

Pollution of Ground Water: Key Audit Issues

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Estimated Ground Water Resources in India

Total Annual Precipitation	4000 BCM
Average Annual Potential	1869 BCM
Average Annual Utilisable Water	1123 BCM
(a) Surface Water	693 BCM
(b) Ground Water	433 BCM
Net Annual Ground Water Availability	399 BCM
Annual Ground Water Draft	231 BCM
(a) Irrigation	213 BCM
(b) Domestic and Industrial Use	18 BCM

BCM: Billion Cubic Metres

Ground Water – Legal Position

- ◆ Legally, ground water ownership linked to land ownership
- ◆ As per the Constitution, water is a “State” subject
- ◆ Centre’s regulatory role
 - ◆ Under Environment (Protection) Act, 1986

Institutional Arrangements

Central Level

- ◆ Ministry of Water Resources (MoWR)
 - ◆ Central Water Commission (CWC)
 - ◆ Central Ground Water Board (CGWB)
 - ◆ Central Ground Water Authority (CGWA)
- ◆ Department of Drinking Water Supply (DDWS), Ministry of Rural Development

State Level

- ◆ Public Health Engineering Departments (PHEDs)/ Jal Nigams/ Corporations
- ◆ Urban Local Bodies & Panchayati Raj Institutions
- ◆ District Collectors
 - ◆ Authorised Officers
- ◆ State Ground Water Authority

Ground Water – Key Issues

- ◆ Overall stage of ground water development – 58%
 - ◆ High degree of variability across States/ Districts
- ◆ Principal use of ground water – agriculture
 - ◆ However, 85 – 90% of rural water supply dependent on ground water
- ◆ Ultimate Irrigation Potential (UIP) of ground water – 64.05 mn ha
 - ◆ Irrigation Potential (IP) created – 46.11 mn ha (72%)
 - ◆ However, IP created exceeds UIP in Gujarat, Haryana, Maharashtra, Punjab, Rajasthan and Tamil Nadu

Ground Water – Key Issues (Contd.)

- ◆ Overall, 29% of blocks in India are semi-critical/ critical/ over-exploited (in terms of ground water exploitation)
 - ◆ However, 54% of blocks in these 6 States are affected
- ◆ Consequences of over-exploitation
 - ◆ Scarcity of water for irrigation and drinking
 - ◆ Contamination of ground water
 - ◆ Salinity ingress in coastal areas

Audit of Ground Water-Related Issues

- ◆ Primary audit focus – Accelerated Rural Water Supply Programme (ARWSP)
 - ◆ Flagship programme of GoI; renamed as “National Drinking Water Programme”
 - ◆ Performance Audit Reports (Union Government) in 2008, 2002, and 1998
 - ◆ State-specific findings in Audit Reports for individual States

ARWSP Audit Report – Ground Water Related Issues

- ◆ Massive slipback and re-emergence of problem habitations (no/ inadequate safe drinking water sources)
 - ◆ Mainly due to sources running dry, lowering of water table
 - ◆ Annual plans not based on habitation-wise data
- ◆ Low priority accorded to sustainability measures
 - ◆ 5% of ARWSP funds for sustainability projects – not fully utilised by most States

ARWSP Audit Findings (Contd.)

- ♦ Proportion of schemes relying on ground water high in most States
- ♦ Model bill for controlling development of ground water in water-stressed areas (suggested by GoI) not passed in most States
- ♦ Ground water recharge not made compulsory in ground water based supply schemes

ARWSP Audit Findings (Contd.)

- ◆ Water Quality
 - ◆ Sub-mission under ARWSP for water quality
 - ◆ 15% of funds for tackling water quality problems like fluorosis, arsenic, brackishness, excess iron and nitrates
- ◆ Audit Findings relating to
 - ◆ Water Quality Laboratories and Institutions
 - ◆ Water Quality Testing
 - ◆ Field Test Kits

Water Quality Laboratories – Audit Findings

- ◆ Premier institutes for water quality checking not identified in some States
- ◆ Significant deficiencies in district level laboratory infrastructure
 - ◆ Districts without laboratories/ new labs not established/ Labs not functional
 - ◆ Funds not used for strengthening infrastructure
 - ◆ Lack of qualified staff
- ◆ Inadequate IEC activities

Water Quality Laboratories – Audit Findings

- ◆ Testing guidelines
 - ◆ Testing of all water sources once a year
 - ◆ State-level testing of 10% of samples tested at district labs (including all positive labs)
- ◆ Findings
 - ◆ No system of testing at State level in most States
 - ◆ Huge shortfall in testing at district level
 - ◆ Supporting records for testing not available
 - ◆ Shortfall in testing of water sources even once

Field Test Kits (FTKs) – Audit Findings

- ◆ Field Test Kits (FTKs)
 - ◆ Not procured in time
 - ◆ Not distributed to districts, and further to Gram Panchayat level functionaries/ short receipt vis-à-vis requirement
 - ◆ FTKs lying in stock
 - ◆ Irregularities in procurement process

Execution of Water Quality Schemes – Audit Findings

- ◆ Ineffective execution/ non- completion of water quality schemes in many States
 - ◆ Lack of coverage of affected habitations
- ◆ Diversion of water quality funds for other ARWSP components
- ◆ Other issues
 - ◆ Fluoride/ arsenic removal plants not functional
 - ◆ Digging of new deep tube wells in fluoride affected areas

Performance Audit of Arsenic Alleviation Programme – West Bengal (2005)

- ◆ Inadequacies in identifying the extent of arsenic contamination; comprehensive mapping not done
- ◆ Acceptable contaminant level (50 µg/ l) set much higher than WHO/ BIS/ GoI standards
- ◆ Expenditure of Rs. 721 crore during 1994-2005 on arsenic alleviation measures
 - ◆ Actual coverage of only 43% population in affected districts

Arsenic Alleviation Programme (Contd.)

- ◆ 543 tubewells dug by PHED during 1994-2005 + PWSS (under Arsenic Sub-Mission/ ARWSP) with high arsenic content
 - ◆ Non-adherence to recommended depth; non-testing
- ◆ Out of 2252 Arsenic Treatment Units installed during 2000-05, 1124 (50%) were non-functional/ yielding water with high arsenic content
- ◆ Surface water supply schemes remained incomplete
- ◆ Lack of adequate steps for ground water recharge

Other Audit Reports (Sample)

- ◆ Neeru-Meeru (Andhra Pradesh) – 2004
 - ◆ Non-achievement of targets
 - ◆ Incorrect reporting of achievements
 - ◆ Injudicious selection of works
 - ◆ Structures not in existence/ in poor condition
 - ◆ As revealed during site visits
 - ◆ Fall in Ground water levels
 - ◆ Poor recharge of ground water

Other Audit Reports (Contd.)

- ◆ Well Census Project (Tamil Nadu) – 2006
 - ◆ Project for creating consolidated database of all wells in the State
 - ◆ Delay in completion
 - ◆ Deficiencies in quality and completeness of data
 - ◆ Absence of validation checks; defects in codification
 - ◆ Geo-database (GIS) not created
 - ◆ Non-availability of adequate hand-held GPSs

Summing up - Critical Issues from Audit Perspective

- ◆ Inadequate attention paid to ground water sustainability
 - ◆ Although ground water is primarily used for irrigation, drinking water sources getting affected
- ◆ Deficient Water Quality Testing
- ◆ Water Quality Schemes not getting completed/
not functional

Thank You

