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WorldFish in India

Healthy People. Healthy Planet. Shared Prosperity.



WorldFish



CGIAR

Country Profile

- During the 2021–2022 financial year, India produced **16.25 million** tonnes of fish.¹
- India's population consumes **6.31 kg** of fish per person per year, which is less than half the global average of 20.2 kg fish per person per year.¹
- **36 percent** of children are stunted, and **57 percent** of women are anemic in India.²

Undernutrition is one of India's most serious development challenges, with a particularly high burden of malnutrition among children. Small indigenous fish—which are rich in micronutrients—are often missing from diets in low-income communities. Small-scale fish producers could be part of the solution but they face suboptimal production outcomes with limited access to aquatic food production technologies and knowledge. Meanwhile, species diversity is declining due to habitat degradation and overexploitation of inland fisheries, exacerbated by climate change, which continues to threaten aquaculture.

Where We Work



FAST FACTS

- WorldFish is working in Odisha, Assam, Bihar, and Andhra Pradesh states to:
 - enable sustainable intensification of aquaculture;
 - promote and scale nutrition-sensitive approaches to aquaculture;
 - secure and enhance the contribution of small-scale fisheries to food security;
 - improve fish value chains and human nutrition;
 - develop and promote climate-resilient aquaculture strategies and technologies; and
 - promote gender-transformative approaches in aquaculture.
- Odisha's **fish production nearly doubled** during the first six years of WorldFish collaboration in the state, from 521,000 tonnes in 2015–16 to 991,000 tonnes in 2021–22.
- Since 2018, nearly **20,000 women's self-help groups** in Odisha have participated in WorldFish activities enabling sustainable, profitable aquatic food production.





This success has motivated other Mission Shakti self-help groups in the area to take up fish farming in gram panchayat tanks on a large-scale basis. The technical collaboration with WorldFish was very instrumental in the successful implementation of this scheme.

Sujata R Karthikeyan

Commissioner-cum-Secretary, Department of Mission Shakti, Government of Odisha, India



WorldFish's Support

WorldFish has been working in India since 1996, collaborating closely with various government departments and private sector in scaling fisheries and aquaculture technology. Since 2016, WorldFish has developed and implemented several projects with local partners to harness aquatic food systems for sustainable development across four states Odisha, Assam, Bihar, and Andhra Pradesh.

In Odisha, WorldFish is collaborating with the state government, including the Departments of Fisheries and Animal Resources Development, Mission Shakti – Odisha's women empowerment initiative, Water Resources, Women and Child Development. The program aims to scale innovative, nutrition-sensitive fishery technologies and integrated approaches through partnerships to improve regional food and nutrition security. It combines targeted, evidence-based behavior change tools and awareness raising with increased supply and access to affordable, safe, nutrient-rich fish. This integrated approach across different departments cuts across multiple development goals, improving nutrition with increased fish consumption among vulnerable populations, particularly women and children, while also boosting the income of small and marginal farming communities.

WorldFish is also working in partnership with the Government of Assam, where capture fisheries, aquaculture, and the marketing of fish products provide livelihoods for thousands of rural households. The current average productivity in pond aquaculture and *beel* (wetlands) fisheries is far below their potential, and the quality of fish seed produced in the state is poor, exacerbated by a chronic shortage of fish feed. The Assam Agribusiness and Rural Transformation Project (APART), supported by WorldFish, aims to add value and improve the resilience of select agricultural value chains, prioritizing fish and focusing on smallholder farmers and agro-entrepreneurs in targeted districts of Assam.

In Bihar, WorldFish is assisting the JEEViKA program of the Government of Bihar through MicroSave Consulting India Pvt. Ltd and with support from Bill & Melinda Gates Foundation (BMGF) to encourage women empowerment through fisheries sector interventions, including fish farming in village tanks by women self-help groups for economic gains and promotion of fish consumption for nutritional gains.

These projects are contributing toward India's targets for attaining multiple Sustainable Development Goals.

Enabling Impact

WorldFish's advocacy efforts have resulted in policy changes within the administrations of Odisha and Assam states, including the incorporation of nutrient-dense small indigenous fish, such as mola (*Amblypharyngodon mola*) into traditional carp-based polyculture systems. This paves the way for the widespread adoption of nutrition-sensitive aquaculture approaches on a substantial scale across both states.

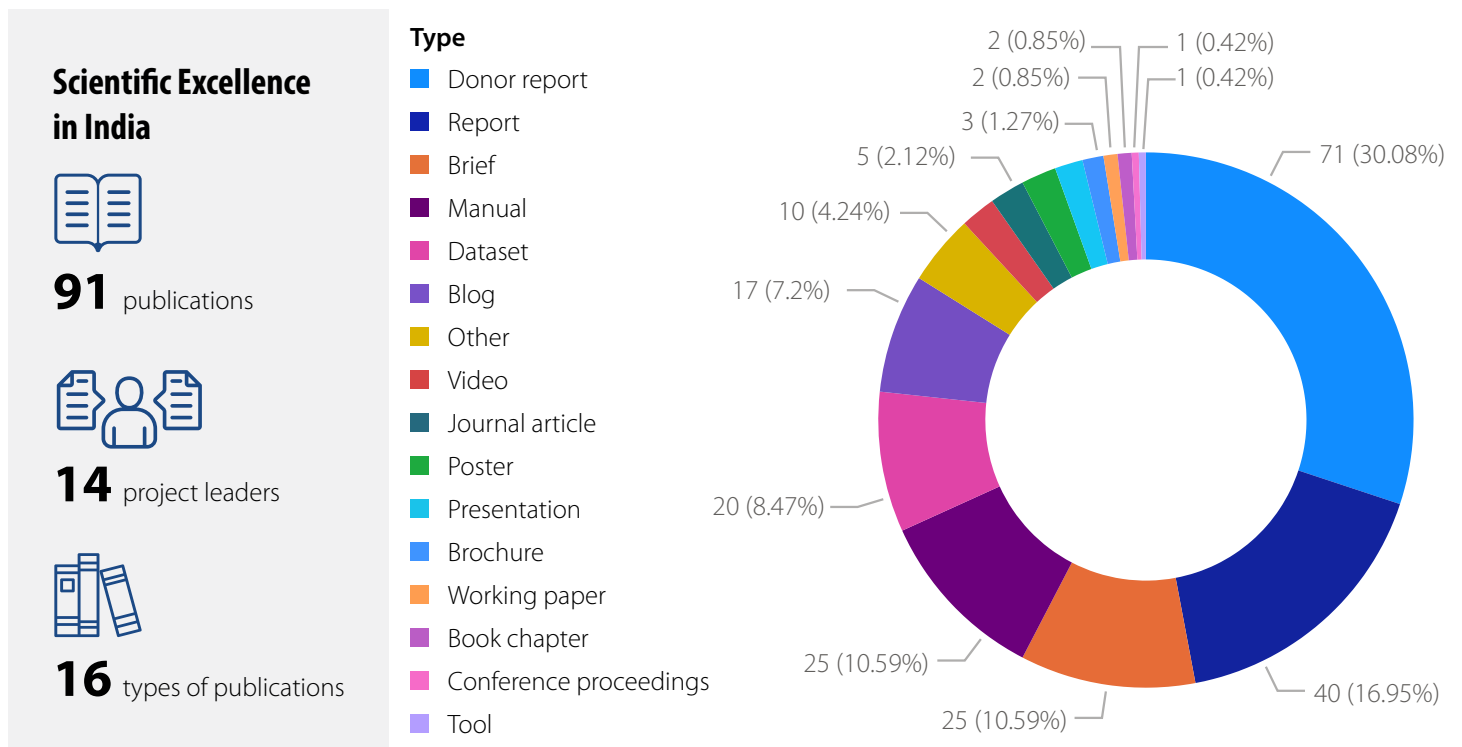
Under the BMZ funded project, WorldFish scientists have also successfully mass bred mola, a small indigenous fish species and a champion species for nutrition-sensitive aquaculture, for the first time in India and standardized the hatchery-based mass seed production protocol. This innovation will accelerate the scaling of nutrition-sensitive approaches – improving the availability, access, and consumption of nutrient-rich food in rural communities in Odisha. Over **10 million hatchlings** have been distributed to farmers and women's self-help groups to stock community tanks. Building on this experience, the India team achieved a key milestone in Assam by implementing field experiment – producing nearly 2.5 million of mola seeds.

WorldFish has worked with the Women and Child Development Department of the Government of Odisha to include fish-based meals in the Supplementary Nutrition Programme. The pilot implemented at 50 childcare centers reached **1,200 children**, while technical support and training to increase fish production improved the nutrition of more than 100,000 men, women, and children during 2021. The Department has been supported in preparing a comprehensive annual action plan for the expansion of fish-based nutrition in 125



most backward blocks of the states over the next 5 years. Also, for a sustainable supply of hygienically prepared and food-safe small dried fish, WorldFish has collaborated with the Department of Mission Shakti to build the capacity of women self-help groups in coastal fishing villages for the production of dried small fish using solar driers from 2023 to 2028.

Through WorldFish's support to the Matsya Paripusti project in Assam, where 35% and 33% of children are stunted and underweight respectively, an estimated **7,000 children aged 3–6 years** are expected to benefit from including dried small fish powder in two daily meals across **293 childcare centers during 2023**.



Moving Forward

The Government of India through its inter-ministerial SCALE committee has set a transformative and ambitious goal to produce 2.155 million metric tons of tilapia by 2032, from an estimated 70,000 metric tons in 2022. With the collaboration of WorldFish, India will invest in genetically improved farmed tilapia (GIFT) production infrastructure to promote nutritious and affordable tilapia. GIFT will also provide new business opportunities, especially for youth and women, and significantly boost affordable nutrition among domestic consumers.

WorldFish, the Department of Water Resources, and the Department of Fisheries have signed an agreement to boost aquaculture productivity and improve climate resilience in Odisha. This collaboration, supported by the World Bank, aims to empower smallholder fish producers, introduce innovative technologies, and improve the livelihoods of farmers in 15 districts of the state. Previous collaboration doubled seed production by adopting WorldFish's early breeding technology and facilitating reservoir cage culture.

Collaborating with Mission Shakti, Odisha's women empowerment initiative, WorldFish will also train 30,000 women from 3,000 self-help groups to produce hygienically dried fish using low-cost solar driers – enhancing quality, prolonging the shelf life, and reducing loss and waste. The dried fish can then be marketed through buyback arrangements with established industry actors, providing increased, more secure incomes—a proven scalable approach.

Donor and Partners

- Andhra Pradesh Community Managed Natural Farming, Rythu Sadhikara Samstha, Department of Agriculture, Government of Andhra Pradesh
- Assam Rural Infrastructure and Agricultural Services (ARIAS) Society, Government of Assam
- CGIAR centers in India (IRRI, IWMI)
- Department of Fisheries, Government of Assam
- Fisheries and Animal Resources Development Department (FARD), Government of Odisha
- German Federal Ministry for Economic Cooperation and Development (BMZ)
- GIZ Sustainable Aquaculture for Food and Livelihood (SAFAL) Project, India
- ICAR-Central Inland Fisheries Research Institute (CIFRI)
- ICAR-Central Institute of Fisheries Technology (CIFT)
- ICAR-Central Institute of Freshwater Aquaculture (CIFA)
- Indian Council of Agricultural Research (ICAR), Ministry of Agriculture and Farmers Welfare, Government of India
- Indian Institute of Science Education and Research Kolkata (IISER-K)
- International Rice Research Institute, New Delhi
- International Water Management Institute (IWMI), New Delhi
- JEEViKA, Bihar Rural Livelihoods Promotion Society, Government of Bihar
- MicroSave Consulting India Pvt. Ltd. through Bill and Milinda Gates Foundation (BMGF)
- Mission Shakti Department, Government of Odisha
- MPEDA-Rajiv Gandhi Centre for Aquaculture (RGCA)
- MS Swaminathan Research Foundation, Chennai
- Tata-Cornell Institute, USA
- United States Agency for International Development (USAID)
- Water Resources Department, Government of Odisha

Notes

- ¹ Handbook on Fisheries Statistics 2022. Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, New Delhi. <https://dof.gov.in/sites/default/files/2023-08/HandbookFisheriesStatistics19012023.pdf>
- ² National Family Health Survey (NFHS-5) 2019-21, Ministry of Health and Family Welfare (MoHFW), Government of India

Contact

Arun Padiyar P, WorldFish India Lead

International Center for Living Aquatic Resources Management (ICLARM)

WorldFish India Branch Office, Flat No.602, 6th Floor, Sethi Bhawan, Rajendra Place, New Delhi, Delhi, India-110008, India

Phone: +91 9440916428

Email: worldfish-india@cgiar.org; a.padiyar@cgiar.org

About WorldFish

WorldFish is a leading international research organization working to transform aquatic food systems to reduce hunger, malnutrition and poverty. It collaborates with international, regional and national partners to co-develop and deliver scientific innovations, evidence for policy, and knowledge to enable equitable and inclusive impact for millions who depend on fish for their livelihoods. As a member of CGIAR, WorldFish contributes to building a food- and nutrition-secure future and restoring natural resources. Headquartered in Penang, Malaysia, with country offices across Africa, Asia and the Pacific, WorldFish strives to create resilient and inclusive food systems for shared prosperity. Learn more at www.worldfishcenter.org

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