

Environmental Flow

What is Environmental Flow?

Environmental Flows are the quantity, timing, duration, frequency and quality of flows required to sustain freshwater, estuarine and near-shores ecosystems and the human livelihoods and well-being that depend on them. (Brisbane Declaration 2007)



Why Flow in river is affected?

Dams- block, fragment and regulate flows “ time, magnitude, duration and frequency of flows.



Diversion of water- Complete /partial diversion of river stream



Deforestation- Degradation of the river catchment leading to reduced flows



Mining in the catchments-as in Goa



Sand mining on River Bed- as in Western Ghats Rivers



Pollution- as in Yamuna



Glacial Melt-as in Gangotri



Why Environmental Flow is necessary?

Ecological- Maintain aquatic biodiversity and not to affect feeding and breeding of aquatic species.



Morphological- Prevent sand, silt and sediment deposition declining the channel.



Hydraulic Connectivity- Maintain lateral and horizontal connectivity. (Aviral Dhara)



Social Issues- Ensuring quantity and quality of water (NirmalDhara)



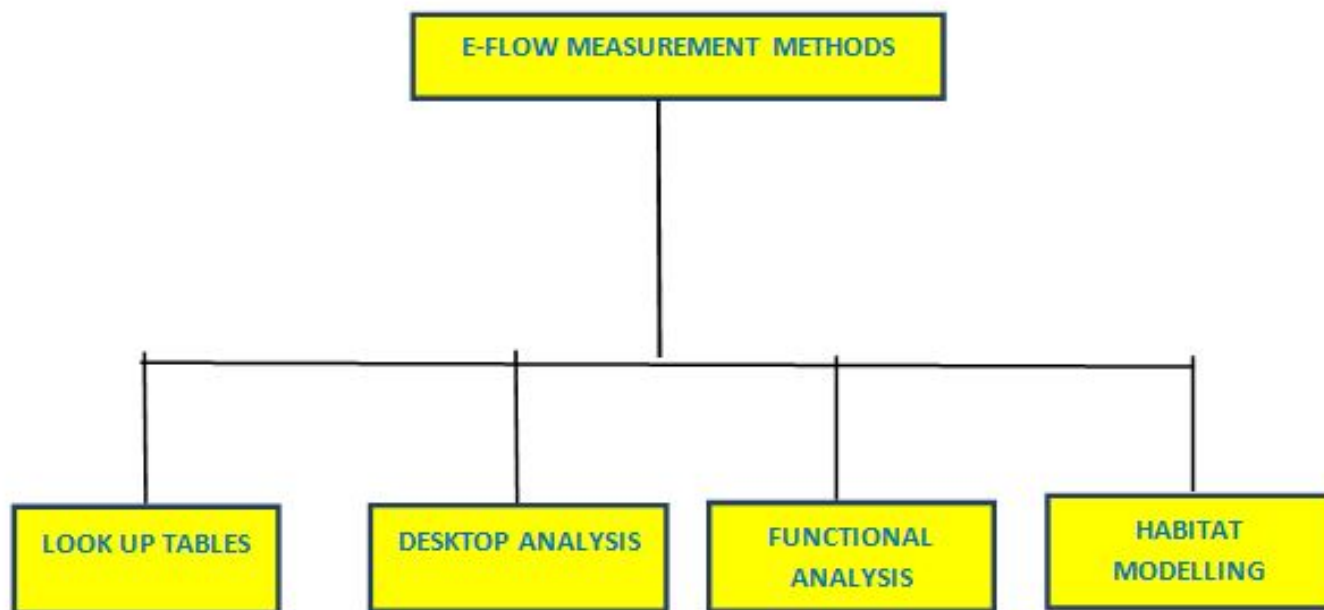
Economic-Prevention of loss from fisheries and farming to the river communities.



Spiritual and Cultural Needs: Preserving sacred groves and temple fish sanctuaries.



Environmental Flow Assessment Methodologies



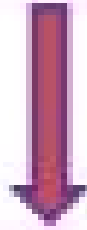
- Around 207 methods used in 44 different countries.
- Each of these methods may involve more or less input from experts and may address all or just parts of the river system.
- In India, IS code on Environmental flow is not yet published.

COUNTRY	BROAD METHODOLOGY	METHOD ADOPTED
France	LOOK UP TABLES	Hydrological Index
United Kingdom	LOOK UP TABLES	Q ₉₅ Index
USA	LOOK UP TABLES	Tennant Method
United Kingdom	DESKTOP ANALYSIS	LIFE (Lotic Invertebrate Index for Flow Evaluation)
South Africa	FUNCTIONAL ANALYSIS	BBM (Building Block Methodology)
Australia	FUNCTIONAL ANALYSIS	Expert Panel Assessment Method, Scientific Panel Approach, Benchmarking Methodology
France, Norway, Newzealand	HABITAT MODELLING	PHABSIM (Physical Habitat Simulation)

Status of E-Flow in Indian Context

The minimum flow in the river should not be

THE MINIMUM FLOW IN THE RIVER SHOULD NOT BE less than the average of 10 days minimum flow of the river in its natural state (CWC, 1992)



The environmental water needs were also recognized by NCIWRDP (1999)



National Environmental Plan 2005 talks about "Freshwater Resources and calls for IWRM and E-flows

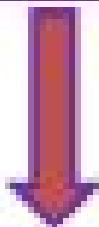


As a pre-condition for upcoming HePs, the Himachal Pradesh government had mandated 15% of lean season flow (2006)





Water Quality Assessment Authority (WQAA) used "modified Tennant Method" to assess flow requirement in Indian rivers (2007)



E-Flows are looked up in comprehensive manner first time in Ganga River Basin Management Plan, (2013)

Next Chapter >>
Water Pollution