1. **Title of the project:**

Women led **Fa**rm **M**echanization Ecosystem for Reducing Drudgery and Enhancing Livelihood of **R**ural Farmers in Pre and Post Production Agriculture (**W-FARM**)

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2. **Introduction:**

Rural women are engaged at all levels of agricultural value chain; i.e., production- pre-harvest, post-harvest processing, packaging, marketing to increase productivity in agriculture. Nevertheless, women farmers in India face numerous challenges, including limited land ownership and access to resources, a gender wage gap, inadequate education and training, unpaid family labor, restricted decision-making power, gender-based violence, market access barriers, vulnerability to climate change impacts, and insufficient legal rights. These obstacles hinder their ability to engage in farming effectively, exacerbate their economic vulnerability, and perpetuate gender disparities in the agricultural sector. Efforts are underway to address these challenges and empower women in agriculture, but significant progress is still needed to achieve gender equality and improve the livelihoods of women farmers in India. It is projected that women-oriented reforms, ensuring equal access to resources, skill development and opportunities in agriculture would increase agricultural output in developing countries between 2.5 and 4 percent (FAO,2011). Promotion of gender equality and access to Government schemes/programmes will encourage women participation in agriculture sector. This will help in alleviating extreme poverty and hunger and support in improving the country's economy.

The National Rice Research Institute (NRRI) is one of the premier agricultural research institutes in India, located in Cuttack, Odisha. It plays a crucial role in advancing rice research and agricultural technology development to support the country's rice cultivation, which is a staple food for millions of people in India. The National Rice Research Institute (NRRI) was established in 1946 by the Indian Council of Agricultural Research (ICAR). It is situated in the heart of the rice-growing belt of

India, with the primary objective of conducting research and development activities related to rice production, improvement, and protection. NRRI is committed to enhancing rice productivity, sustainability, and the overall well-being of rice farmers across India. NRRI's mission revolves around advancing rice research, technology development, and dissemination. Its objectives include: Developing high-yielding and climate-resilient rice varieties, improving rice crop management practices, enhancing rice processing and value addition, protecting rice crops from pests, diseases, and environmental stress, promoting sustainable and eco-friendly rice farming practices, Transferring knowledge and technology to farmers.

The core values of NRRI typically align with the broader values of the Indian Council of Agricultural Research (ICAR), which includes a commitment to excellence, innovation, sustainability, and the welfare of farmers. These values are reflected in NRRI's research, outreach, and development activities.

NRRI plays a significant role in research activities on farm mechanization, water management activities, and post-harvest technologies related to rice production. NRRI is involved in the design and testing of farm machinery suitable for rice cultivation. This includes innovations in seeders, transplanters, harvesters, and other equipment tailored to the needs of rice farmers. NRRI is involved in various activities related to efficient water use and management in rice farming. Researching and promoting efficient irrigation techniques, including the adoption of technologies like drip and sprinkler irrigation, to optimize water use and reduce water wastage. Developing and promoting rice varieties that are more drought-resistant or require less water, helping farmers adapt to changing climate conditions. Conducting research on water-saving practices such as alternate wetting and drying (AWD) and the System of Rice Intensification (SRI) to reduce water consumption in rice fields. NRRI also focuses on post-harvest technologies to reduce post-harvest losses and improve the quality of rice. Major post harvest activities of NRRI involves developing and disseminating efficient drying technologies to reduce post-harvest losses due to improper drying and storage, exploring methods for value addition to rice products, such as the production of rice bran oil, rice flour, and other processed rice products, which can provide additional income opportunities for farmers. Having multifaceted expertise of NRRI in research activities relevant to rice and rice based cropping system, following objectives were

formulated to help rural women community of Odisha attaining maximum benefit from agriculture.

3. Objectives and goals:

- Identification of available women-friendly farm/ off farm agricultural machinery for their ease in operation and adaptation.
- Identification of indicators that influence the acceptance and adoption of available and new pre and post harvest technologies.
- Capacity building of women-led group in carrying out entrepreneurial activity by adopting these farm/off-farm technologies for value addition to farm produce.
- Assessing the effect of project intervention in capacity building and livelihood security of women farmers.

4. **Project description**:

Objectives		**Activity**	**Measurable indicators**	**Output**
Objective 1	Identification of available women-friendly farm/ off farm agricultural machinery for their ease in operation and adaptation.	Baseline survey on availability and access of women-centric farm machinery Evaluation of available farm machinery for their suitability to women farmers for Refinement of machinery for women farmers	List of inventory of farm machinery of the intervention village Ergonomic design of machinery, power required to operate the machinery, mismatch between the village physical conditions and physical conditions required for operation of farm machinery Changes in the design/structure of the machinery focusing on improved quality, reduced losses and cost efficiency	Resource Map or Inventory of farm machinery Refined/improved machinery suitable for women farmers
Objective 2	Identification of indicators that influence the acceptance and adoption of available and new technologies	Survey for identification of technological, economic, social and other factors	Identification through structured survey schedule	Prioritization of factors responsible for acceptance and adoption of technologies

Objective 3	Capacity building of women-led group in carrying out entrepreneurial activity by adopting these farm/off-farm technologies.	Baseline survey to assess the knowledge of farm women in the project village about the available farm machinery for different operations and their usage	Identification through structured survey schedule	Identification of knowledge gap for capacity building of farm women on usage of farm/off-farm machinery
Objective 4	Assessing the effect of project intervention in capacity building and livelihood security of women farmers.	Ex-ante evaluation on the status of farm/off activities used in the project village Ex-post evaluation on the status of farm/off activities used in the project village	Availability of crop specific farm machinery; availability of operation specific farm/off-farm machinery; operations in which women operate machines; machinery owned by the farm women; Per capita income of the target women, man-days of employment for the target women in a year, extent of processing (processing to production ratio) in the village; items processed by a typical household during baseline period, extent of post-harvest food losses during the baseline period, number of man-days required to complete a particular farm operation etc.	Baseline information for impact of the project intervention

Timeline of the project:

Sl. No.	OBJECTIVES	Year 1 (2024-25)		Year 2 (2025-26)		Year 3 (2026-27)	
		Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun

1.	Evaluation and refinement of available women-centric agricultural machinery for their ease in operation and adaptation by women farmers						
2.	Identification of indicators that influence the acceptance and adoption of available and new technologies						
3.	Capacity building of women-led group in carrying out entrepreneurial activity by adopting these farm/off-farm technologies						
4.	Assessing the effect of project intervention in capacity building and livelihood security of women farmers						

5. Target beneficiaries:

The target beneficiaries for the project will be women farmers involved in farm and off farm activities in agriculture.

The project intervention will definitely reduce time spent for the farming operations in rice farming with the help of gender friendly small farm equipments. The unspent time generated will be utilized for generating income from allied sources like kitchen gardening, mushroom production, value addition of the agro produce which can fetch more price in the market making them self-sustainable. Additionally, water saving structures provided under this project will help them in drudgery as well as time reduction in collecting water.

6. **Budget and resources**:

Budget of the project is **85.72 lakhs**

Budget	**Items**	**Budget (in lakhs)**
1. Recurring	Human resources (1 Graduate Assistant, 2 AFO)	15.12
	Consumables (chemicals, laboratory equipment, glasswares, training materials, raw materials for fabrication, stationery)	10
	Travel (Project logistics, Field activities, Review meetings)	10
	Field testing, Demo/ Training expenses (material for technology field testing/demo, training manuals, training expenses for beneficiaries)	15
	Contingencies (computer time, secretarial assistance, documentation, cost of technology transfers/acquisitions (intellectual fees), lab/field trials, maintenance/servicing of equipment, incidental expenses)	10
	Institutional Overheads*	5.60
	Miscellaneous items	5
2. Non-recurring	Permanent equipment	15
Total		**85.72 lakhs**