The Blue Tax Initiative: A Quantitative Policy Approach to Water Pollution in India

Devyansh Khanna

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Abstract

India is in the middle of a water pollution crisis that is constantly increasing in severity, with most of its urban and rural water sources heavily contaminated by untreated sewage and industrial effluents. The *Blue Tax Initiative* is a quantitative fiscal mechanism that levies taxes based on pollution and water consumption, incentivizing sustainability on the industrial scale while also creating a water restoration fund. This paper further uses the case of Gangnauli, Uttar Pradesh, to estimate the use of such a framework in improvement of water quality.

1. Introduction

The water pollution crisis in India represents one of its most persistent and serious environmental issues. The Central Pollution Control Board(CPCB) estimates that industrial effluents or sewage contaminate almost 70% of India's surface water.Although there are efforts to combat the problem, they focus on compliance instead of incentives, leading to no sustained change. Currently, there is a severe lack of funding for water treatment infrastructure and fiscal incentives to generate this funding.

The *Blue Tax Initiative* is a possible solution to this problem and introduces a progressive taxation scheme which enforces taxes above a certain threshold of pollution or overuse. The purpose of this system is twofold, both to incentivize industries to start

water treatment plants and to create a sustainable fund for the development of water infrastructure.

This paper develops the quantitative model to estimate the potential revenue from the Blue Tax and analyzes how it could contribute to the improvement of water quality. It also applies the case study of Gangnauli, Uttar Pradesh, to develop a projection of the implementation potential.

2. Methodology

The Blue Tax model can be divided into 2 sub-taxes: the Industrial Tax and the Household Tax. As the names suggest, they are levied on industrial offenders and households respectively. A breakdown of both taxes is given below:

Table 1: Industrial Tax Slabs

Category	**Rate (Rs./L)**	**Description**
Compliant Industry	0	Meets CPCB effluent standards
Moderate Offender	3.0	Under twice the safe pollutant standard
Severe Offender	10.0	Over twice the safe pollutant amounts

Table 2: Household Tax Slabs

Category	**Rate (Rs./L)**	**Description**
Normal Use	0	$\leq$ 150 L/person/day
Overuse	1.0 (per extra L)	$>$ 150 L/person/day

2.1 Tax Formulation

Let V_i denote the wastewater discharged (in liters) by industry i, and R_i the corresponding rate. Then total monthly industrial tax revenue T is:

$$T = \sum_{i=1}^{n} V_i \times R_i$$

For households, total monthly tax H is:

$$H = P \times C \times R_h$$

where:

- P = number of households,
- C = average monthly consumption (liters),
- R_h = household tax rate (Rs./liter).

2.2 Sample Calculation

Assume:

- 10,000 industrial units,
- 70% compliant ($R_i = 3$ Rs./L),
- 30% offending ($R_i = 10$ Rs./L),
- Average discharge per unit = 1.5×10^6 L/month.

Then:

$$T = (7000 \times 1.5 \times 10^6 \times 3) + (3000 \times 1.5 \times 10^6 \times 10)$$

$$T = Rs.31.5 \text{ billion per month.}$$

For households:

$$P = 280 \text{ million}, \quad C = 10,000 \text{ L/month}, \quad R_h = 0.05 \text{ Rs./L}$$

$$H = 280 \times 10^6 \times 10,000 \times 0.05 = Rs.140 \text{ billion/month.}$$

Total projected revenue:

$$R_{total} = T + H = Rs.171.5 \text{ billion/month.}$$

This amount could be directed toward sewage treatment plants, groundwater recharge, and pollution control systems.

3. Case Study: Gangnauli, Uttar Pradesh

The water crisis in India is exemplified by the rural village of Gangnauli, Uttar Pradesh, which is a case study of this problem at its most extreme. Groundwater samples show contamination by nitrates, ammonia, and heavy metals, attributed to nearby industries. Local reports document high rates of disease, including 1/3 of the population suffering from cancer, unsafe water plays a large role in the development of.

Applying the Blue Tax framework, industries contributing to local effluent loads would face proportionate taxation. Revenue generated could finance:

1. Construction of decentralized sewage treatment units.
2. Groundwater quality monitoring systems.
3. Subsidies for household filtration units.

This is a region that would be highly impacted by the Blue Tax, and would work as an important empirical source.

4. Policy Discussion

The Blue Tax aligns with several key policy frameworks:

- **SDG 6:** Clean Water and Sanitation.
- **National Water Policy (2012):** Promotes efficient use via economic incentives.
- **Swachh Bharat Mission:** Targets reduced sewage discharge.

This policy, if opted into these already existing frameworks, would help in environmental protection. It ensures pollutant-monitoring and resistance from industrial lobbying. It would also enhance transparency by industries, especially if a digital verification system for water purity is incorporated in the industrial tax.

5. Conclusion

The water crisis poses an existential threat to all of humanity. We, however, cannot alter all of humanity. This does not mean that we should not take action where we can. The Blue Tax Initiative presents a data-driven fiscal approach to addressing India's water pollution crisis. It is an implementable and sustainable policy that has the potential to improve and possibly reverse water pollution in many rural villages as well as major cities. Future work should focus on pilot implementation and real-time monitoring to refine the model and ensure scalability across diverse Indian municipalities.

References

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