacking Area: "Usually characterized by the loss of rural aspects (e.g. fertile soil, agricultural land, natural landscape) or the lack of urban attributes (such as services or infrastructure)" (Allen, 2003)

Status of Peri-Urban Areas in India

Not formally defined in Census or statutory planning frameworks.

They are transitional and dynamic, constantly changing as cities expand.

They may fall under-Census towns or Urban fringes of statutory towns/cities or Villages within urban influence zones

1. Census Towns As per Census 2011: **~3,800+ census towns**

- These are **rural areas with urban characteristics**, often considered peri-urban

2. Villages in Urban Influence Zones

- Thousands of villages fall within:
  - **5–20 km radius of cities**
  - Industrial corridors and expanding metropolitan regions
- Estimates suggest **tens of thousands of villages** are functionally peri-urban

3. Urban Agglomeration Fringe Areas

- Every major city (Delhi, Mumbai, Bengaluru, etc.) has **extensive peri-urban belts**, but these are not counted separately

Drivers of Peri-Urban Growth

PUSH FACTORS

In City

- High land prices
- Congestion in the core areas
- Pollution
- Lack of quality services
- Lack of quality services and amenities

Peri-Urban Growth

PULL FACTORS

In Fringe

- Land availability, lower land prices
- Opportunities for employment
- Mobility & access to goods
- New educational & health facilities developing
- Less pollution

Key Characteristics

- Mixed land use patterns
- Informal settlements
- Limited infrastructure
- Dependence on both rural and urban systems

Case Study- BANGALORE,INDIA

- ~65% of peri-urban land shifted from agricultural to mixed-use/commercial.
- Rapid urbanization occurred in 11 wards, including Kempegowda, Yelahanka, and Byatarayanapura.
- Population Growth: Significant increase from 2001 to 2011, mainly due to migration and new developments.
- Infrastructure Impact:
  - Major projects like the NH-7 corridor and metro expansion spurred urban sprawl.
  - Public transport (e.g., BMTC) facilitated daily commuting from peri-urban zones.

Why Peri-Urban Areas Matter and what are the challenges?

- Fastest growing regions
- High environmental stress
- Critical for sustainable urbanization
- Often under-researched

- Unplanned development
- Weak governance structures
- Inadequate water and sanitation services
- Fragmented institutional responsibilities

About the webinar

As cities expand, many villages on the urban fringe are being absorbed into growing urban areas, but access to safe water, sanitation and hygiene services often lags behind.

To better understand these challenges, the **Centre for Science and Environment, New Delhi** conducted a study titled “Water, Wastewater & Stormwater Management in Recently Transitioned Peri-Urban Areas – A Case Study of Bijnor, Uttar Pradesh.” The study highlights key gaps and proposes practical solutions, with a strong focus on governance and economic factors influencing service delivery.

Aim of the webinar

to develop a shared understanding of WASH challenges in peri-urban areas and exploring solutions for improving sustainable service delivery.

Panelists

SPEAKERS AND PANELLISTS

DR. M.N ROY
Founder & President, Sigma Foundation, IAS (Retired), Governemnt of West Bengal

DR. RUMI AIJAZ
Senior Fellow, Observer Research Foundation

PROF. CHETAN VAIDYA
Independent Urban Advisor Ex-Director of NIUA and SPA Delhi

MR. VIKAS KUMAR
Executive Officer, Nagar Palika Parishad Bijnor, Uttar Pradesh

MR. SUBRATA CHAKRABORTY
Director, Water Programme, Centre for Science and Environment

DR. SUMITA SINGHAL
Programme Manager, Water Programme, Centre for Science and Environment

JYOTI PARSAD DADHICH
Deputy Programme Manager, Water Programme, Centre for Science and Environment

HARSH YADAVA
Programme Officer, Water Programme, Centre for Science and Environment

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Questions to address

- When urban fringe areas transition from rural to urban and are incorporated into municipal limits, responsibilities are often shared across multiple institutions. What policy and governance mechanisms can be adopted to ensure effective coordination and accountability across different levels?
- Is there scope to improve the existing criteria or framework for the merger of peri-urban areas? Is there a defined timeline for achieving service delivery, and who is responsible for monitoring progress?
- When peri-urban areas transition from rural to urban, does the **allocation of funds** under flagship schemes or missions also transfer accordingly?
- In many cases, infrastructure assets are inherited from Gram Panchayats while governance shifts to municipalities. How can cities manage this transition effectively, particularly in terms of asset ownership, operations, and maintenance?
- Peri-urban areas often compete with core city areas for limited municipal resources. How should municipalities prioritize investments for equitable service delivery?
- Peri-urban areas often rely on rural water supply norms before urban integration, resulting in groundwater dependence and weak waste management systems. Should there be dedicated service standards for water, wastewater, and stormwater management in these areas?

Housekeeping Rules

- 🎤 **Audio**

  Keep your microphone **muted** during presentations to avoid background noise. You may unmute yourself during Q&A or when invited by the moderator.

- 💬 **Chat box**

  Use the chat feature to share comments, questions, or relevant links. Kindly keep the conversation professional and on-topic.

- ✋ **Q&A**

  If you have a question, type “Question” in the Q&A chat box ; the moderator will invite you to speak or take up questions from the chat box..

- **Respect & inclusivity**

  Be respectful of all speakers and fellow participants. Diverse views are welcome; let’s keep the discussion constructive and inclusive.

Thank You

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Dr Sumita Singhal
Programme Manager, CSE

Sumita Singhal, with 15 years of experience in water, wastewater, and sanitation, holds a doctorate in Environment. She has worked with organizations like CPCB and Tide Technocrats, focusing on pollution monitoring, EIA, lab management, FSSM, and capacity building. A member of IWA and BIS, she supports water-related standards. Currently, she is Programme Manager at CSE, overseeing the inclusive sanitation and circular economy program.

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Subrata Chakraborty
Director- Water Programme, CSE

Subrata Chakraborty has more than 22 years of experience working in the social development field. He is passionate about clean water and safe sanitation. He has long experience of working with governments shaping policy interventions and quality implementation, both in urban and rural areas. He has also worked with International development organisations like the World Bank and International Water Management Institute; and corporates like PwC and other NGOs.

He is currently leading CSE Water programme

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Dr. M.N Roy
Founder President, Sigma Foundation

Dr. M.N. Roy, an IAS officer (1980 batch), holds an M.Tech from Calcutta University and a PhD in Sociology from TISS, Mumbai. He served as District Magistrate of undivided Midnapur and Jalpaiguri, and later held key positions including Secretary, Principal Secretary, and Additional Chief Secretary in the Government of West Bengal.A pioneer of the people-centric, self-financed rural sanitation movement in the early 1990s, he played a vital role in strengthening Panchayati Raj, decentralized planning, and poverty alleviation in the state.He is the Founder President of SIGMA Foundation (est. 2017), which has implemented over 100 projects across 22 states, including extensive work in WASH. He is associated with several professional bodies and has published widely in international journals.

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Prof. Chetan Vaidya
Independent Urban Advisor, Ex-Director of NIUA and SPA Delhi

Prof. Chetan Vaidya is an architect planner with over 30-year long academic, research and consultancy experience of urban planning and development. In 2015, IIT Kharagpur recognized him as distinguished alumni. He was Director of the School of Planning and Architecture (SPA) New Delhi, during 2012-17 and was also Director of National Institute of Urban Affairs (NIUA) during 2008-12. He was Independent Director (Non-Executive) of GIFT city Gujarat and HUDCO. He has been a consultant to many international agencies on Urban development.

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Dr. Rumi Aijaz
Senior Fellow, Observer Research Foundation

Dr. Rumi, is a Senior Fellow at the Observer Research Foundation (ORF), a public policy think-tank with its headquarters in New Delhi. During his research career of about 25 years, he has contributed to the fields of town planning, urban governance, and social development. Some research projects have been undertaken in collaboration with reputed institutions. He has received education from India in the subjects of Geography, Regional Planning, and Urban Governance.

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Mr. Jyoti Parsad Dadhich
Deputy Programme Manager, Water Programme, Centre for Science and Environment

Jyoti Parsad Dadhich is a WASH specialist and capacity-building expert with over 10 years of experience across Global South, national, state, and ULB levels. He holds a degree in Civil Engineering from Rajasthan Technical University and a PG Diploma in Environmental and Sustainable Development from IGNOU.He has supported key Government of India missions such as SBM 2.0, AMRUT 2.0, and Namami Gange, with expertise in planning, design, implementation, and advocacy of WASH projects. As a master trainer, he has trained thousands of practitioners and contributed to multiple research reports, manuals, and publications.He has worked extensively on FSTPs and used water management across several states, with a focus on water and faecal sludge reuse, biosolids management, and circular economy approaches for sustainable urban sanitation

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Mr. Harsh Yadava
Programme Officer Centre for Science and Environement

Harsh Yadava is an environmental professional with over 8 years of experience in the WASH sector, focusing on drinking water, sanitation, and wastewater management. He has been instrumental in advancing sustainable solutions through his work with the Centre for Science and Environment (CSE). He has provided extensive on-ground technical support to Bijnor, including implementation of co-treatment and DEWATS projects, and enabling citywide FSSM environment. His field engagement has also informed research on peri-urban WASH challenges. He has contributed significantly to CSE's SFD initiative and capacity-building efforts at national and international levels. Currently based at CSE-PSU Lucknow, he supports towns across Uttar Pradesh in operationalizing faecal sludge and septage treatment infrastructure and strengthening FSSM practices. His interests include field-based research, urban water systems, wastewater reuse, and inclusive sanitation.

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Thank You

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