

Status of Waterbodies in Bihar and Wayforward

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Introduction

Bihar possesses abundant water resources, including both surface water and groundwater. Its favourable geographical location allows for the flow of several rivers through the state, with the Ganges being the most prominent one. Originating in the Himalayas, the Ganges is joined by various tributaries from the north, while additional rivers join it from the south. These rivers ensure a steady water supply, originating from the melting snow and glaciers in the Himalayas. The rivers in Bihar offer numerous advantages. They serve as a crucial water source for irrigation, enabling year-round crop cultivation and supporting the livelihoods of farmers. The rivers also facilitate water transport, promoting trade and commerce within the state. Additionally, they foster a thriving fishery industry and contribute to hydroelectric power generation. In addition to surface water, Bihar benefits from a plentiful groundwater source, which is extensively utilized for drinking, irrigation, and industrial purposes. This further enhances the availability of water resources in the state. Overall, the rivers and groundwater in Bihar play a vital role in sustaining agriculture, industry, and ecological balance. They are invaluable assets that contribute to the state's economic development, provide livelihood opportunities, and ensure the well-being of its people.

The Ministry of Jal Shakti has launched the first-ever Census of Water Bodies, in conjunction with the 6th Minor Irrigation Census, as part of the "Irrigation Census" initiative. The main objective of this census is to create a national database that encompasses all water bodies, collecting comprehensive information about their size, condition, encroachment status, usage, storage capacity, and filling status. The primary goal of the Census of Water Bodies is to establish an updated and reliable repository of data, enabling effective management and planning of water resources. By obtaining accurate information on these key aspects, policymakers and stakeholders can make well-informed decisions regarding the

conservation, restoration, and development of water bodies. Moreover, water bodies provide crucial environmental services both locally and globally, beyond their cultural significance. These services include water storage, flood buffering, improvement of water quality, flood protection, groundwater recharge, and the provision of habitats for fish and wildlife. Overall, the Census of Water Bodies, conducted alongside the Minor Irrigation Census, aims to establish a comprehensive database that will assist in the effective management and conservation of water bodies. By recognizing and documenting the environmental services provided by these bodies, the census contributes to the well-being of both human populations and ecosystems at local, national, and global scales.

Major Highlights of 1st Census of Water Bodies

- A total of 24,24,540 water bodies have been enumerated in the country, with 97.1% (23,55,055) located in rural areas and only 2.9% (69,485) in urban areas.
- Among the enumerated water bodies, 59.5% (14,42,993) are ponds, followed by tanks at 15.7% (3,81,805), reservoirs at 12.1% (2,92,280), water conservation schemes/percolation tanks/check dams at 9.3% (2,26,217), lakes at 0.9% (22,361), and others at 2.5% (58,884).
- West Bengal has the highest number of ponds and reservoirs, while Andhra Pradesh has the highest number of tanks. Tamil Nadu has the highest number of lakes, and Maharashtra is the leading state for water conservation schemes.
- Out of the enumerated water bodies, 83.7% (20,30,040) are in use, while the remaining 16.3% (3,94,500) are not in use due to factors such as drying up, construction, siltation, being destroyed beyond repair, salinity, and other reasons.
- Of the enumerated water bodies, 78% (18,90,463) are man-made, while the remaining 22% (5,34,077) are natural water bodies.
- In terms of storage capacity, 50% (12,12,283) of the water bodies have a storage capacity between 1,000 to 10,000 cubic meters, and 12.7% (3,06,960) have a storage capacity exceeding 10,000 cubic meters.

Waterbodies Status of Bihar

In terms of number of waterbodies, Bihar stands at 14th position in India. West Bengal has the highest number of water bodies. Bihar is having the second-highest number of lakes in India after Tamilnadu. Bihar performance in terms of the water conservation scheme is poor

and it stands in 15th Position in India. When a comparison was made for waterbodies not in use/ functional the census data indicated that in Bihar about 49.8 % of total water bodies are not in use (Dried up or Encroachment) whereas in India about 16.2 % of water bodies are not in use. Gujarat's performance is quite outstanding as less than 0.5 % of water bodies are not in use. This is the reason the state of Gujrat has been ranked number one in the Composite Water Index launched by Nitiayog. According to experts, approximately 70% of water bodies in the Bihar state have disappeared over the past three decades. There used to be a significant number of water bodies, but they have gradually vanished. All these waterbodies that were essential for rainwater harvesting, have disappeared due to encroachment and government apathy. Groundwater and water bodies are hydraulically connected and poor groundwater management can lead to poor waterbodies (Chandra *et al.* 2008)

Table 1 Distribution of Waterbodies in the State of Bihar (In numbers)

S.N.	Bihar	U. P.	W.B.	A.P.	Odisha	Gujarat	India
No. of Ponds	35027	2399 12	457224	14132	94025	4711	1442993
No. of Tanks	4221	573	7585	113425	80671	22963	381805
No. of Lakes	2693	180	1349	62	579	12	22361
No. of Reservoirs	2126	209	280585	703	1606	667	292280
Water Conservation Scheme/Percolation Tank/Check Dam etc.	312	4117	610	57492	4474	25667	226217
Others	1414	36	77	4963	482	49	58884
Total	45793	2450 87	747480	190777	181837	54069	2424540
Waterbodies not in use	22799	6550 1	48536	41498	19630	166	394500

Source: 1st Census of Report on Waterbodies, Ministry of Jalsakthi, Government of India

SOPs to Develop Strategies for Waterbodies Management

- Inventory & cataloging of water bodies is the first step in formulating the strategy of waterbodies management. For characterizing waterbodies, information should be collected and collated under the following subheads:-
 - a. The description of the study area along with the drainage network.
 - b. Water Management: Hydro-meteorological data analysis.
 - c. Survey and demarcation & mapping.
 - d. Land use and land cover changes within the wetland to identify the effluent discharging sources and their quality.
 - e. Land use and land cover around the water bodies.
 - f. Bio-diversity survey.
 - g. Socio-economic scenario and livelihood opportunities.
 - h. Institutional infrastructures.
- The ecological characteristics of each waterbody i.e. its water spread area, hydrology, drainage basin, network of the different drainage systems, land use, soil type, geohydrology, and groundwater resources.
- These data are necessary for the preparation of a macro-scale plan for the maintenance of the water balance and ecological characteristics of the water bodies. It would also help in the preparation of the plan for restoration and rejuvenation of water bodies.
- As the catchment area of the wetland is dominated by agricultural fields, habitat, and habitations as well as extensive networking of water bodies and rivers, the identification of drainage lines and flow patterns would help to enliven the threatened waterbodies by maintaining the desired hydrology of the waterbodies.
- In this connection, the real-time data of waterbodies to retain the integrity and ecosystem services is necessary from reliable RS and GIS data.
- Continuous Encroachment on Catchment Areas: Small water bodies such as lakes, ponds, and streams are under constant threat due to encroachment on their catchment areas. As urbanization expands, people are building houses, commercial buildings, and other infrastructure in and around the catchment areas of these water bodies. This can lead to the destruction of natural vegetation, soil erosion, and pollution of the

water body itself. The urban agglomeration witnessed from the 1990s has severely impacted SWBs, turning many of them into dumping grounds. Considering the ever-increasing encroachments, strong legislation should urgently be enacted to make encroachment on water bodies a cognizable offense. In 2014, the Madras High Court ruled that no approval should be granted for building plans or layouts on lands situated along SWBs (Streams, Water Bodies, and Wetlands).

- Water resources (both surface water and groundwater) and waterbodies must be managed in an integrated manner to ensure the sustainability of the ecosystem and the water it provides.
- Wise use of water and waterbodies is particularly important in arid lands where water is often the limiting factor for human and ecosystem health.
- Draining of wetlands should be discouraged and instead of draining the collected water for cultivation artificial groundwater recharge should be promoted using drainage cum recharge structure developed at RPCAU, Pusa for maintaining good groundwater status.
- Restriction of shallow tubewells in one kilometer outer periphery of wetlands.

Way forward

- A comprehensive state water policy needs to be finalized keeping all the stakeholders in mind.
- Sustainable Ground Water management can contribute to healthy waterbodies
- The Command Area and drainage network of waterbodies need proper attention.
- Periodic monitoring is required. (Water quality, encroachment, and water availability)
- Ahar and the pyne system should be strengthened in south Bihar.
- Soil Conservation measures in the catchment will reduce the silt load in the water bodies.
- Desilting of Waterbodies with augmentation of storage capacity is required.

References

1st Census Report on Waterbodies Volume-1 (2023). Ministry of Jal Sakthi, Government of India, pp- 200.

Chandra, R. Sharma, B. R., Bhatt, V. K., Singh S. and Kapadia V. (2008). Variation in Groundwater use, water productivity, and profitability across canal command of in the Indo



Gangetic Plain. Published in Proceedings of 2nd International Forum on Water and Food held at Addis Ababa, Ethiopia, Vol-II, 35-39.

