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India's Fisheries and Aquaculture, Its Promising Course

Context

- Fisheries and aquaculture are among India's **most rapidly expanding** food-producing sectors, supporting millions of livelihoods and contributing significantly to national nutrition and trade.
- In recent decades, the country has undergone a **striking transformation in aquatic food** production, fuelled by technological advancements, robust institutions, and forward-looking policy initiatives.
- As India marks **World Fisheries Day 2025** under the theme India's **Blue Transformation: Strengthening Value Addition in Seafood Exports**, the occasion highlights both achievements and the need for renewed commitment to sustainable growth.

Dramatic Growth, Major Factor Driving the Growth and Structural Transformation

• Dramatic Growth

- The FAO's State of World Fisheries and Aquaculture 2024 reports global aquaculture production at **9 million tonnes** and global capture fisheries at 92.3 million tonnes in 2022.
- **India contributed 10.23 million tonnes** to global aquaculture, making it the world's second-largest producer.
- National aquatic output has increased from 2.44 million tonnes in the 1980s to 17.54 million tonnes in 2022-23, reflecting long-term structural change.

• Major Factor Driving the Growth

- This growth has been driven by the modernization of inland, coastal, and brackish-water aquaculture.
- Agencies such as **ICAR fisheries institutes**, the Marine Products Export Development Authority, and the National Fisheries Development Board have promoted advancements in breeding, disease management, and post-harvest practices.
- The **Coastal Aquaculture Authority** has strengthened environmental compliance, while private-sector investments across hatcheries, processing, and exports have enhanced value chain efficiency.

• Structural Transformation

- Policy reforms over the past decade have accelerated this momentum.

- The Blue Revolution and the **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** have expanded infrastructure, strengthened fisher safety, and supported digital and financial inclusion through initiatives such as vessel transponders, the Kisan Credit Card, and Matsya Seva Kendras.
- Programmes for climate-resilient coastal villages and the draft **National Fisheries Policy 2020** reflect India's increasing focus on sustainability and resilience.

Enduring Challenges and Emerging Pressures

- Overfishing, habitat degradation, water pollution, and the impacts of climate change threaten aquatic ecosystems and the livelihoods dependent on them.
- These environmental pressures risk **undermining long-term productivity** and ecological stability.
- **Socio-economic barriers** further complicate progress. Small-scale fishers and farmers often lack access to capital, modern technologies, and remunerative markets.
- Weak traceability systems and inadequate post-harvest infrastructure limit India's ability to realize the full potential of global and **domestic market opportunities**.
- These gaps also affect food safety and nutritional security, underscoring the need for systemic improvements in value chain governance.

FAO's Partnership in India's Blue Journey

- FAO's Bay of **Bengal Large Marine Ecosystem (BOBLME) project** advanced ecosystem-based approaches to fisheries management, promoted science-based stock assessments, and strengthened India's efforts to combat Illegal, Unreported, and Unregulated (IUU) fishing.
- These initiatives have helped balance conservation with sustainable utilization of marine resources.
- To support India's expanding aquaculture sector, FAO is implementing a **Global Environment Facility-funded project in Andhra Pradesh** aimed at promoting climate-resilient, environmentally responsible aquaculture aligned with global sustainability guidelines.
- Additionally, a **Technical Cooperation Programme** is improving the environmental, social, and economic performance of Indian fishing ports, with pilot interventions in Vanakbara and Jakhau.
- These efforts collectively enhance institutional capacity and strengthen India's aquatic value chain.

The Way Forward: Toward a Sustainable and Inclusive Blue Transformation

- As India deepens its Blue Transformation, **sustainability must remain the guiding principle**.
- **Science-based stock assessments**, ecosystem-based approaches in fisheries and aquaculture, and strengthened Monitoring, Control, and Surveillance systems are essential to safeguarding aquatic resources.
- **Enhancing certification, traceability**, and digital tools will improve the competitiveness of India's seafood exports.
- Equally critical is **empowering small-scale fishers** and farmers by improving access to credit, technology, and markets.
- Their inclusion is vital for building a resilient and equitable aquatic food system.

Conclusion

- India stands at a **pivotal moment in its fisheries** and aquaculture development.
- With strong institutional support, transformative policies, and enduring collaboration with FAO, the country is well positioned to lead **global efforts toward sustainable aquatic food production**.
- By placing sustainability and inclusivity at the heart of its Blue Transformation, India can secure ecological health, economic opportunity, and food and nutritional security for future generations.

India's Fisheries and Aquaculture, Its Promising Course FAQs

Q1. Why are fisheries and aquaculture important to India?

Ans. Fisheries and aquaculture are important to India because they support millions of livelihoods and contribute significantly to national nutrition and trade.

Q2. What major factor has driven India's rapid growth in aquatic food production?

Ans. India's rapid growth in aquatic food production has been driven by technological innovation, institutional support, and proactive government policies.

Q3. What is one major challenge faced by small-scale fishers in India?

Ans. A major challenge faced by small-scale fishers in India is limited access to finance, technology, and markets.

Q4. How has the FAO supported India's fisheries sector?

Ans. The FAO has supported India's fisheries sector by strengthening institutions, promoting sustainable practices, and collaborating on projects that enhance aquaculture and fisheries management.

Q5. Why is sustainability considered central to India's Blue Transformation?

Ans. Sustainability is considered central to India's Blue Transformation because it ensures long-term ecological health, food security, and resilience in fisheries and aquaculture.

Source: **The Hindu**

Hidden Cost of Polluted Groundwater

Context

- On a scorching afternoon in rural Punjab, a farmer draws water from a well that has served his family for generations.
- To the naked eye, the water glistens with the promise of life. Yet laboratory tests reveal a bitter truth: **uranium levels far above the permissible limit**.
- In nearby villages, children limp under the weight of skeletal deformities caused by **fluoride-contaminated groundwater**, while families spend their meagre income on medical care.
- These scenes, repeated across the country, illustrate a crisis that is both a profound public health emergency and a **deepening economic disaster**, one unfolding invisibly beneath the soil.

The Scale of Groundwater Contamination

- The **Annual Groundwater Quality Report (2024)** offers sobering evidence of the scale of the problem.
- Nearly one-fifth of groundwater samples from over **440 districts exceed safe contamination limits**.
- Punjab is particularly afflicted, with almost one-third of samples showing **excessive uranium**, alongside elevated fluoride, nitrate, and arsenic levels.
- This would be alarming in any context, but in India, where 600 million people depend on groundwater for drinking and where agriculture relies heavily on aquifers—it amounts to a national emergency.
- **Environmental degradation** already costs India an **estimated \$80 billion annually**, nearly 6% of GDP, according to the World Bank.

Implications of Groundwater Contamination

• Human Capital at Risk

- Groundwater contamination is not merely an environmental issue; it is an **assault on human capital**.
- In Mehsana district of Gujarat, fluorosis has been disabling workers, lowering their productivity, and dragging families into cycles of **wage loss and medical expenses**.
- Nationwide, preventable diarrhoeal diseases continue to claim the lives of hundreds of thousands of children under five.
- These tragedies represent **more than isolated health failures**, they weaken India's long-term development prospects by impairing physical health, cognitive growth, educational attainment, and workforce capacity.

• Rise in Inequality

- Inequality deepens as contamination spreads. Wealthier families may purchase bottled water or home filtration systems, but poorer households remain trapped, consuming toxic water because they have no alternative.
- **Out-of-pocket medical spending**, already one of the highest in the world relative to income, worsens the vulnerability of rural families.
- Children exposed to arsenic and fluoride often suffer **long-term cognitive impairments**, reducing future earning potential and perpetuating generational disadvantage.

• Agriculture Under Siege

- The crisis also imperils India's agricultural backbone, which employs over 40% of the population.
- Nearly a third of India's land suffers from **soil degradation**, and polluted groundwater accelerates this decline.
- Heavy metals and chemical residues absorbed by crops **lower yields and contaminate food chains**.
- Farms near polluted water bodies face measurable reductions in productivity and income, creating economic ripples that extend beyond rural villages.

The Path Forward

- **Build a nationwide, real-time monitoring system**

- Transparent, accessible data on water quality is essential for community awareness and policymaking.
- Monitoring systems must cover both rural and urban areas and be linked to public dashboards.

- **Strengthen environmental regulation**

- Industries and municipalities must be held accountable for the discharge of effluents and untreated sewage.
- The current regulatory framework is weak, allowing private actors to externalise environmental and health costs onto society at large.

- **Reform agricultural policy**

- Input subsidies that encourage chemical overuse must give way to incentives for crop diversification, organic practices, and micro-irrigation.
- Pilot programmes in Punjab and Haryana show that replacing water-intensive paddy with pulses and maize can reduce groundwater pressure without harming farmer incomes.

- **Deploy decentralised treatment systems**

- Community water purification units and affordable filtration technologies can provide immediate relief.
- Success stories, such as the drop in fluorosis cases following the installation of purification units in Telangana's Nalgonda district, demonstrate the efficacy of local interventions.

- **Protect agricultural exports**

- Strengthening quality checks, educating farmers on contamination risks, and improving traceability systems can safeguard India's global market position.

Conclusion

- Groundwater contamination is not an episodic or peripheral problem; it is a silent, accumulating debt that India is paying with its health, productivity, and economic potential.
- Unlike water scarcity, which can sometimes be reversed, **contamination is often irreversible.**
- The **choice before India is stark:** continue ignoring the poison beneath our feet and incur massive long-term losses, or confront the crisis with bold, coordinated action.
- To protect its people, its economy, and its future, India must recognise groundwater contamination as one of its most urgent **national challenges**, and act before the damage becomes permanent.

Hidden Cost of Polluted Groundwater FAQs

Q1. What does the 2024 Groundwater Quality Report reveal about contamination levels in India?

Ans. The report shows that nearly one-fifth of sampled districts have groundwater contamination above safe limits.

Q2. Why is groundwater contamination considered an economic crisis?

Ans. It is an economic crisis because polluted water leads to high health costs, lost productivity, and reduced agricultural output.

Q3. How does contamination affect human capital?

Ans. Contamination weakens human capital by causing illnesses, disabilities, and cognitive impairments that reduce people's long-term productivity.

Q4. What risks does groundwater pollution pose to India's agricultural exports?

Ans. It threatens agricultural exports by increasing the chance of produce being rejected in global markets for failing safety standards.

Q5. What is one immediate solution to provide safe water in affected villages?

Ans. One immediate solution is to install decentralised community water purification systems that deliver safe drinking water.

Source: **The Hindu**

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