



TRANSFORM FARM PONDS INTO **ECO FARM PONDS**

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In tribal and rainfed areas, numerous seasonal water bodies have been created through watershed programmes and the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)¹ initiatives. However, these water bodies often suffer from neglect, due to the lack of effective management and utilisation. Farm ponds in these regions typically collect rainwater, divert stream flows, or are replenished by seasonal and perennial springs. Yet, their potential remains largely untapped.

Against this background, traditional farm ponds in the north coastal regions of Andhra Pradesh are being transformed into eco farm ponds under the JIVA programme. JIVA is an innovative programme funded by the National Bank for Agriculture and Rural Development (NABARD)

supported by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, under the Indo-German Development Cooperation Project *Support to Agroecological Transformation Processes in India* (SuATI). The SuATI project is implemented by GIZ together with the Ministry of Agriculture and Farmers' Welfare (MoA&FW), the Ministry of Rural Development (MoRD), and NABARD. The project is commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) as part of the global BMZ Initiative "Transformation of Agriculture and Food Systems". Under the JIVA programme, implemented by the Watershed Support Services and Activities Network (WASSAN), so far 200 farm ponds have been converted into eco farm ponds in the Alluri Sitharama Raju (ASR) and Parvathipuram Manyam districts of Andhra

¹ The Viksit Bharat–Guarantee for Rozgar and Ajeevika Mission (Gramin) Act (VB–G RAM G), 2025, replaces MGNREGA with a new statutory framework aligned with Viksit Bharat 2047.

Pradesh. This initiative has demonstrated significant benefits, with farmers recognising the value of transforming conventional farm ponds into eco-friendly, multifunctional resources.



Benefits of Eco Farm Ponds

- **Water conservation:** Collects and stores rainwater and surface runoff, increasing infiltration of water, reducing dependence on external water sources, and ensuring irrigation availability during dry periods.
- **Bund plantations:** Provides diverse fruits and vegetables, improving household nutrition and generating additional income from produce sales.

- **Water sustainability:** Recharges local groundwater levels, offering a reliable water source for cattle during droughts.
- **Support for fisheries and crops:** Enables fish farming as an additional livelihood activity and sustains irrigation for Rabi crops, thereby increasing agricultural productivity.

The Pond Ecosystem

A pond ecosystem consists of four interdependent components: water, plants, fish, and microorganisms. Each element relies on the others to create a stable and healthy environment. Water quality directly affects the health of fish and plants, which in turn influences the microbial balance necessary for organic matter decomposition. By recognising the interdependence of the pond ecosystem's components and adopting sustainable management practices, farmers can unlock the full potential of their farm ponds, leading to a more resilient and productive agricultural system.





Water Quality Management

Regular monitoring of pond water quality parameters is crucial to prevent imbalances and ensure a healthy ecosystem. Periodic testing of physical parameters like turbidity, temperature, plankton density, and chemical parameters like pH, alkalinity, dissolved oxygen content, dissolved nutrients, and contaminants, helps identify and address potential issues before they become severe. Improving water quality and circulation is also vital, as it prevents stagnation, stabilises oxygen levels, and prevents the buildup of harmful gases like higher ammonia and methane concentration. A well-oxygenated pond is essential for supporting a thriving aquatic ecosystem, including fish and other aquatic life. When introducing fish to the pond, consider species that are adapted to the region and compatible with the ecosystem. Additionally, beneficial bacteria and microorganisms play a vital role in decomposing organic waste and cycling nutrients, thereby maintaining the delicate balance of the pond ecosystem. To promote a healthy ecosystem, opt for organic or natural pond treatments whenever possible, such as clearing weeds, and applying manure and lime when the pond is dry. Regular removal of fallen leaves and dead plants is also essential to

prevent decay from overwhelming beneficial bacteria, ensuring a balanced and thriving pond ecosystem.

Why Should We Focus on Eco Farm Ponds in JIVA Project Areas?

Farm ponds play a vital role in safeguarding crops during dry spells, enabling farmers to irrigate water-efficient crops like millets and vegetables during the Rabi season. By integrating horticulture and fisheries, farmers can diversify their income streams and increase their earnings. Moreover, a single farm pond can have a ripple effect, benefiting not just the owner but also neighbouring farmers. One farmer with a farm pond can support at least three neighbouring farmers, helping them to protect their crops during times of water scarcity. This not only ensures food security but also fosters a sense of community and cooperation among farmers, making farm ponds a valuable asset for rural livelihoods. By leveraging farm ponds, farmers can mitigate the risks associated with drought and uncertainty, and instead, focus on cultivating a more resilient and profitable agricultural enterprise.

How Water Bodies are Mapped

A participatory planning exercise is conducted with the village organisation's (VO) women's federation members through an electronic participatory rural appraisal (e-PRA) exercise to identify existing farm ponds and potential sites for the creation of water bodies on both private and common lands. The sites are assessed scientifically, and discussions held with beneficiaries regarding community contribution and their willingness to adopt natural farming practices. Thereafter, the site's Global

Positioning System (GPS) coordinates are recorded, and baseline information of farmers is collected. Finally, an internal memorandum of agreement (MoA) is made between the beneficiary, the VO, and the Gram Panchayat leaders, to ensure the sustainability of the initiative.

Prioritisation of Fruits and Vegetables to be Grown on Tank Bunds



Conduct a separate meeting with all the farm pond owners in a village to prioritise fruits and vegetables as per the local agroecological context. Fruit species like papaya, banana, coconut, and jamun can be considered. Cucurbits like ridge gourd, bottle gourd, and beans may also be promoted. Red gram and marigold can be planted on pond dykes.

Introducing Water Ecosystem Services

An innovative enterprise model is being established to provide water ecosystem services to five to ten farmers, with a focus on those who own eco farm ponds. This enterprise offers a unique service where farmers can access irrigation support by hiring a solar energy-

Traditional Farm Pond Converted to Eco Farm Pond



Before intensification of the farm pond.



After intensification of the farm pond.

powered cart to lift water from their pond and store it in a drum with a capacity of 1,000 litres. This on-demand service allows farmers to irrigate their crops as needed, providing a reliable and sustainable solution for their water requirements. By leveraging solar energy and adopting a pay-per-use model, this enterprise aims to make water management more efficient, affordable, and environmentally friendly, ultimately supporting the livelihoods of smallholder farmers and promoting sustainable agricultural practices.



Farm Pond Intensification Budget

Size: 20 metre x 20 metre x 2 metre

Plant	Unit	Quantity	Unit cost (INR)	Total cost (INR)	Specifications
Banana	No. of plants	14	25	350	Distance maintained at 9 ft. (2 opposite sides)- outer dykes
Papaya	No. of plants	14	25	350	Distance maintained at 9 ft. (2 opposite sides)- outer dykes
Coconut	No. of plants	4	300	1,200	18 ft. distance or corners
Landraces of bean and bottle gourd	100 gm/pond	1	25	25	Distance at 5 ft. (2 opposite sides)- Mid inner dykes with machan model
Fodder (Sesbania/Super Napier)	No. of plants	40	5	200	Distance maintained at 3.2 ft. (2 opposite sides) Lower inner dykes: Napier, Outer dykes: Sesbania
Chilli/Tomato	7 gm/pond	1	25	25	Distance maintained at 2 ft. (2 opposite sides)- inner edge dykes
Drumstick	5 gm/pond	14	20	280	Distance maintained at 9 ft. (2 opposite sides)- outer dykes
Red gram – Perennial	100 gm/pond	1	20	20	Distance maintained at 3 ft. (2 opposite sides)- top bunds
Vegetables/Marigold	50 gm/pond	1	50	50	Distance maintained at 3 ft. (2 opposite sides)- top bunds
Total				2,500	

Note: Plant type, quantity, and cost may vary depending on the local context.

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