

Evidence-based Governance for Water Resilience

A K Gosain

Emeritus Professor, IIT Delhi

Founder Director INRM Consultants

(A R&D based company set up under TBIU plan of IIT Delhi)

Vision 2031

An International Conference on Development and Democracy

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Why Energy & Water Matter for Kerala

- Limited land and ecological sensitivity
- High climate vulnerability (floods, droughts)
- Rising development aspirations
- Need for integrated, science-driven resource management

Kerala's Water Reality

- High rainfall but seasonal scarcity
- Frequent floods and localised droughts
- Uneven spatial and temporal distribution
- Need for integrated water management

Modernising Water Infrastructure

- Upgrading irrigation efficiency
- Enhancing land productivity
- Reassessing large and medium irrigation projects
- Reducing conveyance losses

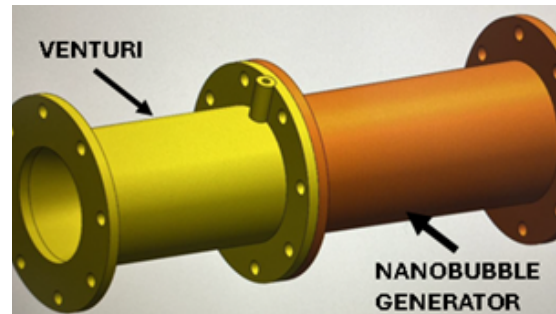
Dams & Reservoirs as Multipurpose Assets

- Flood moderation
- Dry season water storage
- Hydropower and irrigation
- Ecological safeguards and rehabilitation

Decentralised Water Security

- Revival of tanks, ponds, check dams
- Local water budgeting
- Groundwater recharge
 - Watershed management
- Community-level resilience

In-situ treatment using Nanobubble Technology



- **Low energy consumption focused on efficient oxygen delivery**
- **Installed in water flow, connected to gas supply**
- **Injects billions of gas nanobubbles for advanced oxidation, increase DO and biological treatment**
- **Provides in-situ treatment of BOD, COD, TSS, and N**

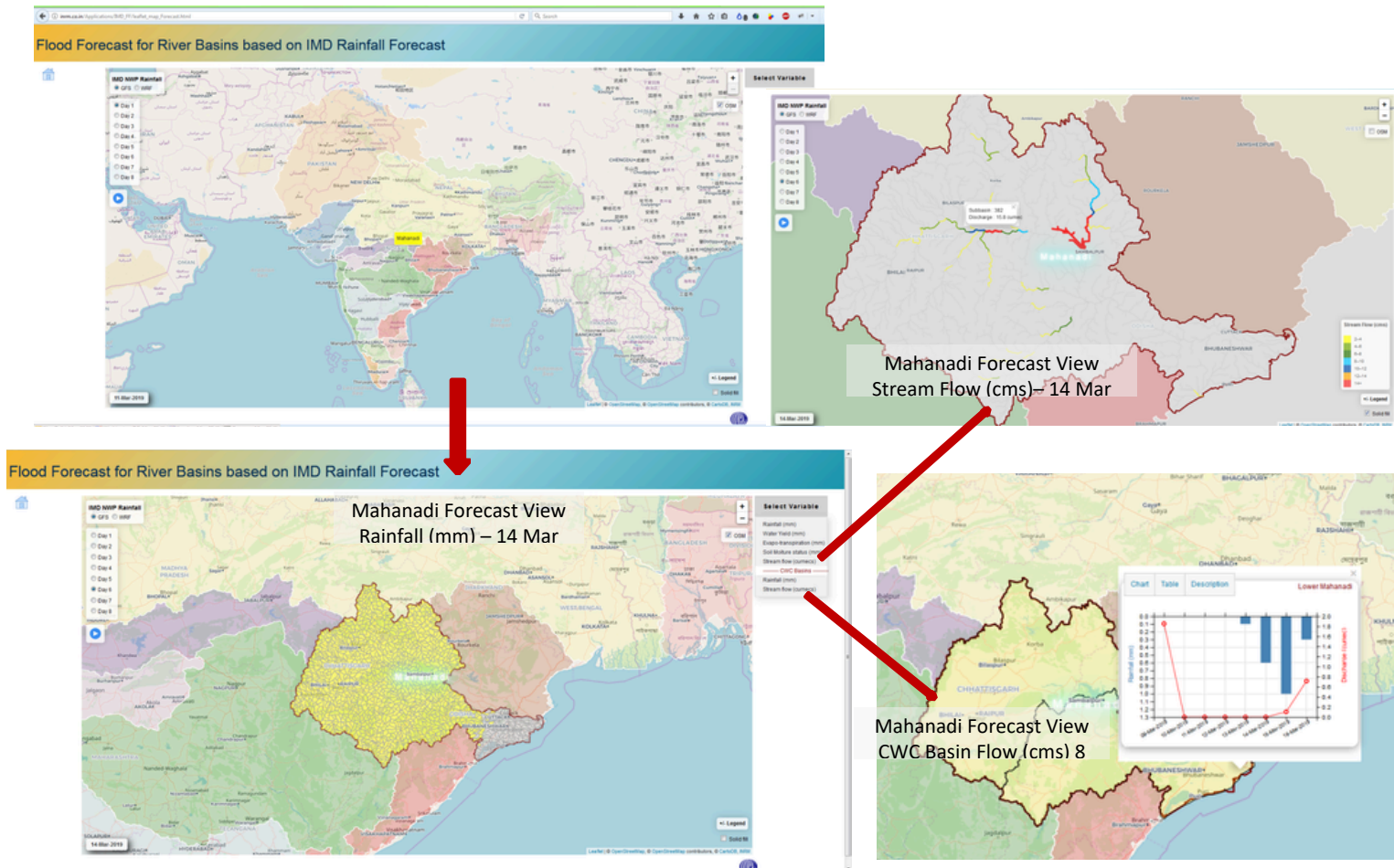
Technology & Smart Water Management

- Improved demand forecasting
- Automated canal operations
- Real-time monitoring
- Data-driven allocation decisions

Integrated Flood Management

- Structural measures and reservoirs
- Watershed restoration
- Urban drainage systems
 - Wastewater & Solidwaste
- Protection of natural floodplains

Real-time Stream Flow Forecast Portal



https://inrm.co.in/Applications/IMD_FF/login.php

Towards 2031: A Coherent Strategy

- Energy-water-climate nexus
- Economic growth with equity
- Environmental protection
- Institutional and policy reforms

Conclusion

- Scientific management is essential, not optional
- Kerala can lead with innovation and evidence-based governance
- Energy and water security underpin sustainable development



Thank you

Prof. A. K. Gosain

Founder & Director, INRM Consultants Pvt. Ltd.

gosain@civil.iitd.ac.in

www.inrm.co.in