



# UK-India Water Quality Scoping Meeting

## Background and Overview of the Aims and Objectives of the Meeting

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# UK-India Water Quality

- A collaborative action on Water Quality has been supported by the Newton-Bhabha Fund
- Aim of the programme is to enable a better understanding of the sources, transport and fate of pollutants and to develop new management strategies and technologies to reduce the pollution levels
- The purpose of this workshop is to bring the UK and Indian community together to discuss the research priorities for this call
- UK lead is the Natural Environment Research Council (NERC) with support from the Engineering and Physical Sciences Research Council (EPSRC)
- Indian lead is the Department of Science & Technology (DST)



# Natural Environment Research Council (NERC)

- ***Vision: To place environmental science at the heart of responsible management of our planet***
- Achieving this by supporting excellent, peer reviewed science to understand and predict how our planet works and manage our environment responsibly
- Research being undertaken in 55 universities and 20 research institutes in the UK
- Supports research capability including four ships, seven aircraft, six polar stations, six data centres and 32 research community facilities
- International collaboration a priority, for example NERC
  - Funds joint calls with international partners, such as DST
  - Participates in multilateral activities, including the Belmont Forum
  - Welcomes international project partners on all proposals
  - Secures access to international research infrastructure



# Engineering and Physical Sciences Research Council (EPSRC)

EPSRC is at the heart of discovery and innovation.

- We invest in long-term, fundamental engineering and physical sciences research and training in the UK.
- Committed to excellence and impact, we support the talented scientists, engineers and postgraduate research students who through their research, discover new knowledge, explore new ways of thinking and drive innovation.
- Our research ranges from physics, chemistry and mathematics to materials, computing and engineering.
- Our research provides underpinning knowledge that informs other fields such as the life and medical sciences.
- Our research places the UK as a leading global research nation. It saves lives, creates prosperity, protects the environment and inspires future generations.

EPSRC aims to enable every EPSRC sponsored researcher (from student to principal investigator) to collaborate with the best researchers from across the world where it adds value to the research they are undertaking

- Our strategic focus is on enabling collaborations with key partners in US, Europe, China, India and Japan





# Department of Science and Technology- Objectives and Functions

**DST**, currently enjoys the status of India's main Extra Mural Research Support system with a share of about **50% of funding** for research through EMR route

- ❖ Formulation of Science, Technology & Innovation Policy and other enabling Policies for the R&D Sector
- ❖ Strengthening Basic Research and Expanding R&D base - Human Capacity
- ❖ Strengthening Basic Research and Expanding R&D base - Institutional Capacity
- ❖ Implementing Technology Development Programs
- ❖ Societal Interventions of S&T
- ❖ S&T Co-operation/ Partnerships and Alliance



# Water Programme of DST-

## Vision, Implementation Strategy and Action Plan

### ❖ Vision

- To position India as one of the leading research and development hubs for providing frugal, affordable and efficient solutions for meeting price utility envelopes of social context.

### ❖ Implementation Strategy and Action Plan

- Design of specific programmes for centre technology development chain right from directed research to the technology development and commercialisation.
- **Focussed human and institutional capacity building programmes to strengthen the research capabilities .**
- Development of knowledge network, virtual centres and centres of excellence to promote research and development related to all aspects of water .
- **Design and evolve demand oriented mission mode projects to address the prevalent and emerging water challenges, water energy nexus etc.**
- Support to technology incubation hubs for translating the research leads to useful innovations.



# Water Research Promoted by DST

## ❖ Developmental Research

- ❑ Developmental research for feasible homegrown solutions related to water quality, quantity and recycling

## ❖ Application Research

- ❑ Application Research on convergent technological solutions for meeting the challenges of water scarcity in different social contexts (Winning, Augmentation and Renovation: WAR for Water)

## ❖ Leveraging bilateral and multilateral collaboration for addressing prevalent water challenges



# Water Challenges facing the Country

Water Availability Challenges	Water Quality Challenges	Scientific Water Management Approach
Low per capita availability	Quality deficit of available water for specified uses	Storage capacity for seasonally available water and Water body disuse
Evaporation loss from water bodies	Contamination through Arsenic, Fluoride, Iron, multiple species, pesticides and other water derived residues	Surface run-off on account of nature of geological terrain
Water winning and mining in water starved areas	Biological contamination	Mismatched rates withdrawal and recharging capacity
	Alkali metal ion salinity and Alkaline earth metal salt salinity and hardness	Non-optimal use of water in agriculture and industries
	Sea water intrusion in coastal areas	River flood management
		Wetland management





## WAR and WTI Accomplishments

# Research based technology solutions for water challenges

- ❖ Research based technology and community management solutions for 19 site-specific challenges in 225 habitats across 23 states.
- ❖ Around 300 R&D Projects on water quality and quantity issues.
- ❖ Vibrant Water Quality Monitoring Network developed in partnership with line departments, state S&T councils and academic institutions
- ❖ Programme of Cooperation on Dutch-India Water Alliance for Leadership Initiative (DIWALI) and joint programmes with EU for Water Technology, Research and Innovation on water purification and waste water treatment initiated.

# Workshop Plan

- During the course of this workshop we will be:
  - Exploring what the common interests in water quality research are
  - Discussing the priorities for the Newton-Bhabha Research call
  - Discussing how the Indian and UK research communities can best work together to improve water quality
  - Going on a field trip to learn more about approaches to water quality management in Delhi
- The outcomes will be used by the funders to inform:
  - The development of the Water Quality Announcement of Opportunity



# Possible Research Questions

- How do we improve our understanding of the transport, transformation, interactions and fate of natural and man-made pollutants in the environment?
- Explore how to determine the risks posed of natural and man-made pollutants to people and the environment?
- How to improve our understanding of the risks from naturally occurring pollution, such as arsenic and fluoride from geological sources?
- How do we develop management strategies and technologies to enable better measurement and monitoring pollution levels?
- How do we develop management strategies and technologies that will support the reduction in pollution levels?
- How can we assess the impact of pollution mitigation approaches, including timescales for clean-up measures to take effect and exploring the applicability of approaches to other areas?



Department of Science  
& Technology



# Breakout 1 – Water Quality Interests

- Purpose of this session is to develop a mutual understanding of the water quality interests of the environmental and engineering research communities in both India and the UK
- Breakout groups are asked to:
  - Summarise personal water research interests/priorities
  - Explore what the common interests/themes are; and
  - Appoint a rapporteur to feedback to plenary (after lunch)



## Breakout 2 – Research Priorities

- Purpose of this session is to define the research priorities for the Water Quality programme
- Breakout groups are asked to:
  - Discuss how best to combine the respective expertise to the environmental and engineering research communities to tackle water quality
  - Discuss which areas should be the priority for this 3-year India-UK research programme
  - Suggest key research challenges for the call
  - Appoint a rapporteur to feedback to plenary

