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India's first national water-body census

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Why in News: The massive effort expended in the first-ever water body census, conducted by the Ministry of Jal Shakti and whose findings were published recently, was much needed.

Background

India is facing a water crisis with groundwater decline and biodiversity loss, and climate change increasing the frequency of floods and droughts.

In this context, water bodies are important. They buffer against climate variability, holding flood waters for use in dry periods.

They contribute to food and water security and livelihoods by recharging groundwater and providing water for irrigation and livestock. They also have cultural and ecological significance.

But water bodies are increasingly under threat from pollution, encroachment, urbanisation, and drying.

If they are to be conserved and managed effectively, we need action plans and these require baseline data. Because water bodies are managed by different agencies from state to local to private entities, the data must be uniform and easily accessible.

To actually manage water bodies, we need contextual and traditional knowledge of communities to be integrated with formal data.

Data on reservoirs and rivers has been available on the India Water Resources Information System (WRIS) for the last few years, but thus far there has been no data on smaller water bodies that are the lifeline of rural India and critical cultural, flood-control and recreational spaces in cities.

Objective of the water census

First census of water bodies was conducted with reference year 2017-18 across the country in 33 States/UTs except Daman & Diu, Dadra & Nagar Haveli and Lakshadweep

The census's objective was to develop a national database with information on the size, purpose, ownership, status, and conditions of water bodies.

It covered all natural and human-made units bounded on all sides for storing water, irrespective of condition or use.

All natural or man-made units bounded on all sides with some or no masonry work used for storing water for irrigation or other purposes (e.g. industrial, pisciculture, domestic/drinking, recreation, religious, ground water recharge etc.) will be treated as water bodies in this Census.

These are usually of various types known by different names like tank, reservoirs, ponds etc. A structure where water from ice-melt, streams, springs, rain or drainage of water from residential or other areas is accumulated or water is stored by diversion from a stream, nala or river will also be treated as water body.

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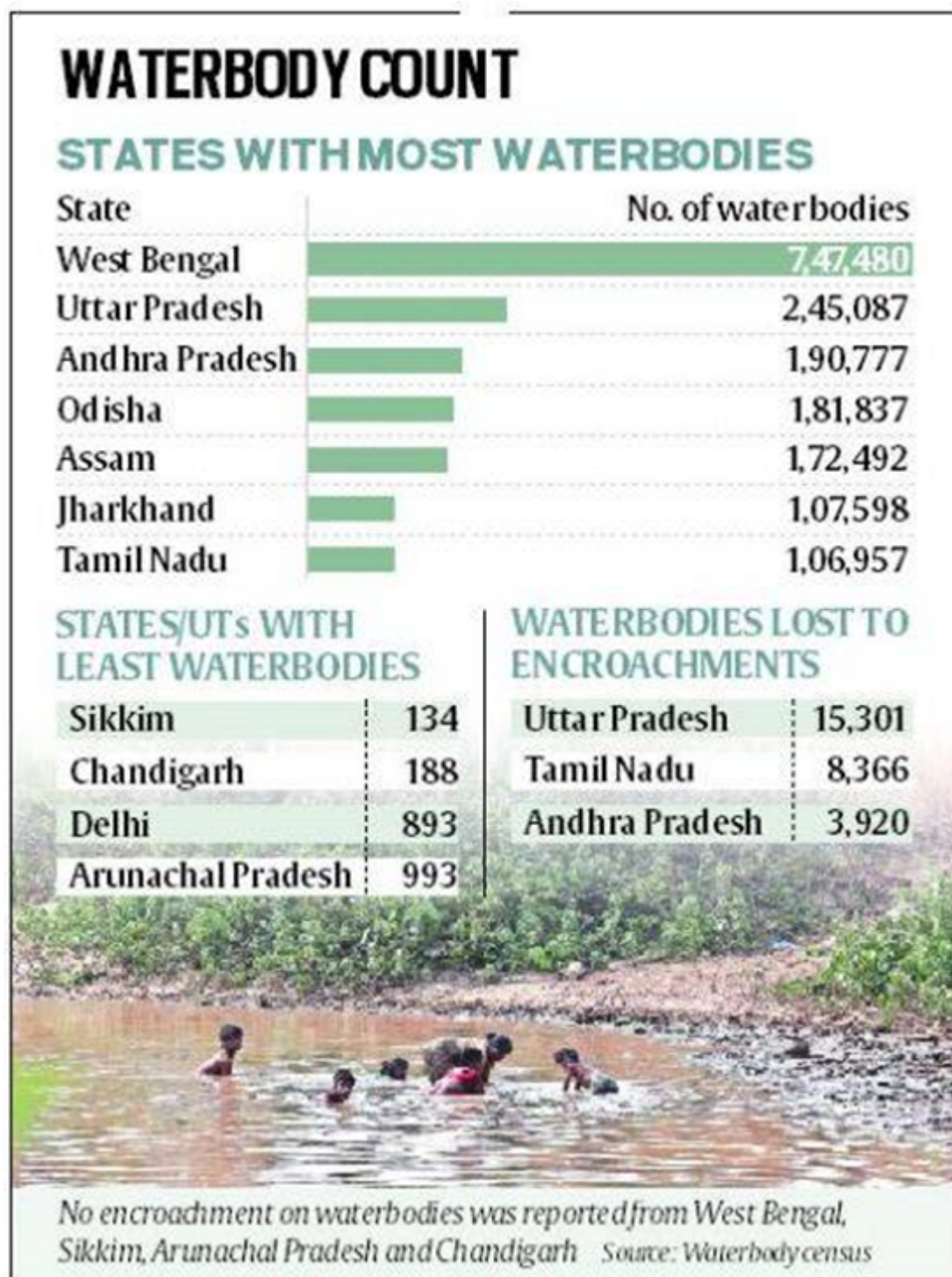
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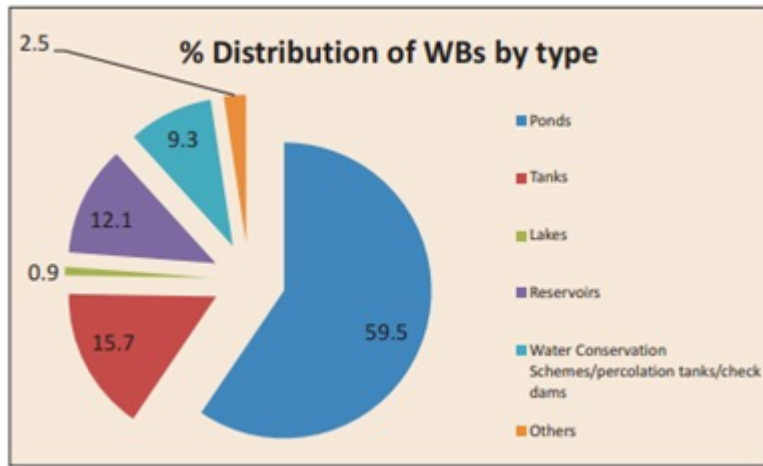
The software for data entry and the mobile app for capturing the location and the visual of the water bodies were developed and data-processing workshops were conducted to train the trainers in all States and Union territories.

The census built on existing and publicly available satellite-derived datasets. This dataset was also extremely rich, allowing citizens to hone in on a specific village and download the historical time series data on each water body.

But it only includes attributes that can be observed from space. The water body census extends this to social characteristics including ownership, use and condition.

Data Shown by the Report





The vast majority of India's water bodies are less than one hectare (ha) large. This means locating and keeping track of them is likely to remain a challenge. The traditional way to map these water bodies, using satellites, may not work, which is why the mammoth effort expended in ground-based tracking is very welcome.

In general, in drier states like Gujarat, Maharashtra, and Rajasthan, water bodies tend to be larger and publicly held. In the wetter parts of the country, like Kerala, West Bengal, and states in the northeast, more than three-quarters of the water bodies are privately owned. In drier states, the water bodies are primarily used for irrigation and groundwater recharge. In wetter states, domestic use and pisciculture dominate. Mid-sized water bodies are largely panchayat-owned.

Several water bodies were classified "not in use", meaning despite the recent interest in rejuvenating water bodies, most of them have never been repaired or revived.

Key highlights of the report

As per the report, 24,24,540 water bodies have been enumerated in the country, out of which 97.1% (23,55,055) are in rural areas and only 2.9% (69,485) are in urban areas. 59.5% (14,42,993) of water bodies are ponds, followed by tanks (15.7%, i.e 3,81,805), reservoirs (12.1%, i.e 2,92,280), Water conservation schemes/percolation tanks/check dams (9.3%, i.e 2,26,217), lakes (0.9%, i.e 22,361) and others (2.5%, i.e 58,884).

Maharashtra State is the leading state for water conservation schemes. Whereas West Bengal has highest number of ponds & reservoirs, whereas Andhra Pradesh has highest number of tanks, Tamil Nadhas highest number of lakes.

West Bengal's South 24 Parganas has been ranked as the top district having the highest (3.55 lakh) number of waterbodies across the country. In addition to West Bengal, six other states have over one lakh waterbodies, while four states and UTs account for less than 1,000 waterbodies each

The census also collected data on encroachment of waterbodies for the first time. "1.6% waterbodies out of all the enumerated waterbodies are reported to be encroached, out of which 95.4% are in rural areas and remaining 4.6% in urban areas.

Out of all encroached waterbodies, 62.8% have less than 25% area under encroachment, whereas 11.8% waterbodies have more than 75% area under encroachment

Uttar Pradesh accounted for almost 40% (15,301) of water bodies under encroachment, followed by Tamil Nad(8,366) and Andhra Pradesh (3,920). No encroachment was reported from West Bengal, Sikkim, Arunachal Pradesh, and Chandigarh.

Limitation of the Report

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1 Gaps in the report

Water bodies have an important role in supporting biodiversity. They harbour fish that birds feed on and provide roosting and breeding spaces for resident and migratory birds. These ecological functions are related to the size and location of the water bodies. The report itself noted in its preamble that water bodies “support healthy ecosystems”, yet the focus was exclusively on human use, which means only pisciculture or fish farming, which is seeded and does not reflect natural biodiversity, is featured. But the water body census does not address questions about this.

In classifying water bodies in terms of reasons of abandonment or disuse, “others” emerged as a significant reason, on par with “drying up” in a few states, but far ahead of other specific categories such as industrial pollution, construction, and salinity. One possibility is that the census questionnaire may have left out the most common reasons like eutrophication, sewage pollution, and solid waste dumping.

2 Inconsistencies in the Report

The census groups water bodies into five types: ponds, tanks, lakes, reservoirs, and water conservation schemes. Its glossary defines a pond as a smaller water body than a tank, while “water conservation structures” might include check dams and percolation tanks. However, these categories are not mutually exclusive: many tanks that were traditionally used directly for irrigation primarily serve as recharge structures today.

Based on the data, it appears that in Karnataka, these were classified as ponds and tanks serving the purpose of irrigation, whereas in Maharashtra these were classified as water conservation structures, primarily serving the purpose of groundwater recharge. The sources of irrigation statistics for the two states suggest neither state has much tank irrigation.

3 Non standardisation of Data

The data are not standardised across states. Some states like Gujarat don’t show any water bodies not being in use, whereas Karnataka reports almost 80% of its water bodies as being in a state of disuse. This suggests differences in interpretation by the enumerators.

4 There are some other concerns.

For example, the map for north Karnataka seems suspiciously empty. Since the original geotagged data does not seem to have been made available yet, it is unclear if some districts were skipped or if they genuinely had a lower water-body density.

Conclusion

Notwithstanding these shortcomings, it is crucial that the government continue such nationwide censuses of a vital resource, with modifications. This first edition itself provides high-level indications on the ways forward by detailing ownership, state of use, and the costs of construction and repair. It points to how and why water bodies must be restored, which agency’s capacities need to be strengthened, where and how much funds are needed, and who will benefit from such efforts