

Water availability & Water pollution: Issues in Audit



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Scheme of presentation

- Introduction
- Availability and water use
 - Drinking water & sanitation
 - Industrial water
 - Irrigation water
- Issues in integrated management
- Water pollution
 - Reasons of pollution
 - Various acts, regulations
 - Water quality standards
- Regulating bodies, responsible institutions





Introduction

- φ Origin of civilization and water
- φ Availability and scarcity
- φ Rural and Urban issues & contrast
- φ Actual requirement – competing usages
 - φ Sugarcane Vs domestic use
 - φ Grape growers and tankers
- φ New York case of drinking water Supply Scheme
- φ Neglect of traditional systems
- φ Need of holistic and integrated approach

Drinking water

- Quantity
 - Rural 40-70 Lpcd
 - Urban 150 - 250 Lpcd
- Quality- causes of contamination
- Sustainability
- 24x7 water supply
 - Malakapur case Study
- Restoring traditional systems
- Rain water harvesting
- Animals- domestic and wild life
- Singapore case study



Industrial Water

- Important driver in the economy
- Requirement- sector dependent
 - Chemicals and fertilizers
 - Power generation
 - Heat treatment
- Pollution issues
 - Zero discharge polity by CPCB
- Recycle and reuse
- Effluent treatment

Irrigation Water

- Quantity & coverage
- Dependence on ground water resulting depletion of water table
- Flow irrigation and water use efficiency
- Intensive agriculture/ cash crops
- Participatory Management
- Use of modern technology
- More crop per drop



Issues in Integrated Management

ϕ **Conjunctive use in rural & urban areas**

- ϕ Surface & ground water needs to be judiciously used taking in to consideration environmental impacts.
- ϕ Ground water legislation – Maharashtra case study

ϕ **Appropriate solution based on situation**

- ϕ Both centralised and decentralised interventions are needed. Inter-basin transfers should done with full feasibility check. Neglect towards smaller decentralised interventions should be avoided.
- ϕ Hiware Bazar Ahemadnagar case study for ground water management



Water pollution

ϕ **Causes & Sources of pollution**

- ϕ In developing countries high population growth and increasing urbanisation & industrialisation are the main causes of pollution.
- ϕ Sewage & solid waste, mining, pesticides & fertilizers, chemical & industrial process, oil, gasoline & additives
- ϕ Point source and non point source

ϕ **Impact on health & environment**

- ϕ Waterborne diseases & water based diseases
- ϕ Harmonal disorders, cancers, infertility etc.
- ϕ Major threat to marine life and biodiversity



Pollution status of India

ϕ **Sewage and solid waste pollution from cities**

- ϕ Only 25% sewage is treated
- ϕ Solid waste dumping contaminating surface and ground water
- ϕ Most of the rivers having BOD above 5mg/l
- ϕ Ganga and Yamuna case study
- ϕ Pune case study

ϕ **Industrial and agriculture pollution**

- ϕ Excessive use of pesticides & fertilizers
- ϕ Industrial pollution on rise - from 20% a decade ago is now 30%



Legislative framework

φ **Acts**

- φ The Water (Prevention and Control of Pollution) Act, 1974, amended 1988.
- φ The Water (Prevention and Control of Pollution) Cess Act, 1977, amended 1992 and 2003.

φ **Rules**

- φ The Water (Prevention and Control of Pollution) Rules, 1975.
- φ The Water (Prevention and Control of Pollution) Cess Rules, 1978.
- φ Central Board for the Prevention and Control of Water Pollution (Procedure for Transaction of Business) Rules, 1975 amended 1976.

Legislative framework

φ Notifications

- φ Date on which the Water (Prevention and Control of Pollution) Cess (Amendment) Act, 1974 (6 of 1974) came into force and Date on which the Water (Prevention and Control of Pollution) Cess (Amendment) Act, 2003 (19 of 2003) came into force.
- φ Rate of Cess notified under the Water (Prevention and Control of Pollution) Cess (Amendment) Act, 1977(36 of 1977).
- φ Effective abatement of pollution and conservation of the river Ganga, Notification. S.O.583(E) Water Quality Assessment Authority, Order.
- φ Water Quality Monitoring Order 2005, Notification.

Full text of all the acts, rules and notifications relating to air pollution can be found at

<http://envfor.nic.in/legis/water.htm>



Supporting policies/ legislation

- φ Environment Protection Act, 1986
- φ National Conservation Strategy and Policy Statement on Environment and Development, 1992
- φ Policy Statement for the Abatement of pollution, 1992
- φ National Environment Policy, 2004 and 2006
- φ Vision Statement on Environment and Health



Regulating Organisations

ϕ **Ministry of Environment, forest and climate change**

ϕ National River Conservation Programme

NRCP covered pollution abatement works in 164 towns along the polluted stretches of 35 rivers spread over 20 States.

ϕ National Lake Conservation Programme

ϕ **Central pollution control board**

Separate board under MoEF &CC mainly responsible for nation wide policy formulation and regulation.

ϕ **State pollution control boards**

All states constitute these boards to carry out regulation function at state level.



Monitoring mechanism

CPCB in collaboration with concerned SPCBs/PCCs established a nationwide network of water quality monitoring comprising 1019 stations in 27 States and 6 Union Territories. The monitoring is done on monthly or quarterly basis in surface waters and on half yearly basis in case of ground water. The monitoring network covers 200 Rivers, 60 Lakes, 5 Tanks, 3 Ponds, 3 Creeks, 13 Canals, 17 Drains and 321 Wells. Among the 1019 stations, 592 are on rivers, 65 on lakes, 17 on drains, 13 on canals, 5 on tanks, 3 on creeks, 3 on ponds and 321 are groundwater stations.

Presently the inland water quality-monitoring network is operated under a three-tier programme i.e. Global Environment Monitoring System (GEMS), Monitoring of Indian National Aquatic Resources System (MINARS) and Yamuna Action Plan (YAP). The water quality data are reported in Water Quality Status Year Book.

Water quality standards

ϕ **Drinking water source**

- ϕ with treatment
- ϕ without treatment

ϕ **Outdoor bathing**

ϕ **Propagation of Wild life and Fisheries**

ϕ **Irrigation, Industrial Cooling**

ϕ **Effluent**

- ϕ Special provision of CETPs under scheme of CPCB for small scale industries





Water pollution audit

φ **Types of audit**

- φ Compliance audit
- φ Performance audit
- φ Financial audit

φ **Audit process**

- φ Audit planning
- φ Gathering background information for environment audit
- φ Setting audit scope
- φ Setting audit objectives for environment audits
- φ Setting audit criteria for environment audits
- φ Conducting field audits
- φ Post audit

φ **Major compliance audit issues in prevention and control of water pollution**

φ **Checklist for performance audit of prevention and control of water pollution**



Thanks

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