

The Future is Inland

If managed sensibly, inland water bodies can go a long way to provide India with a sustainable future and food security for its population

Fish production in India registered a remarkable 16-fold increase during the last six decades to reach 12.59 mn tonnes (MT) in 2017-18, propelling the country to the position of the second-largest fish-producing nation in the world. During this period, the share of inland fish production has increased from 30 per cent to 70 per cent, and the present inland fish production has reached 8.9 MT. More than 14 mn fishers and fish farmers depend on fishing and fish farming for their livelihoods; many times more than that number eke out their living through support and ancillary activities like fish processing, trade and making of fishing craft and gear. The Gross Value Added (GVA) from fisheries is estimated at ₹ 1,330 tn (US\$ 17.80 bn), which contributed to nearly 1 per cent of the national GVA, at current prices in 2016-17, and about 5.37 per cent of agriculture GVA.

Recognizing the role of fisheries and aquaculture as a major driver for the security of food, nutrition and livelihood, the government of India has recently made substantial investment in the sector, both in terms of financial allocation and institutional support. A dedicated department for fisheries has been created under the newly formed Ministry of Fisheries, Animal Husbandry and Dairying, which is entrusted with the task of doubling farmers' income and achieving a target fish production of 15 MT by 2022 under the Blue Revolution scheme. The recently launched schemes like Fisheries and Aquaculture Infrastructure Development Fund (₹ 75.22 bn or US\$ 1 bn) and Pradhan Mantri Matsya Sampada Yojana (₹ 200.5 bn or US\$ 2.7 bn over the period 2020-25) are the highest-ever fisheries development projects launched in the

country, aiming at raising the income and quality of life of fishers and fish farmers in the country.

Inland fisheries are crucial for several socially, economically and nutritionally vulnerable groups of people around the world. But the challenges in monitoring inland fisheries preclude a complete understanding of the magnitude of their contributions. The low profile of inland water ecosystems (including their fisheries) in the UN Sustainable Development Goals (SDGs) exemplifies their marginalized status in major policy arenas. India is no exception to this. However, this situation is rapidly improving with the increasing recognition of inland fisheries in

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development discourses; this has also encouraged research to enhance knowledge on the importance of inland fisheries.

Small-scale operations

Unlike marine and aquaculture segments, where both small and large scales are relevant, fisheries in inland open waters of India are based exclusively on small-scale fishing operations. In all such water bodies, including large reservoirs and lakes, traditional fishing craft—coracles, improvised rafts, dug-out canoes and wooden country boats—and gear (mainly gillnets) are employed. Motorized boats are rarely seen even

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in large reservoirs that yield several tonnes of fish every year. Individual fishers who operate under co-operatives or have obtained a lease to fish in the water body get a limited quantity of fish, often below what might be called the subsistence level. Thus, the entire gamut of inland fisheries in India falls under the ambit of small-scale fisheries.

India has rich natural inland fisheries resources in its rivers, ponds, lakes, reservoirs and floodplain wetlands. Fish-production systems in these water bodies can be summed up as the capture fisheries of the rivers, estuaries, lagoons and lakes; aquaculture in ponds; and various forms of enhancements. Of these, enhancements—mainly culture-based fisheries and stock enhancement—being practised in reservoirs, lakes and floodplain wetlands offer relatively ecofriendly options for sustainable fish production from aquatic resources.

The inland open-water fisheries is a complex mix of artisanal, subsistence and traditional fisheries; their marketing system is highly dispersed and unorganized. The tenure rights are archaic and inequitable. Capture

and enhancement fisheries being common-property regimes, the community is often not empowered to manage the ecosystem and fisheries on a sustainable and equitable manner. Appropriate policy-level interventions are required to bring them under co-management platforms to enable and empower the community members to follow the norms.

Often, it is not the complexity of technology that comes in the way of achieving higher production and maintaining sustainability in aquaculture and open-water fisheries. It is the lack of appropriate community governance arrangement for open-water fisheries and lack of institutional mechanisms to regulate the growth in aquaculture that lead to low productivity and unsustainable practices. There is also a social dimension of enhancement. The profit obtained in aquaculture ventures accrues to an entrepreneur, investor or a small group of individuals as 'return on investment'. On the contrary, a sound regime will provide for the sharing of the benefits due to increased fish production obtained

Fig. 1. Fish production trends during the last six decades in million tonnes

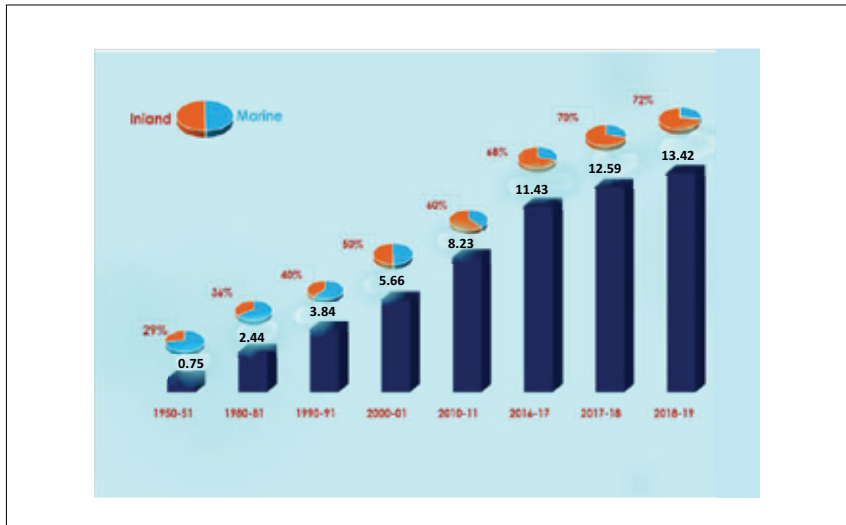


Fig. 2. Small scale fisheries in India

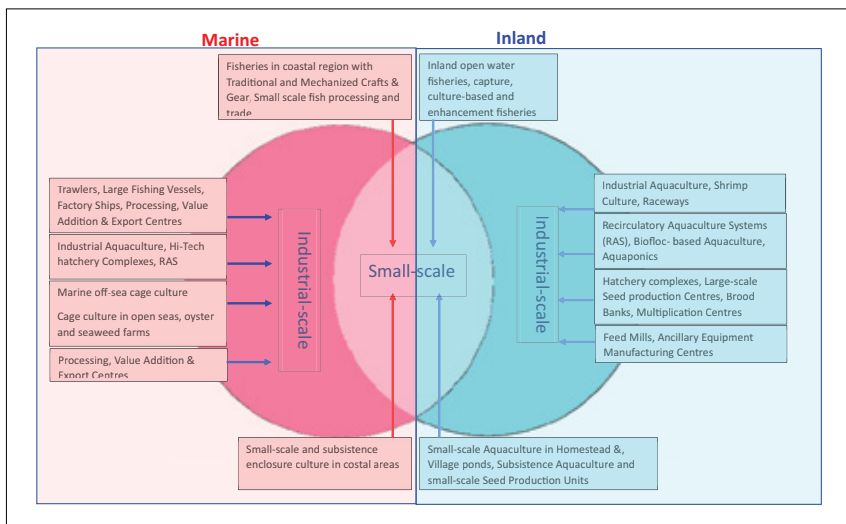
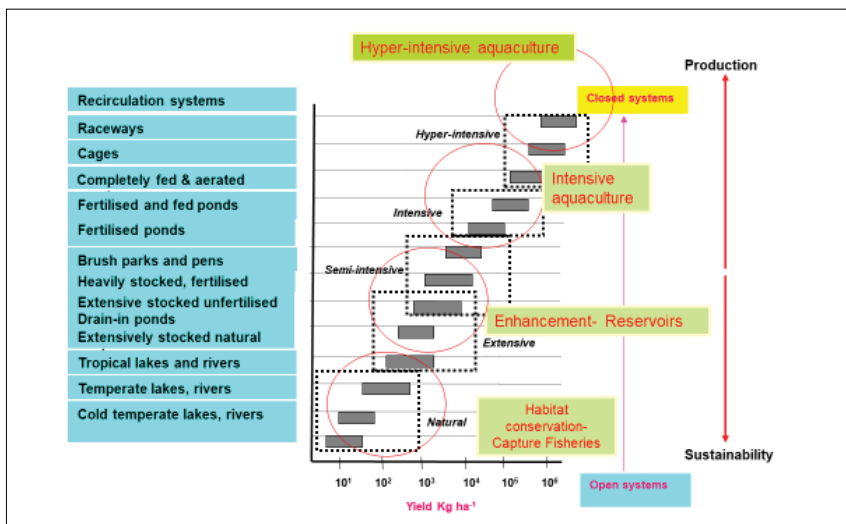


Fig. 3 Inland fish production systems and their sustainability (Modified from Welcomme and Bartley, 1998)



in an enhancement fishery among a large number of fishers—the key stakeholders. There is this large cake and each stakeholder gets a slice, albeit small. Thus, the enhancement provides opportunities for inclusive growth that is economically sound and socially equitable.

In order to realize the production potential of open-water bodies and ensure sustainable growth of aquaculture, several challenges must be addressed. Technologies used for developing capture fisheries and enhancements in open waters are relatively simple and do not demand exceedingly high technical skill. These can be applied by anybody with some basic management skill and intelligence. Still, the rate of adoption of scientific advice for open-water fisheries is remarkably low.

Most water bodies in the country are still being managed in a very arbitrary manner, leading to low productivity and low sustainability. This can be attributed to lack of proper governance environments. The open-water bodies in India are common-property resources; their management is generally based on community activity. Thus, organization of the community that manages the system plays a key role.

The main challenges facing the inland open-water fisheries are:

- Archaic tenure systems are not conducive for helping the fisher

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community to utilize natural resources for supporting their livelihood and generating income on a sustainable and equitable manner.

- Consequently, the fisher communities that utilize the water bodies as common-property resources are not empowered and well-organized. Their resources are exploited by numerous

other stakeholders like market intermediaries and money lenders.

- The lack of post-harvest and market infrastructure, long market chains and no value addition result in making fishing unremunerative to the primary stakeholders.

Compared to intensive aquaculture, capture and culture-based fisheries provide management options more compliant with the norms of sustainable development. The sustainability of fish-production systems is inversely proportional to intensification. Hyper-intensive culture systems are not environmentally sustainable and, many a times, these work against social equity by affecting access to resources by many stakeholders. The future strategy for inland fisheries development should centre on the principle of growth with sustainability. Sustainable development should not degrade the environment, and should be technically viable and socially acceptable.

Currently, fish production in India is growing at the rate of 6 per cent per annum. Various projections on demand for inland fish during 2021-22 range from 5.3 MT to 15 MT. It is now well accepted that the country can achieve 15 MT by 2021-22 as envisaged in the Blue Revolution targets. But it is also obvious that any big increase in fish supply must come from the inland segment, considering the slow growth of mariculture and the dwindling catch from marine capture fisheries.

Fish production

From 2009-10 to 2017-18, inland fish production increased by nearly 3 MT. It is estimated that the current inland aquaculture production is about 7.75 MT – 7 MT from freshwater aquaculture and 0.75 mn from coastal aquaculture. By the end of 2020-21 it is expected to touch at least 9 MT, with coastal aquaculture inching to 1 MT and freshwater aquaculture increasing by 1 MT. It is pertinent to note that inland fisheries enhancement (and capture fisheries) accounted for only 1 MT in 2016-17, which can be raised to 2 MT. Combined with marine capture fisheries production, this is the way to achieve the Blue Revolution target of 15 MT by 2020-21.

Looking beyond 2020-21, maintaining the 6 per cent growth for prolonged periods, say up to 2025-26, will bring in many new challenges. The land and water resources are becoming scarcer in the wake of increasing, and often conflicting, demands from various water and land-use sectors; climate change and environmental concerns compound the problem. While it is unavoidable to practise intensive aquaculture in order to keep the pace of growth and to meet future demands, it is equally important to ensure that all avenues for increasing production through more sustainable use of resources and protection of the ecosystem are explored.

Herein lies the importance of enhancement fisheries. As culture-based fisheries and other forms of enhancement in reservoirs are a non-consumptive water use, it does not create any extra demand for water. Moreover, in the absence of feeding and chemical treatment, there is no chance for eutrophication and chemical pollution. It is necessary to utilize the opportunities for raising fish through culture-based fisheries, enhanced capture fisheries and sustainable cage culture in reservoirs. Prioritizing culture-based fisheries and other forms of enhancement from reservoirs holds the key for increasing inland fish production in India in a more sustainable way. It will reduce the necessity to depend heavily on unsustainable practices like high-intensive aquaculture.

As with any other development sector, Indian fisheries is at a crossroads. The living aquatic resources, although renewable, are not infinite and need to be managed on a sustainable basis if their contribution is to be harnessed for the nutritional, economic and social well-being of a growing population. In the enthusiasm to produce more fish from all available water bodies, many developing countries in the past paid higher attention to production and yield, while ignoring key issues like environmental sustainability and social equity.

India is no exemption. A number of key ecosystem goods and services and their significance to the livelihood,

nutritional and health security of riparian populations have almost been ignored, at least during the early years of development. Today, awareness about environmental impact assessment, biodiversity conservation and environmental flows is increasing. A substantial section of the scientific community in the country and its civil society at large are now aware of, and committed to, achieving a sensible trade-off between sustainability and increased productivity.

Small-scale fisheries of the inland water bodies in India need greater attention from planners and policymakers. There is a glaring lack of institutional mechanisms to ensure healthy growth of inland fisheries and aquaculture. Globally, despite its high productivity and contribution to the livelihood and nutrition of the poor, water resources planning gives little recognition to freshwater-dependent fishery production or its ecological basis. Poor appreciation of the importance of small-scale

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fisheries of inland waters has several consequences. It exacerbates the lack of data, which, in turn, hampers research and management.

The national policy on inland fisheries needs to:

- strike a balance between aquaculture and various enhancement practices to achieve higher fish productivity, environmental sustainability and social equity;
- assist fishers to organize themselves to take advantage of community management schemes and establish their user rights as envisaged in the 1995 Kyoto Declaration; and
- provide necessary institutional mechanisms to ensure the healthy growth of small-scale inland fisheries and aquaculture. ♣

For more

https://igssf.icsf.net/images/SSF%20India%20workshop/Kelkar_Situation%20Paper_Inland%20Fisheries%20and%20Aquaculture%20in%20India.pdf

Governance of Inland Fisheries and Aquaculture in India: Situation Paper in the Context of India's Draft National Inland Fisheries and Aquaculture Policy and the FAO SSF Guidelines by Nachiket Kelkar

https://www.icsf.net/images/samudra/pdf/english/issue_81/4399_art_Sam_81_art16_FishCulture_%20JOHAR_Bipin_Bihari.pdf

India: Welcome, JOHAR