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NABARD

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Climate Resilient Livelihoods with Minor Millets in Mandla

“Climate risks are financial risks” (Global Climate Risk Index 2020)

Over 85 percent of the landholders in India are marginal and small farmers who are highly vulnerable to the drastic economic impacts of climate change affecting local agro-ecological systems. Mainstreaming climate adaptation is crucial to combat these financial risks and requires a comprehensive multi-level perspective involving diverse actors. A robust value-chain in agribusiness not only provides a crucial income and arbitrage opportunity to small farmers but also offers an opportunity to supporting and financing agencies to develop, strengthen and sustain climate-resilient and commercially bankable business models.

GIZ is working towards developing climate adaptive farming and financially sustainable models by utilising minor millet value chains in Kodo (Paspalum scrobiculatum) and Kutki (Panicum sumatrense) in Mandla, Madhya Pradesh with the following approach:

- Climate Risk Assessment and identifying bottlenecks in minor millet value chain
- Incentivising climate adaptive agriculture using minor millet value chain
- Developing climate adaptation based business plans, together with FPOs

Mainstreaming climate adaptation in minor millets value chain

Aim: To support the millet value chain in Mandla, Madhya Pradesh in order to promote climate resilient livelihood opportunities for vulnerable communities.

Objectives:

- Support community-based institutions to set up millet processing capabilities in order to gain arbitrage opportunities in the value chain.
- Support the institutions who will redirect profits to farmers and further incentivise them to cultivate millets.

Agricultural Risks in Mandla

Mandla is a district in the state of Madhya Pradesh, home to the Gond and Baiga scheduled tribes and characterised by acute poverty. The economy is largely dominated by smallholder farmers relying on rain-fed farming and alternate sources of livelihood are scarce. This has resulted in limited capacity of rural communities in Mandla to engage in adaptation measures to improve crop productivity and post-harvest processes. Along with this, the effects of climate change have resulted in erratic rainfall, poor groundwater recharge, soil erosion and damage to cultivated land and standing crops. All these factors mean that the capacity of Mandla’s rural population to cope with climate hazards is acutely in need of support.

Mainstreaming climate adaptation in minor millets value chain

Impacts

- Variability in crop production
- Reduced soil fertility
- Shift in crop pattern to paddy and wheat, increasing input cost
- Loss of income due to crop loss

Risks

Climate

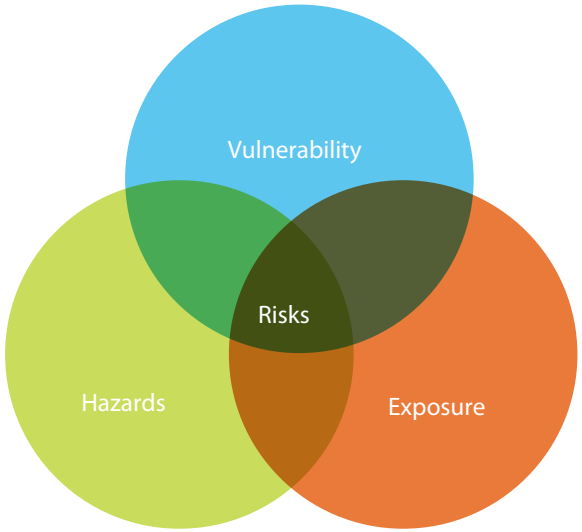
- Annual Rainfall variability
- Extreme weather events including regular dry spells and heavy uneven rainfall
- Reduced annual monsoon (Earlier June to Sep, now July and August)

Hazards

Socioeconomic Processes

- Rain-fed farming
- Lack of irrigation infrastructure
- Lack of robust village institutions
- Absence of technology on postharvest masures for moisture control
- Lack of awareness and know-how on proper cropping and agronomic practices
- Low institutional capacity to mobilise government support in agriculture or rural livelihoods
- High incidence of poverty and heavy dependence on agriculture
- Poor market linkage

Vulnerability



Land-Use change

- Increasing risk exposure due to land conversion to paddy and wheat
- 50 per cent reduction in kodo-kutki production area and 3/4th reduction in production

Exposure

Minor Millets in Mandla

Minor millets such as Kodo and Kutki are traditional crops that tribal farmers in Mandla have been cultivating over many generations. These crops are hardy, have a short growing season and are naturally resilient to changes in climate conditions, thriving in droughts. Millets are also highly adaptable to a wide variety of soil types, and grow well on shallow and poor quality soil. These are gluten-free grains and also a major source of proteins and carbohydrates, making them highly valuable in terms of food security.

Adaptation and value chain measures for minor millets

Productivity improvement:

Introduction of improved Kodo-Kutki seed varieties, soil improvement measures such as, vermi-composting, mulching and contour bunding and extension support to support these activities. These measures would contribute to improving soil fertility and crop production.

Efficiency improvement:

Given the poor socio-economic background of the farmers and the size of landholdings as small and marginal, appropriate farm mechanisation methods with low-cost implements such as seed drill and dry land weeder would be important for lowering costs, manual drudgery and encouraging more precise sowing.

Supplementing nutritional security with nutrition gardens:

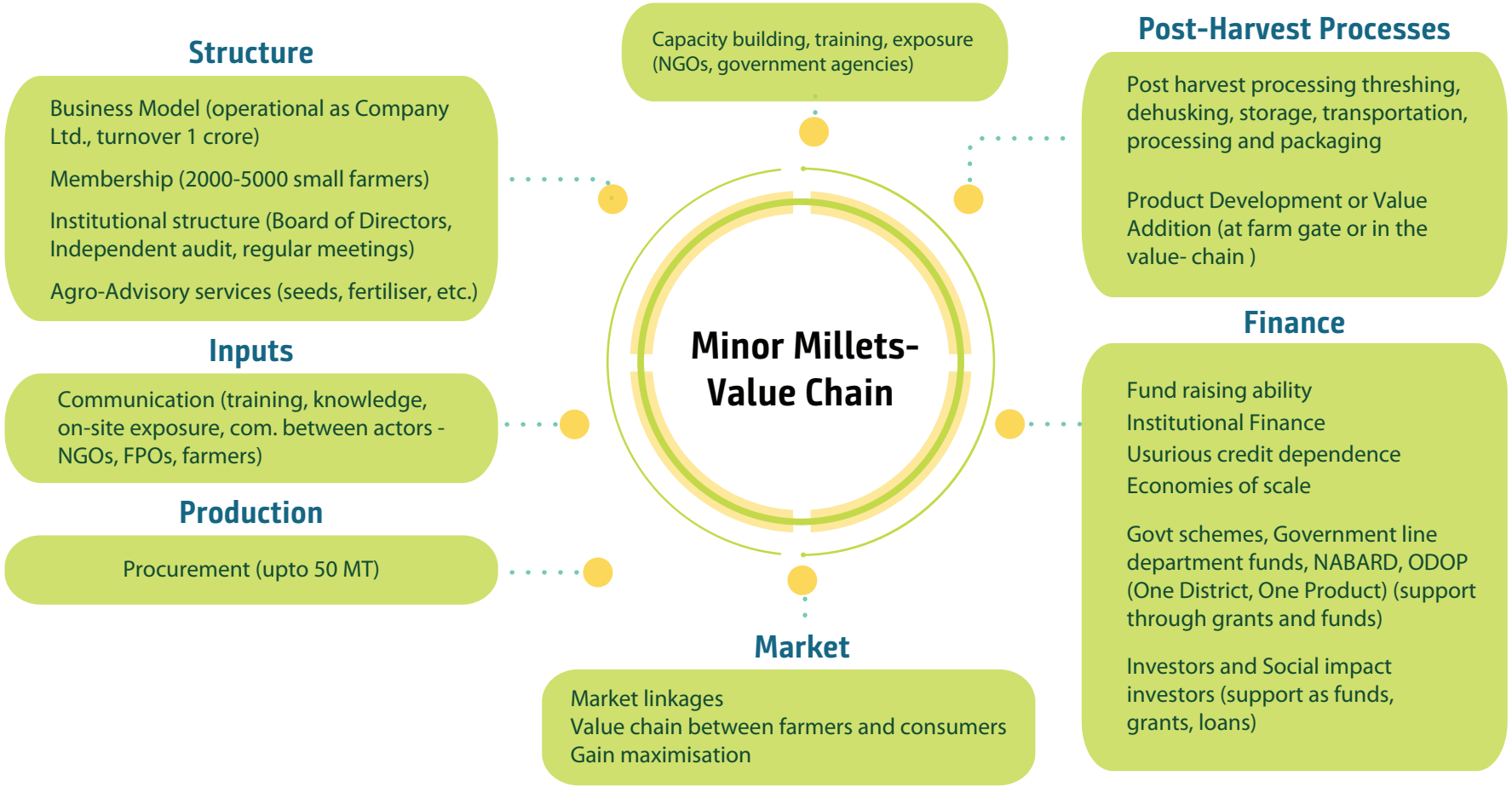
Community Nutritional Gardens and individual agri-nutritional gardens can play an important role in supporting food and nutritional security and enhanced income support. It would improve the economic and social resilience of the tribal farmers.

Value Addition:

Primary processing of minor millets in a modern facility equipped with dehulling, grading and automatic packaging machines and colour sorters would help in moving the farmers up the minor-millets value chain. Presently, post-production value addition is absent at the local level, particularly in processing.

De-hulling processes employed by local millers are inefficient, causing wastage and grain damage. This crucial intervention is critical to improve income levels and livelihoods of farmers through better unlocking of value from the value chains. Further, simple value addition in end-products such as millet-based biscuits, cookies, papads, atta and others can be introduced gradually.

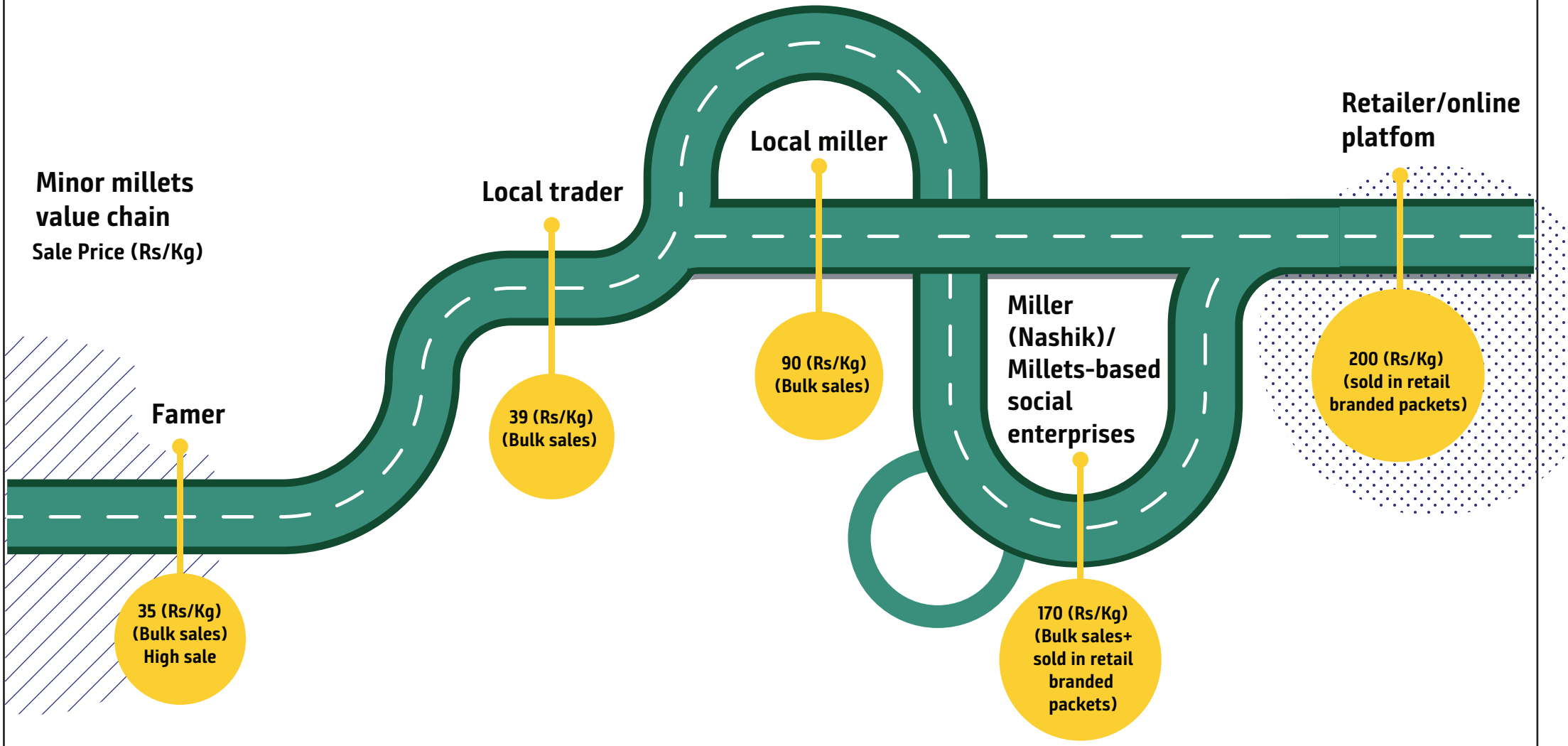
Mapping the minor millets value chain and actors in Mandla



Minor millets value chain and marketing channels in Mandla

There is a stark disparity between the farm gate and the retail prices of kodo-kutki – with less than 17.5 % obtainable as farmers' share. Typically, the marketable surplus is sold to traders at Rs 20 - 30 per kg. On the other hand, ready to cook millets (sorted, graded and dehulled) sold to end consumers fetch Rs 200 per kg.

An absence of high quality processing infrastructure in the district or in a nearby place inhibits farmer groups from taking advantage of this arbitrage opportunity. Due to the lower selling price of millets, its production is disincentivized.



Dehulling, processing technologies and incentivising minor millets value chain

INEFFICIENT LOCAL DEHULLING PRACTICES

Dehulling kodo-kutki grains due to its hard outer shell presents a steep post-harvest challenge.

Dehulling processes adopted by local and small millers are inefficient- causing up to 65 % wastage and 20 % grain damage including depletion of nutrients due to removal of bran and part of endosperm.

EXISTING VALUE ADDITION MEASURES

Diversification to make kodo-kutki cookies and sweets by self-help and entrepreneur groups.

POST-HARVEST PROCESSING AND INCENTIVISING MINOR MILLETS VALUE CHAIN

Enable a large number of small farmers to make sustainable gains in the market through efficient post-harvest processing technologies locally.

Incentivise farmers to return to the climate-resilient minor millets by opening income opportunities.

Improve kodo-kutki production and stem continuous downward trend in its production.

Strengthen the climate resilience of the minor millets value chain and lead to development of sustainable and commercially bankable business models.

GIZ - Reliance Foundation cooperation to incentivise millet value

Reliance-supported Narmada Self-Reliant Farmers Producer Company Limited, Mandla

5000 small farmers in 90 villages as stake holders.

Sound interface between famers and the company (provision of agronomic services).

Robust procurement (50 MT) at farmers gate and no hassle digital payments platfom.

Preventing the shift from millets to paddy and wheat cultivation by small and marginal tribals farmers due to lower market price of kodo-kutki.

A solution-oriented approach to develop and sustain climate resilience business models focussed on processing and market inkages.

"Minor-millet's value-chain (Narmada Company) has brought back the forgotten crops of kodo-kutki to our barra (highlands). Our destinies are intertwined with these crops. We are determined to move ahead with our own company."

Jagatram Chicham
(Tribal farmer and Board of Director, Narmada Self- Reliant Farmers Producer Company Limited)

Components and nature of assistance required for mainstreaming climate adaptation in minor millets value chain

S. No.	Components	Nature of Assistance	Institutions
1	Innovative financial mechanisms for mainstreaming adaptation: setting up processing unit.	Grant and loan	State governments and Government of India, NABARD, Social impact investors and commercial banks, Non-Banking Financial Companies
2	Capacity Building for developing and sustaining climate - resilient business models: training, exposure, etc.	Technomanagerial support Grant	NGOs (such as Reliance Foundation and Foundation for Ecological Security), NABARD
3	Exploring climate smart measures in the value chain: e.g. setting up solar power plant to run the processing unit.	Grant	Carbon Financing Institutions, NABARD

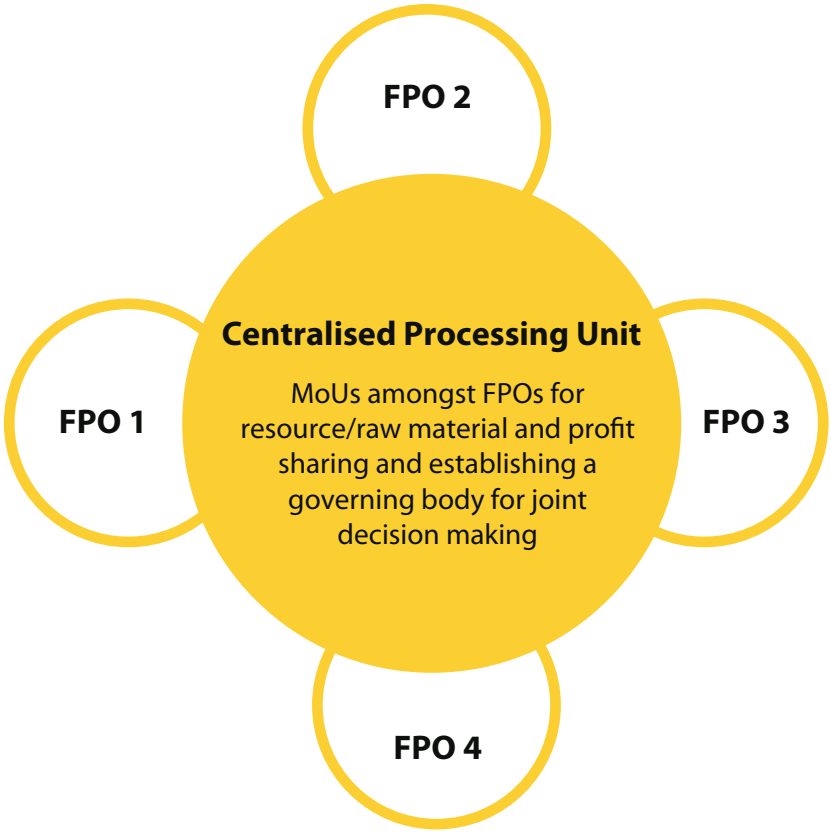
Up-scaling of climate-adaptive business model

Climate-resilient interventions can help to develop, strengthen, sustain and scale up minor millets-value chains. GIZ is interested in facilitating public-private dialogue for exploring financing opportunities in climate-resilient business models.

Prospective ownership plan* for processing plant

*Ownership plan of assets is a factor of the processing capacity and cost of the processing unit.

The processing unit can have multiple parts. It can start as a simple primary processing unit involving de-stoner, de-huller and sorting and grading components. But going forward, further value addition can be added like, millets-based biscuits and millets our.



Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn, Germany

Climate Adaptation and Finance in Rural India
A2/18 Safdarjung Enclave
New Delhi 110029
Phone +91 49 49 53 53
Fax +91 49 49 5391
Shailendra.dwivedi@giz.de
www.giz.de/india