Consortium for Agroecological Transformations

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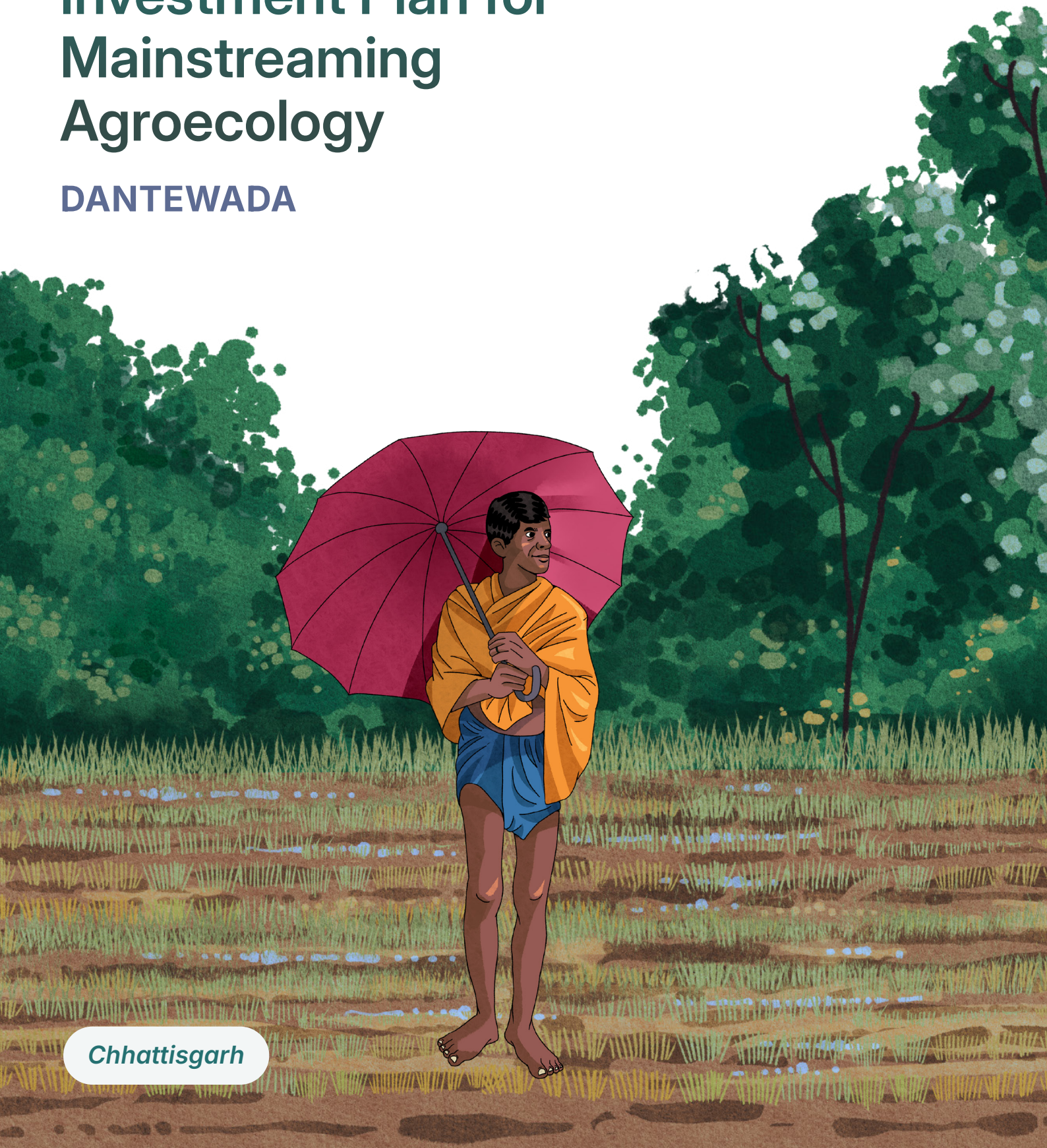
Landscape-Based Investment Plan for Mainstreaming Agroecology

DANTEWADA



Chhattisgarh

Landscape-Based Investment Plan for Mainstreaming Agroecology

Dantewada

DANTEWADA DISTRICT, CHHATTISGARH

Consortium for Agroecological Transformations

Prepared by **The Consortium for Agroecological Transformations**
hosted at **The Centre for Sustainable Agriculture.**

Consortium for Agroecological Transformations

Landscape-Based Investment Plan for Mainstreaming Agroecology - Dantewada

Prepared in collaboration with
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Contents

Introduction

This report is part of the broader initiative by the Consortium for Agroecological Transformations (CAT), which aims to develop landscape-level investment plans to accelerate agroecological transformation in India. For more information on CAT, visit www.agroecologyindia.org.

In CAT's approach, **a landscape is defined as an administrative block**, considered the *minimum viable unit* for planning and action. Unlike the conventional understanding of a landscape as a contiguous area with shared geographical features, here it refers to a governance and planning unit where multiple actors, including farmers, institutions, markets, and governments, can coordinate effectively. The block-level focus enables a convergence of efforts, allowing systemic transformation across domains relevant to food, farming, natural resources, and rural livelihoods.

The six broad goals guiding CAT's landscape-based agroecological transformation are:

1. Improving the quality of natural resources, including land (soil), water, flora, and fauna.
2. Increasing income to make agriculture an attractive livelihood choice for the younger generation.
3. Preserving and enhancing biodiversity.
4. Ensuring the well-being of smallholder farmers, women, and landless labourers.
5. Enhancing food and nutrition security.
6. Addressing the climate crisis.

Agroecological transformation in this context means moving towards 'no use of chemical fertilisers and pesticides' and 'no GMOs', whilst strengthening sustainable and resilient local food systems.

While pursuing these goals, the interventions in this report are also aligned with the thirteen Agroecological Principles (HLPE, 2019) and the Sustainable Development Goals (SDGs). Chapter 7 of the report outlines how each proposed intervention contributes to the six transformation objectives, aligns with the thirteen agroecological principles, and supports progress toward the SDGs.

The interventions are detailed in Chapters 5 and 6, which also present a blended financing model to support their implementation. Given the scale and complexity of the proposed initiatives, it may be necessary to conduct focused studies and develop a Detailed Project Report (DPR) to enable their effective implementation on the ground.

For a deeper understanding of CAT's conceptual foundations, the rationale for the landscape approach, and key system boundaries for planning interventions, refer to the document "Mainstreaming Agroecology: The Landscape Approach."

CHAPTER 1

Landscape Profile

This chapter presents a comprehensive profile of Dantewada Landscape through a combination of secondary data analysis and micro-level insights. It outlines the region's geographical, socio-economic, and agroecological features while capturing key aspects of institutional performance, governance dynamics, and existing livelihood patterns.

1.1. Location & Area Coverage

The Dantewada block, selected as the focus landscape by the Agroecology Transformation (CAT) consortium, is located within the Dantewada district in the Indian state of Chhattisgarh.

Total Geographical area of the Dantewada landscape is 58428 hectares.[1] Hilly terrain, forests, and numerous rivers characterise the region. **It comprises 64 villages (60 inhabited and four uninhabited) and 44 Gram Panchayats**. The landscape includes 9.67% reserved forest area. Iron ore and minor minerals, such as stone and murram, are found in the region.

Particulars	Data point
Total geographical area	58428 ha
Total forest area	5652 ha (9.67%)
Total cultivable land	34,966 ha
Pasture/grazing land	7,713 ha
Fallow land	6837 ha
Other land	3260 ha
Total number of villages	64 (60 inhabited and four uninhabited)
Total Gram Panchayats	38

Table 1.1 – Dantewada District Geographical Landscape

[1]As per the Dantewada Block Data Sheet 2024-25

Fig. 1.1 – Chhattisgarh District Map

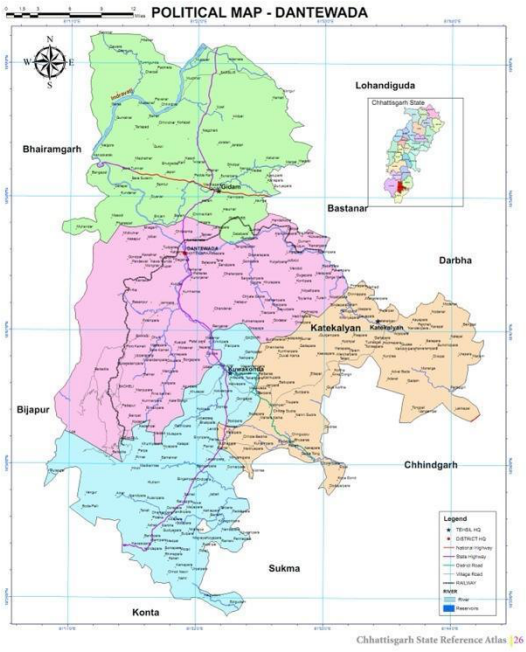
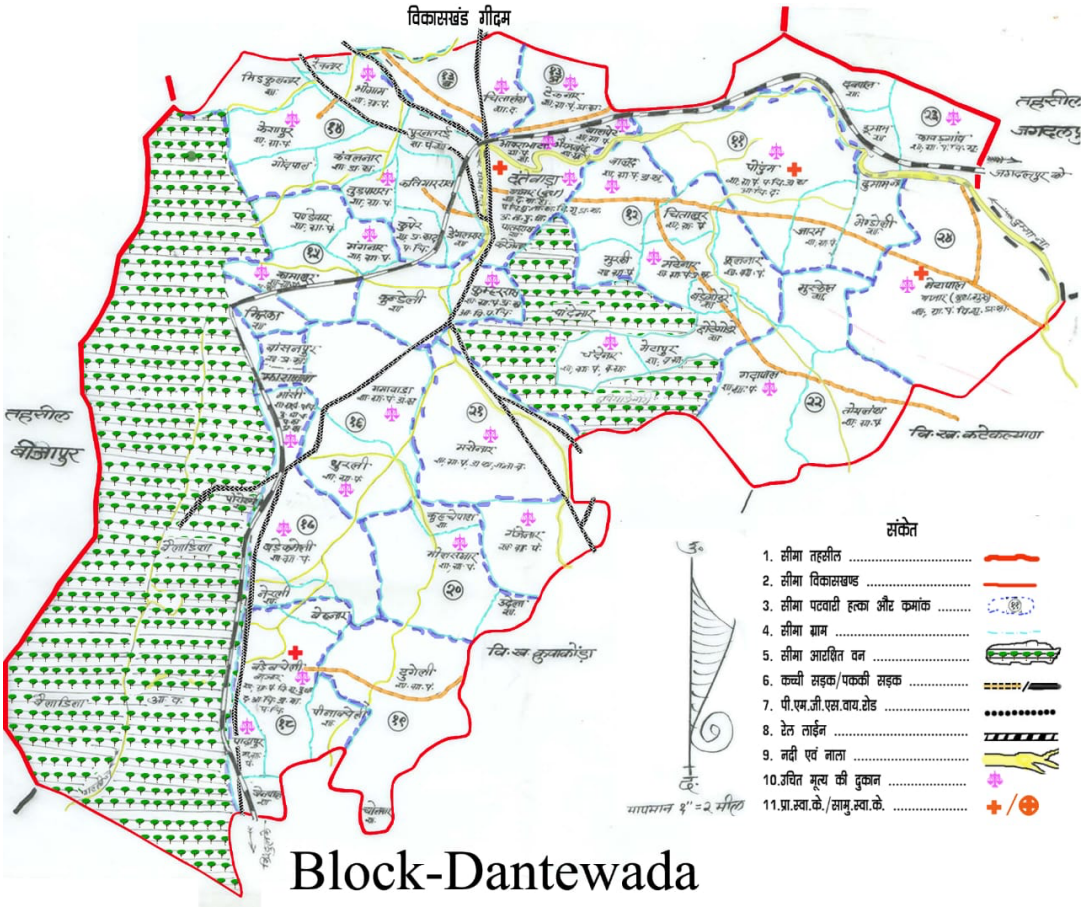


Fig. 1.2 – Political Map - Dantewada



Source: District administration, Dantewada

Fig. 1.3 – Dantewada Block Map

1.2 Topography & Agroclimatic Features

Dantewada district, located in the Southern part of Chhattisgarh State, falls within the Bastar Plateau agroclimatic zone. A moderate climate characterises this zone and is part of the broader Eastern Plateau & Hills region. The area receives moderate rainfall, with a significant portion of it coming from the southwest monsoon. Dantewada has a rich reservoir of rural landscapes.[2] Dantewada is located between 18 D-56'-8" N latitude and 81 D-20'-37" E longitude[3]. **The Dantewada block shares the district's agroclimatic features.**

Dantewada Block, situated in the southern part of Chhattisgarh, is part of the **Bastar Plateau**, characterised by a **highly undulating terrain** with elevations ranging from approximately **50 meters above mean sea level (amsl)** in the southeastern areas to about **1,025 meters amsl** at the Bailadila hills near Akash Nagar. The landscape comprises hills, valleys, plateaus, and pediplains, which influence land-use patterns, water drainage, and soil distribution.

The land here is divided into three main categories based on its elevation and other topography-based features.

The upland areas, locally referred to as *"marhan"*, are typically found on elevated ridges and are less fertile, with low water retention capacity, and mainly support short-duration crops such as millets, hardy paddy varieties, oilseeds, and pulses.

The midland areas lie between the uplands and lowlands, having moderately fertile soils and slightly better moisture availability, making them suitable for paddy cultivation.

The lowland regions, primarily located along riverbanks and valley floors, are the most fertile and are used for long-duration paddy and some Rabi crops, such as vegetables.

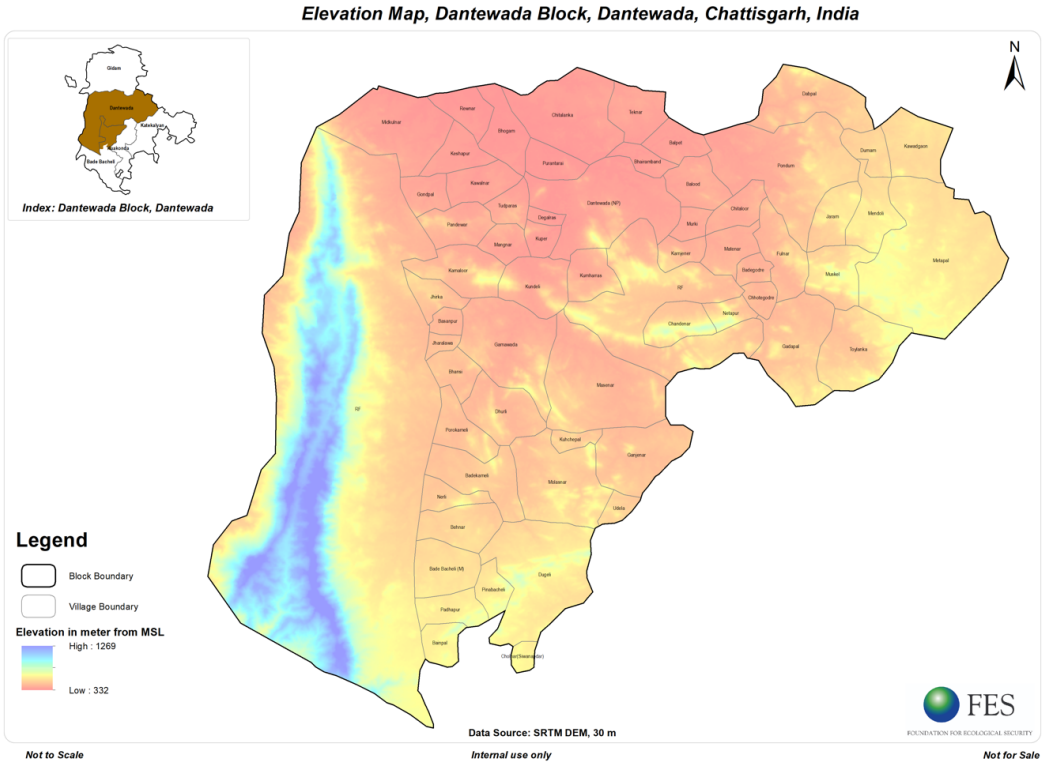
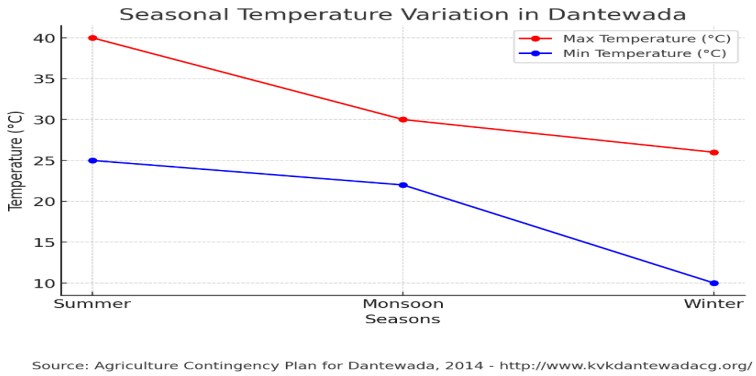


Fig. 1.4 – Elevation Map - Dantewada Block

[2]More on Dantewada in the Potential Linked Credit Plan 2023-24 prepared by NABARD
[3] More in the District Booklet here

Temperature: The region experiences a **sub-humid to semi-humid climate**, with temperatures ranging from **10°C in winter** to **over 40°C in summer**.



Source: Agriculture Contingency Plan for Dantewada, 2014 - http://www.kvkdantewadacg.org/

Fig. 1.5 – Seasonal Temperature Variation in Dantewada

Humidity: Relative humidity varies significantly, from about **85% during the rainy season** to **35-45% in winter**.

Rainfall: The district receives an average annual rainfall of approximately **1,237.5 mm**, with most falling during the southwest monsoon from June to September. However, recent climate variability has led to erratic rainfall patterns, delayed monsoons, and prolonged dry spells, sometimes increasing the frequency of drought-like conditions. The map below also indicates the historical trend of annual rainfall from 1995 to 2024. It suggests that, over the last 30 years, average yearly rainfall has ranged from 1000 to 2000 mm.

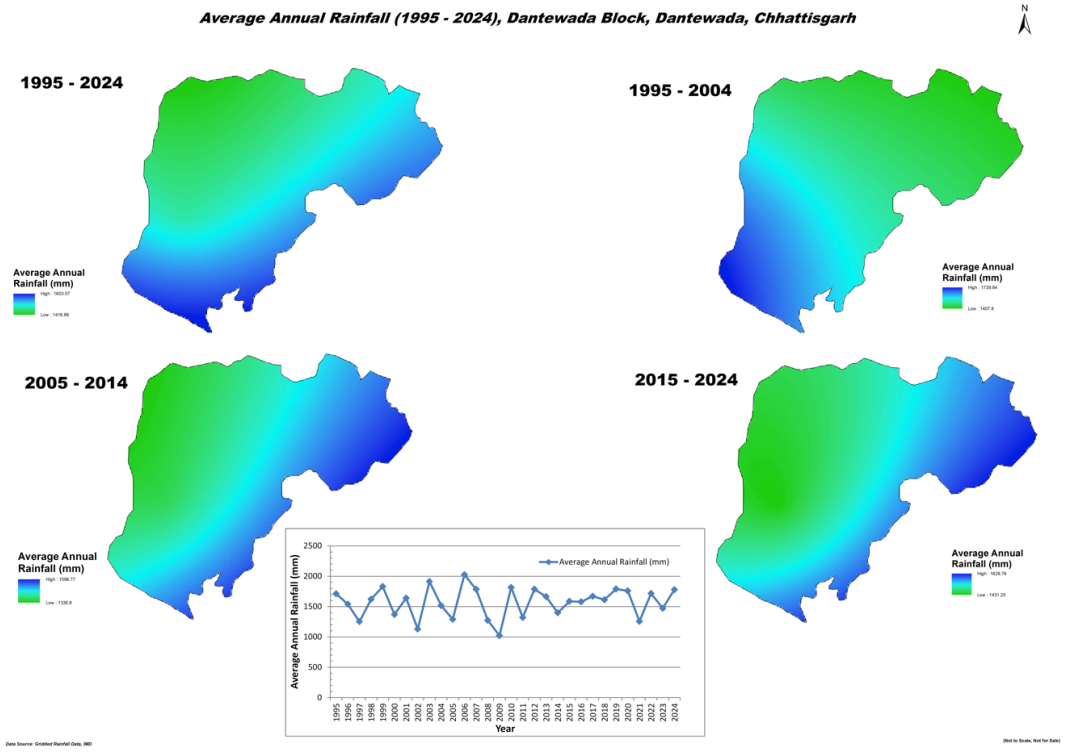
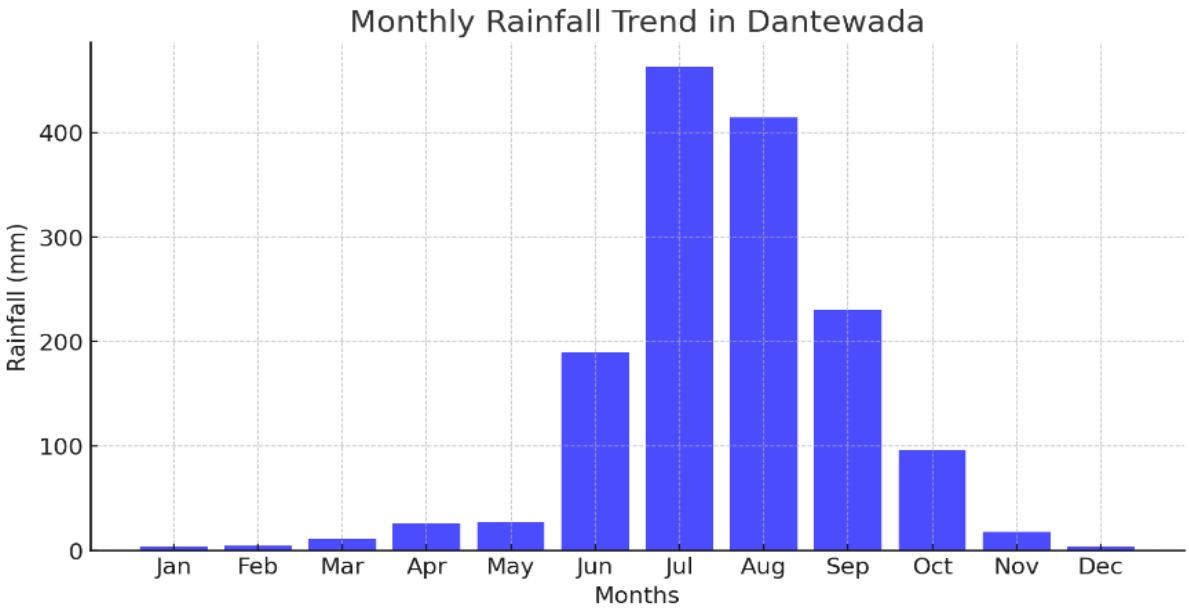


Fig. 1.6 – Average Annual Rainfall – Dantewada Block



Source: Agriculture Contingency Plan for Dantewada, 2014 - http://www.kvkdantewadacg.org/

Fig. 1.7 – Monthly Rainfall Trend in Dantewada

1.3. Demographic and Social Profile

Dantewada Block is predominantly inhabited by rural and tribal communities, with the Gondi tribe being the most prominent. Other tribes in the block include Madiya, Muriya, and Halba. Besides the tribal community, there are also different communities from other backward castes.

Particulars	Total	Urban	Rural
Households			
Population	94,351	35,068 (37.17%)	59,283 (62.83%)
Children (0 - 6 years)	13,919	4,405 (31.65%)	9,514 (68.35%)
Schedule Caste	4,327 (4.59% of the total population)	3,784 (87.45%)	543 (12.55%)
Schedule Tribe	60,605 (64.23% of the total population)	12,301 (20.30%)	48,304 (79.70%)
Literacy	50.64%	79.97%	32.57%
Sex Ratio	1,006	908	1,070
Religion			
- Hindu	96.3%		
- Muslim	1.21%		
- Christian	0.92%		
- Others	1,57%		
Population density (Individuals/km)	53		

Source: 2011 Census, District handbook

Table 1.2 – Demographic and Social Profile of Dantewada

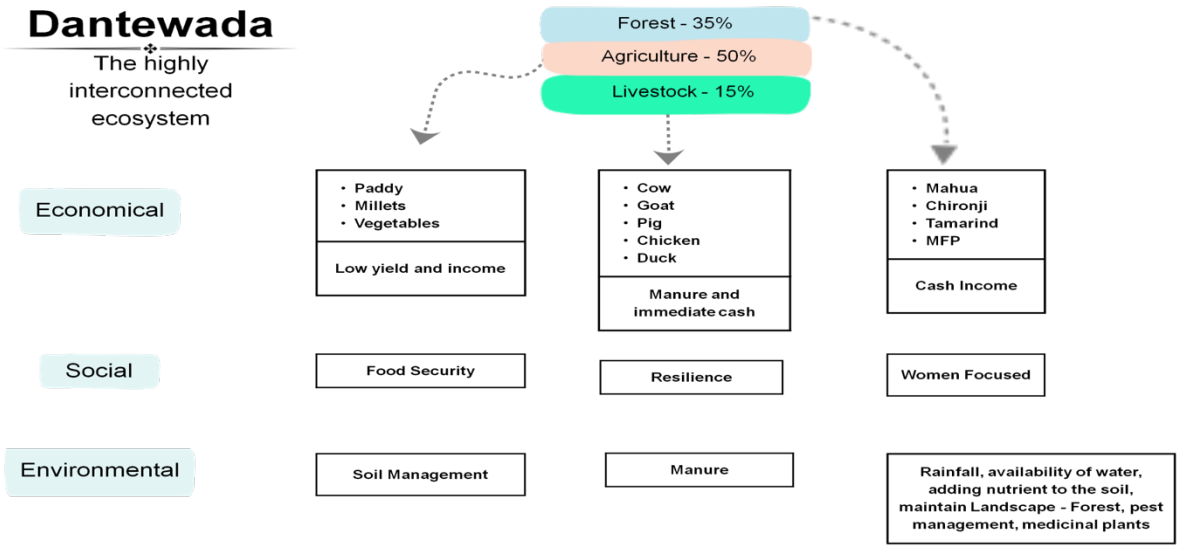


Fig. 1.8 – Livelihood Composition and Sustainability Dimensions in Dantewada

Languages:

In Dantewada, the primary languages spoken are Gondi and Halbi, reflecting the region's tribal heritage. According to the 2011 Census, Gondi is spoken by 57.85% of the population, while Halbi is spoken by 14.88%. Other languages include Hindi (7.63%) and Chhattisgarhi (2.86%). Different languages, such as Dorli (4.40%) and Dhurwa (3.81%), are also present, reflecting the district's rich linguistic diversity[4].

1.3.1. Socio-economic conditions

The Dantewada landscape presents a diverse socio-economic profile shaped by its rich tribal heritage, dependence on natural resources, and evolving developmental efforts. The majority of communities in the region rely on **rainfed agriculture** as their primary source of livelihood, supplemented by the **collection of non-timber forest products (NTFPs)** for both household consumption and local sale. Livestock rearing and non-farm activities—such as daily wage labour, work under MGNREGS, and Forest Department or in nearby rural and urban areas—also contribute to household incomes, though to a lesser extent.

During the field visit to Dantewada landscape, it was observed that communities primarily depend on non-timber forest product (NTFP) collection as their secondary livelihood, following agriculture, wage labour, and including agricultural and MGNREGA-related work. During the meeting with MGNREGA officials in Dantewada block, it was reported that approximately 10,000 to 11,000 job cards have been issued. As a result, approximately 2.5 lakh employment person-days are generated annually for job card holders. Additionally, each household benefits from at least 45 days of employment per year under the scheme. Wages for both male and female workers are equal, set at ₹243 per day. For community-based projects, wage payments are processed within seven days. Additionally, the block has 3 to 4 Technical Assistants (TAS) assisting in the effective implementation and monitoring of MGNREGA activities.

[4] Table C-16 Population by Mother Tongue: Chhattisgarh". www.censwhileusindia.gov.in. Registrar General and Census Commissioner of India.

Despite these diversified livelihood streams, Dantewada lags behind many other districts in Chhattisgarh in terms of socio-economic development. According to the 2023 **Multidimensional Poverty Index (MPI) report**, Dantewada records a **higher poverty** level than both the state average and rural Chhattisgarh. The **headcount ratio** (percentage of people identified as multidimensionally poor) in Dantewada stands at **29.53%**, which is significantly higher than the **state rural average of 19.71%**. Similarly, the **intensity of deprivation** (average proportion of deprivations experienced by people experiencing poverty) is also higher at **45.88%** compared to **42.67%** in rural Chhattisgarh. This results in an MPI score of **0.135 for Dantewada**, nearly **double the rural state average of 0.084**, indicating that households in the district face considerably lower access to basic services and amenities.

Multidimensional Poverty Index for Dantewada

Particulars	Headcount Ratio (H)	Intensity (A)	MPI (H x A)
Overall	16.37%	42.61%	0.07
Rural Chhattisgarh	19.71%	42.67%	0.084
Dantewada District	29.53%	45.88%	0.135

Table 1.3 – Multidimensional Poverty Index for Dantewada

Migration: Distress migration was not reported during discussions in the Dantewada block. As most rural households have diverse economic sources and remain engaged in various economic activities, particularly those related to the forest ecosystem, which provides significant employment opportunities throughout the year, they often do not realise the need to migrate to other locations. However, seasonal migration does happen in limited numbers in some interior villages away from Dantewada and Bacheli towns. There are only a handful of youths who migrate to cities like Jagdalpur, Hyderabad, Raipur, and other cities in Andhra Pradesh for 4-5 months to work in varied industries; however, the pattern of migration is neither regular nor permanent. Even among those who migrate, it is typically only male family members who do so, while other family members remain at home. Migration generally occurs after Kharif harvesting, and people return by the onset of the Monsoon.

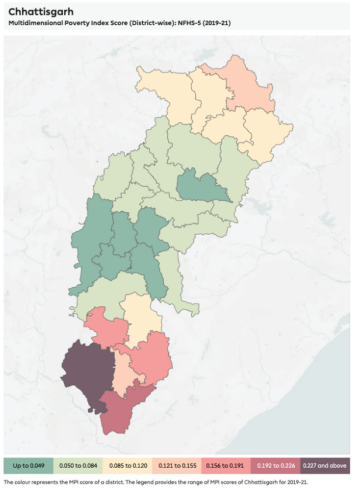


Fig. 1.9 – Multidimensional Poverty index Score of Chhattisgarh

Estimated household income from different sources

Although it is challenging to estimate household income without a proper baseline study, based on discussions with community members and the NIRMAAN team, and on productivity and market price estimates, an attempt has been made to estimate the average household income in the Dantewada block.

- The estimates presented here are based on production potential, as determined by prevailing productivity rates and market prices, and include volumes used for self-consumption. The actual net income, after adjusting for self-consumption and expenses incurred in these activities, will be significantly lower than the numbers presented here.
- The table below presents the average gross household income from various sources, along with an estimated percentage of households engaged in each activity.
- The income indicated here is the household's gross income, given a high level of family labour engagement across all activities and limited investment in purchased inputs. Calculating net income was challenging.

Income Sources	% of Households engaged	Average (land/ herd size)	Average Gross Income per year (Rs.)
Seasonal Income from Agriculture			
Paddy Cultivation during Kharif	95-100%	3-5 Acre	50,000-75,000

Millets and other crops during Kharif	50-60%	1-3 Acre	5000-15000
Seasonal Income from Horticulture			
Vegetables (hh cultivating for markets) during Kharif	10-15%	0.5-1 acre	15,000-50,000
Annual Income from livestock			
Cattle (cow/buffalo)	70-80%	4-5	NA
Goat rearing	70-80%	3-5	20,000-50,000
Poultry	10-15%	4-8	2500-3500
Pig rearing	2-5%	3-5	NA
Annual Income from NTFPs	95-100%	NA	20,000-50,000
Households owning cattle make use of the cow dung in their agricultural practices. While small and marginal farmers are neither part of the manure economy nor the milk economy, a few farming households with large cattle populations do sell cow dung.			

Table 1.4 – Household income from different sources

Livelihood Seasonality Calendar for Households in Dantewada

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
NTFP Collection 1. Mahua collection 2. Chironji 3. Tamarind 4. Other MFP					Kharif crop activity (Paddy and other crop cultivation)						

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Tamarind	Mahua Flower		Mahua seed	Mango	Land preparation & Seed Sowing		Intercultural Operations		Harvesting (in different land parcels		
			Tendu leaves		Vegetable cultivation (hh consumption)				Vegetable cultivation (for sale)		

Table 1.5 – Livelihood seasonality calendar for households in Dantewada

1.4. Land Use and Land Holding Pattern

Most of the land is used for agricultural purposes, including lands in upland, midland, and lowland areas. Agrarian land comprises both revenue land and land acquired under the Individual Forest Rights (IFR) Act. The block has approximately 13% of its land allocated to pasture and grazing areas. Some villages have also received community forest rights to conserve and manage their forest lands.

The following tables summarise primary land use and landholding patterns in the block.

Dantewada Landscape Data	
Cultivated Area across different seasons	**Area (Hectares)**
Total Agriculture (cultivable) land	**34866**
Kharif area 2023	34296
Rabi area 2023	670
Total Cropped area (Kharif+ Rabi)	34966
Land not available for agriculture	570
Land area by soil types	**Area (Hectares)**
Bhata (Laterite soil)	12656.5
Matasi (Yellow clay soil)	8940.56
Dorsa (Sandy loam)	7473.76

Dantewada Landscape Data	
Kanhar (Block soil)	5795.18
Farmer hhs (Classified by land ownership)	**Numbers (percentage)**
Marginal	2354 (31%)
Small	2097 (27%)
Large[5]	3190 (42%)
Total	**7641**

Table 1.6 – Primary land use and landholding patterns in Dantewada

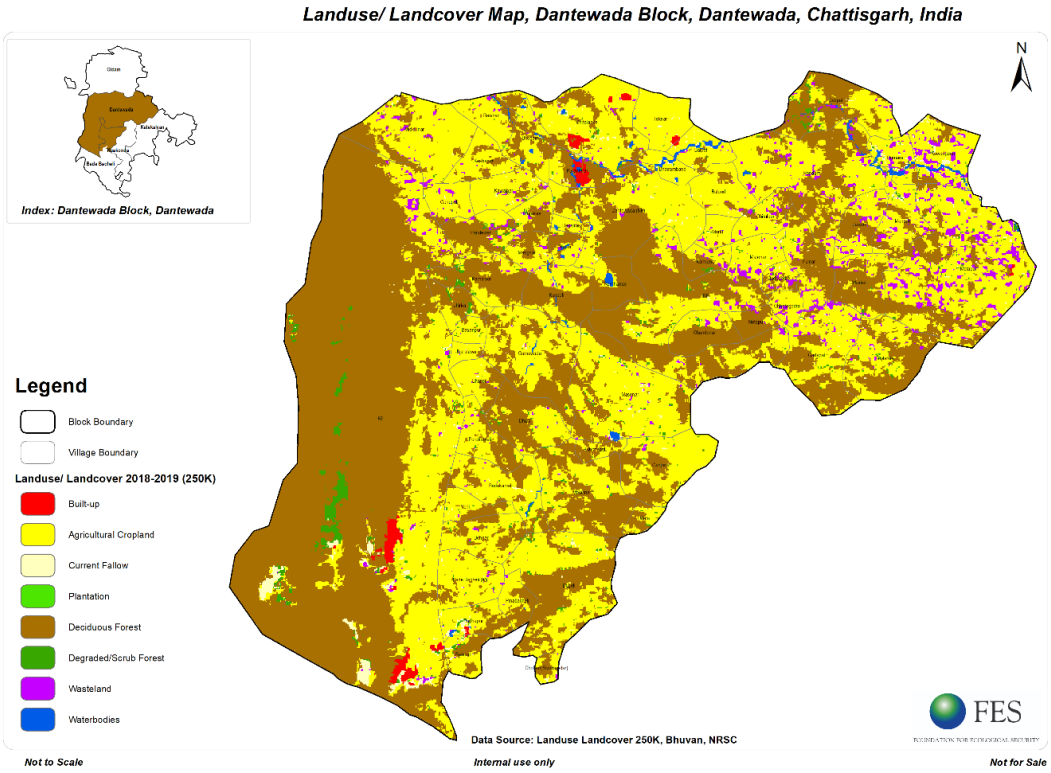


Fig. 1.10 – Land Use / Land Cover Map of Dantewada

1.5. Institutions and Key Stakeholders

Dantewada Block comprises 44 Gram Panchayats, which encompass a total of 60 villages. Many of these Gram Panchayats include attached or hamlet villages, which are administratively part of the larger Panchayat unit. Elected every five years, Pradhans (Panchayat heads) represent the local leadership within these village-level institutions. As part of the Panchayati Raj system, Gram Panchayats play a crucial role in grassroots governance and regional development planning. They are responsible for formulating and implementing the Gram Panchayat Development Plan (GPDP), which outlines development priorities and activities for the villages under their jurisdiction.

[5] Several revenue titles are not divided both due to lack of administrative reach and cultural aversion

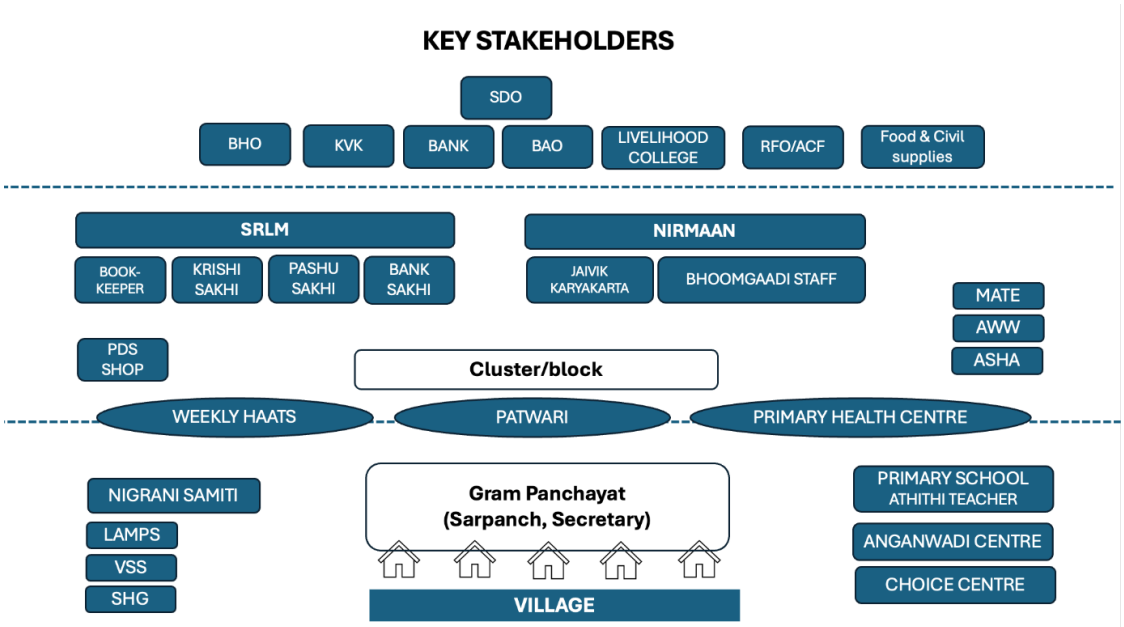


Fig. 1.11 – Institutions and key stakeholders

SDO- Sub Divisional Officer, BHO-Block Horticulture Officer, KVK-Krishi Vigyan Kendra, BAO-Block Agriculture Officer, RFO-Range Forest Officer, ACF-Assistant Conservator of Forest, PDS-Public Distribution Systems, MATE-MNREGS frontline supervisor, AWW- Anganwadi Worker, ASHA-Accredited Social Health Activist, LAMPS-Large Area Multipurpose Cooperative Society, VSS-Van Suraksha Samiti, SHG-Self-Help Group

NGOs: As per the NGO Darpan portal and the district government website, a total of 22 NGOs are registered in Dantewada district. However, the number of NGOs actively engaged in agriculture and allied activities within the Dantewada block is limited. Among the prominent organisations, NIRMAAN stands out as a leading NGO working closely with the district administration under the Organic Dantewada program. NIRMAAN also plays a key role in supporting the Bhoomgaadi Organic Farmer's Producer Company. Other NGOs operating in the block include Shamayita Math and WOTR, both of which are involved in a range of initiatives related to agriculture, natural resource management (NRM), and sustainable rural livelihoods.

Women Self-Help Groups (W-SHGs): There are 1,059 women's SHGs and 42 Village Organisations (VOS) promoted by the SRLM/NRLM in the Dantewada block. The total funds available with these SHGs amount to ₹4.15 crore, comprising ₹1.54 crore in the Revolving Fund (RF)[6] and ₹2.62 crore in the Community Investment Fund (CIF)[7]. Gram Panchayats with higher SHG counts receive higher RF and CIF amounts, indicating a positive correlation between SHG activity and financial support. However, some Panchayats with a substantial SHG presence, such as Metapal (53), have lower CIF allocations. The Chhattisgarh government's erstwhile initiatives, such as the Godhan[8] Nyay Yojana, bolstered SHG activities by promoting organic farming and providing economic opportunities. Under this scheme, women's SHG members convert cow dung procured from local farmers into vermicompost, generating income and promoting sustainable agricultural practices.

Banking Sector: The banking sector in Dantewada block comprises eight commercial bank branches, five regional rural banks (RRBs), and seven cooperative banks, which support financial inclusion and credit access. Crop loans are primarily disbursed through Primary Agricultural Cooperative Societies (PACS), benefiting over 5,000 small and marginal farmers. The agricultural credit target for the Dantewada block for 2023-24 is ₹6,900 lakh, with ₹3,500 lakh allocated to crop loans and ₹3,400 lakh

[6] RF supplements SHG's own funds and prepares them for leveraging and managing bank credit and other sources of credit.
[7] The mission provides CIF to Cluster Level Federations (CLFs) to meet the livelihood credit requirements of its members. The CIF is a grant the CLFs from which loans are made to Village Organizations (VOs) on specific terms and conditions. VOs in turn can lend to SHGs and SHGs to the members. CIF is thus, intended to be a 'resource in perpetuity' available to all community institutions of the poor under DAY-NRLM.
[8] Key state-level programmes influencing rural enterprise and value-chain development—*Narva, Garva, Ghurva, Bari (NGGB)*, *Rural Industrial Parks (RIPA)*, and the *Godhan Nyay Yojana*—are outlined in *Annexure 2*.

to term loans. In the previous year (2022-23), the target was ₹5,557 lakh, but the actual disbursement was ₹1,816 lakh, indicating challenges in credit accessibility. The focus is on paddy, millets, and horticulture crops. Despite progress, banking penetration remains low due to limited rural outreach and security concerns. Recent digitisation and SHG linkages under NABARD's e-Shakti program aim to enhance financial access for farmers and rural enterprises.[9]

1.6. Primary Ecosystems in the Landscape

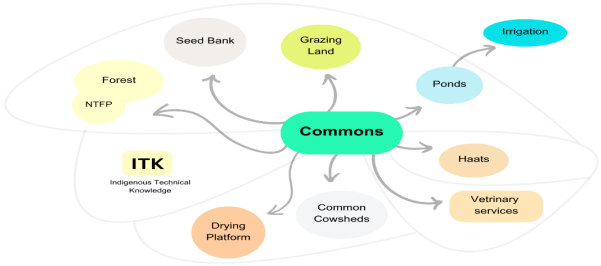


Fig. 1.12 – Primary ecosystems in the landscape

Forest Ecosystem

Moist and dry deciduous forests predominantly cover Dantewada, characteristic of the Bastar Plateau. The forests are home to various species, including *Tora, Harra, Saja, Tendu, Karanj, Teak, Kusum, Bamboo, and Mahua*. Additionally, a variety of agroforestry products, including *Imli, Mango, Jamun, Cashewnut, indigenous Date, Amla, and diversified species of seasonal mushrooms and tubers, are present in the area.* These forests support a diverse array of wildlife, including deer, wild pigs, and numerous bird species, reflecting the region's ecological richness.

Agricultural Ecosystem

The total cropped area under the Rabi season in Dantewada block is limited to only 670 hectares. During the Kharif season, only 2.33% of the total cropped area has access to irrigation. The cultivation of a second crop in the Rabi season is primarily undertaken by farmers with irrigation facilities, which include borewells (538 hectares), ponds (42 hectares), and canals (35 hectares). Additionally, in some areas, farmers utilise check dams (40 hectares) for irrigation. The landscape is predominantly characterised by a rice-fallow cropping system, with an overall cropping intensity of 102%. In the Kharif season, major crops include *paddy (rice), maize, different types of millets (kodo, kutki, ragi, etc.), and different types of pulses (kulthi, moong, urad, etc.)*. Horticultural plants such as guava, banana, and mango, as well as various leafy vegetables, are also cultivated. Agricultural fields attract a variety of species, including rodents, snakes, and insects. Birds such as sparrows, mynas, and pigeons are commonly observed in urban and suburban landscapes.

Grassland Ecosystem

Interspersed within the forested and agricultural landscapes are patches of grassland. The Dantewada block has a total grazing area of 7,713 hectares, accounting for approximately 13.20% of the landscape's total area. [10]These areas serve as grazing grounds for livestock and are integral to the pastoral lifestyle of local communities. Dominantly, grasses and shrubs are present in the grassland. Grasslands support herbivores and provide habitat for ground-nesting birds and various insect species.

[9] More on Dantewada in the Potential Linked Credit Plan 2023-24 prepared by NABARD

[10] https://drive.google.com/drive/u/1/home

CHAPTER 2

History of Agroecology in the Landscape

This chapter provides an overview of the historical context for agroecology in the region, its journey over time, as well as actions and responses by the state through policies and programs in support of this larger transition.

2.1. History of agroecological initiatives, policies, and programs in the last 10–15 years

The collection of forest produce and uncultivated foods has traditionally been a source of livelihood and food for Tribal Communities in Dantewada. With time, tribal communities have gradually shifted towards cultivation practices. However, until recently, their practices have been characterised by very low usage of external inputs. There have also been consistent efforts from the district administration in Dantewada to promote organic agriculture. Under the leadership of Mr K.C. Devasenapati, the then Collector of Dantewada, various efforts and policy measures were undertaken to promote organic farming in Dantewada. As a result of these efforts, in 2015, the consumption of chemical fertilisers in Dantewada dropped to 0.52 kg per ha. Notably, in the same year, the average fertiliser consumption in Chhattisgarh rose to 96 kg per hectare, a 30 per cent increase from 2012. Since then, several initiatives have been launched to promote organic farming in Dantewada. The following section provides a concise overview of the historical evolution of agriculture in Dantewada since 2013[11].

2.1.1. Milestones and Timeline at a glance (2013-2020)

Year 2013

In 2013, Chhattisgarh's fertiliser consumption was 92 kg/Ha, whereas in Dantewada it was only 4 kg/Ha. In 2013, the district administration decided to encourage farmers to adopt organic farming and promote their traditional crops and varieties. This approach was based on building upon the strengths of conventional knowledge and the community's value system. It was an attempt to achieve environmental sustainability while also strengthening livelihoods. With the convergence of various schemes of the agriculture department, MGNREGA, and funds at the disposal of district administration, such as IAP, BRG, F, and CSR funds, multiple initiatives were taken up:

- Bringing about mindset change in the agriculture department staff through exposure visits and orientation sessions. Building their technical knowledge base on organic farming through training conducted by practising experts.
- Extensive exposure visits to successful organic farmers across the country, benefiting the district's farmers. Training and capacity-building for farmers with the help of experts.

[11] While the historical evolution has been provided for the district, 'block' is the minimum unit considered viable as a 'landscape' for transformation under CAT's approach. In the subsequent sections, mapping has been done accordingly.

- Creating model farmers who can inspire others from their village to adopt organic farming. Incentivising such farmers by supporting them, such as fencing, irrigation facilities, etc.
- Promotion of various sustainable techniques, such as System of Rice Intensification (SRI), that increase productivity in organic farming.
- Providing farmers with the necessary infrastructure to adopt organic farming, such as cowsheds with urine tanks, NADEP tanks, and drums for preparing Jeevamrit, among other essentials.

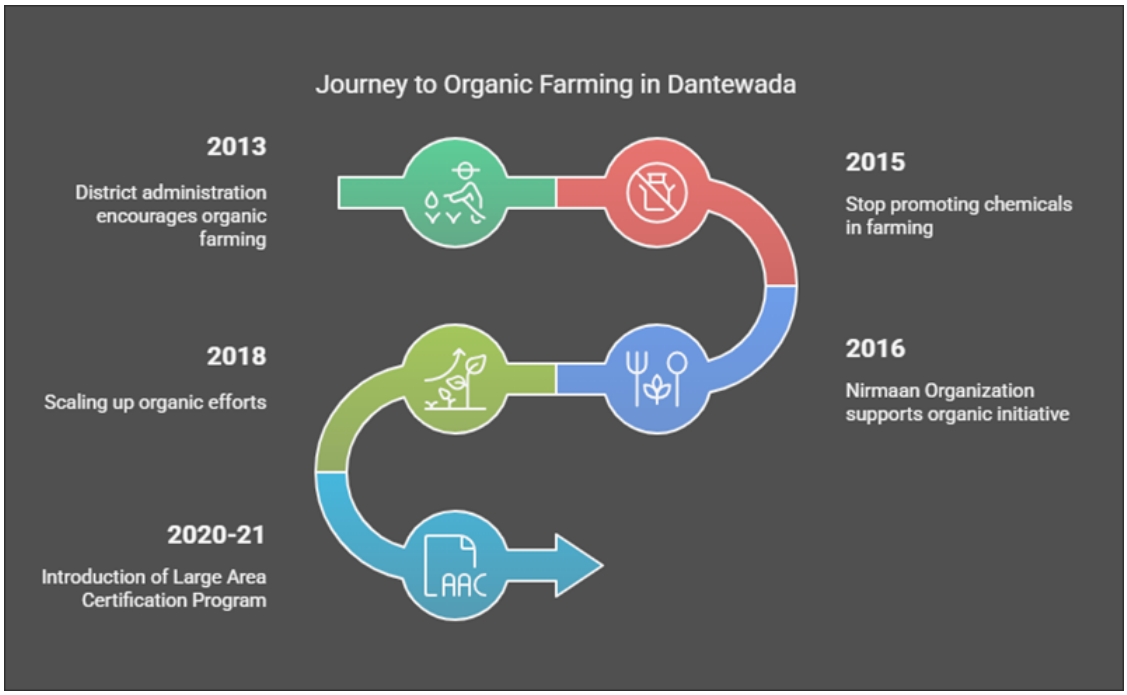


Fig 2.1 – Milestones and Timeline at a Glance (2013-2020)

Year 2015

As a result of these efforts, a sizable number of farmers had started practising organic farming by 2015. The farmers also made a collective demand on the administration to stop promoting chemical use through government schemes and to take steps to make Dantewada an organic farming district, which was subsequently agreed upon.

Year 2016

In 2016, Nirmaan Organisation was involved in these efforts to create a cadre of community resource persons — Jaivik Karyakartas — to provide training and hand-holding support in organic farming, organise farmers into groups and, subsequently, into an FPO in 40 villages of the district.

In 2016, the farmers of Dantewada came together to form Bhoomgaadi Organic Farmer's Producer Company with the support of the district administration and facilitation of Nirmaan. With the help of the field cadre of Jaivik Karyakartas, Bhoomgaadi works closely with farmers on crop planning, producing quality organic seeds through selected farmers, and creating organic inputs with women's SHGs, making them available to farmers. Every year, the Bhoomgaadi board of directors determines procurement rates in consultation with its members, and procurement is conducted at the cluster level throughout the district. The produce is then processed in a dedicated organic processing unit based in Dantewada. Bhoomgaadi has developed tie-ups with various retailers, marketing chains, and consumer groups to sell products in 14 states across the country through bulk sale, white labelling, and under its brand, "Aadim". There is also a unique initiative named "Café Aadim" operated by Bhoomgaadi in Dantewada that promotes organic and traditional cuisine among the local urban population.

Year 2018

In 2018, the administration decided to scale up these efforts (from 40 villages to 120 villages) using the funds from the District Mineral Fund. The objective was to achieve a critical mass, meaning a substantial number of farmers practising organic farming. This critical mass would then pave the way for the widespread adoption of organic practices across the district. The administration took the following steps during this scale-up phase:

A cadre of 100 Jaivik Karyakartas and 25 master trainers was created across the district through extensive training in Beejamrit, Jeevamrit, Brahmastra, Agniastra, and various other organic and natural farming techniques. This field cadre, created from within the community itself and well-versed in the local dialect, culture, crops, and farming methods, has become the backbone of all the efforts to promote organic farming in the district.

These Jaivik Karyakartas worked in 120 villages across the district, reaching out to 80-100 farmers each, promoting organic farming through village- and hamlet-level training, field visits, and hands-on support.

Recognising the crucial role of women, who are often key decision-makers in families and heavily involved in farming, Self-Help Groups (SHGs) formed under the National Rural Livelihood Mission (NRLM) were also engaged in the efforts to promote organic farming.

In 2018, during a meeting with the CEO of NITI Aayog, farmers requested the administration to prevent agricultural input shops from selling chemical inputs. In response, the administration chose not to renew licenses for the sale of chemical inputs in Dantewada.

Year 2020-21

While Dantewada has several villages where farmers are by default organic or have shifted to organic practices for more than 5 years, until 2020, the only certification option was to organise all the farmers of the village into groups and register under PGS-India, a process that required 2-3 years to be completed mandatorily. It also could not be done in one go, given the significant amount of documentation needed, and would therefore have taken much longer.

The situation changed significantly in 2020-21 with the Introduction of the Large Area Certification Program by the Government of India. This simplified the organic certification process for numerous villages in Dantewada that had remained free from chemical inputs. Building on the momentum of previous efforts and leveraging the Large Area Certification program, the administration, with the support of Nirmaan Organisation since 2021, has taken various strategic steps to convert the entire district into an organic one. Among the many steps, village categorisation was carried out, dividing all the villages in Dantewada into three categories based on the number of farmers still using chemicals. PGS Regional Council, Centre for Sustainable Agriculture, has been chosen to manage Large Area Certification.

- Green Villages: Where no farmer has been using any chemicals for the past 5 years (110 villages identified).
- Yellow Villages: Where less than 10 farmers are using chemicals (84 villages identified).
- Where more than 10 farmers are using chemicals (33 villages identified).

Milestones

- National award under the Mahatma Gandhi National Employment Guarantee Scheme (MGNREGS) in 2014-15
- A New Partnership Paradigm in Dantewada – A case study on the work on organic farming in Dantewada selected in “The Sitaram Rao Livelihoods Asia Case Study Compendium 2016” organised by Access Development Services and IRMA
- Work on Organic farming covered in “District Mineral Fund (DMF) Implementation Status and Emerging Best Practices”, published by the Centre for Sustainable Agriculture (CSE) in 2020
- Bhoomgaadi is covered in the compendium “Market Access for Organic and Natural Produce Case Studies,” published by the Centre for Science and Environment (CSE) in 2022, which covers successful efforts in India.

2.2. Coverage of Agroecological Interventions

In 2018, approximately 9,500 farmers from 120 villages were registered for PGS-India organic certification. As of now, 8,780 farmers have been certified as organic, marking the highest number in any district in the state.

In 2020-21, of the district's total 23,886 farmers, only 851 (3.6%) were identified as using chemicals in the yellow and red villages. While farmers from the yellow villages are being approached individually, in the red villages, more focus is on running awareness campaigns through nighttime video screenings, community meetings, and door-to-door visits. The 110 Green villages of Dantewada, where no farmer has used chemical inputs, have been brought under the Large Area Certification (LAC) program. It was ensured that the following criteria were met.

- Each area under LAC comprises at least two villages and has no farmers practising chemical farming.
- In the past 5 years, there has been no use of chemical inputs in the LAC area.
- All the farmers in the village are included in the certification process.
- No permission has been granted for the sale of chemical inputs in the region.

In 2021, 110 villages were certified as organic under Large Area Certification, marking the most significant such geographic area in the country. Details of 5 LAC areas registered are reflected in the table below:

LAC	Development Block	No. of villages	No. of Farmers	Area (ha)
LAC 1	Geedam	4	192	639.58
LAC 2	Geedam	7	859	2985.87
LAC 3	Geedam	2	86	352.23
LAC 4	Geedam	2	57	146.44
LAC 5	Geedam, Dantewada, Kuakonda, and Katekalyan	95	9070	61155.17
Total		**110**	**10264**	**65279.29**

Table 2.1 – Details of Large Area Certification registered areas

During 2023-24, the Centre for Sustainable Agriculture began organising training programs for farmers on organic and natural farming. In 2024-25, 1200 farmers and CRPs from 110 villages were trained on organic and natural agriculture at the Krishna Sudha Academy for Agroecology in Kondaparva, Nuzvid.

Minimum Support Price (MSP)

The state of Chhattisgarh has been very proactive in terms of extending MSP procurement support to its farmers. It has widely increased its network of procurement through government societies, basically PACS and/or LAMPS. Most of the farmers those who intend to sell the Paddy at MSP to the government are generally able to do so, thanks to the procurement wide network and fairly streamlined payment system. While the state government has given high bonuses on top of the MSP, farmers receive payment of MSP usually within 15 to 20 days. Because of these there has been two-fold impact, security of the farmers have been ensured and the area under paddy cultivation has increased significantly.

Public Distribution System (PDS)

Under the PDS system, rice was made available to almost all the vulnerable and poor community communities in Chhattisgarh at very less rates like ₹1-₹2 per kg. Making rice accessible and available to everyone through PDS system, food security of the farmers was ensured. The PDS system is also digitized and there's good amount of technology used. It has been one of the most awarded[12] systems

[12] National Awards for e-Governance 2008-09: GOLD Winner in Award Category "Excellence in Government Process Re-Engineering" to 'Public Distribution System Online' Government of Chhattisgarh, Department of Food, Civil Supplies and Consumer

in India. There have been some efforts taken up intermittently to include organic rice into some of the residential schools in the state. These have not sustained for very long because of various reasons, especially due to cost related aspects. However, in FY 2025-26 a pilot of including Kodo and Kutki apart from rice in Anganwadis has been initiated under a government scheme.

Protection and National Informatics Centre, 12.01.2009 & E AGRICULTURE AWARDS: Best Government initiative of the year: Dhan Kharidi - (Online paddy procurement system), Chhattisgarh, 31.07.2008

CHAPTER 3

Current State of Agroecology in the Landscape

3.1. Agriculture (field crops, vegetables, floriculture, fruit crops)

Agriculture is a vital source of livelihood and food security for the entire rural population in Dantewada block. The region's agrarian landscape is predominantly rainfed, with monsoon-dependent farming systems shaping the agricultural practices. Most farmers engage in single-season cropping, primarily cultivating kharif crops such as paddy during the monsoon months. The area under other crops, such as millet, pulses, and vegetables, is minimal. Rabi and summer cropping remain restricted due to several interlinked challenges.

The agricultural terrain in Dantewada is largely undulating, with parcels of land at varying heights and shapes, which affects the uniformity and accessibility of arable land. Most farmers' land is divided into three distinct categories: upland (Marhan), Midland (Tikra), and lowland (Gabar). Soil types vary significantly across the block, with patches of moderately fertile soil interspersed with areas of low fertility, which further influences crop productivity. Additionally, irrigation infrastructure is limited, restricting the potential for crop diversification and year-round farming. The fragmented landholdings, combined with the diverse range of land types, contribute to the complexity of agricultural challenges in the landscape.

Since Dantewada has already been declared an Organic district, and the sale of synthetic fertilisers and pesticides is banned, farmers are applying only bio-organic inputs. Overall, agriculture in Dantewada is characterised by low-input-intensive practices, with minimal application of external inputs for nutrient or pest management. The following subsections capture the overall scenario of Agriculture and Horticulture in Dantewada.

3.1.1. Agricultural land in Dantewada Block

Dantewada Landscape Data	
Cultivated Area across different seasons	**Area (Hectares)**
Total Agriculture (cultivable) land	**34866**
Kharif area 2023	34296
Rabi area 2023	670
Total Cropped area (Kharif+ Rabi)	34966
Land not available for agriculture	570
Fallow Land	**Area (Hectares)**
Total fallow land	**6837**

Dantewada Landscape Data	
1YYear-old fallow	6202
2-5 year fallow	635
Land area by classification	**Area (Hectares)**
Bhata (Laterite soil)	12656.5
Matasi (Yellow clay soil)	8940.56
Dorsa (Sandy loam)	7473.76
Kanhar (Block soil)	5795.18

Source: Block Agriculture office

Table 3.1 – Details of agricultural land in Dantewada

3.1.2. Status of Irrigation in Dantewada

- **Irrigation Coverage:** Only **2.33% of the total cropped area** is irrigated, highlighting the high dependence on the Monsoon for cultivation and the reason for the single-season cropping system.
- **Water Sources:** Tubewells, ponds, open wells, and canals are the primary sources of irrigation, though their distribution is uneven.
- **Groundwater Availability:** Although the geological structure limits groundwater availability, seasonal fluctuations affect its reliability, and farmers perceive that the groundwater table has declined over the years. Rainwater harvesting structures and small-scale water conservation efforts are present in some villages, but they are insufficient to increase irrigation coverage significantly.

Land under irrigation (all sources)	Area (Hectares)
Kharif- irrigated land	800
Rabi – irrigated land	670
Total Irrigation Sources	**Numbers**
Tubewell	854
Pond	13
Open Well	10
Check Dam	8
Canal	3

Source: Block Agriculture office

Table 3.2 – Status of irrigation in Dantewada

3.1.3. Landholding Pattern

Landholding Titles and Farmers	Numbers
No. of Landholding Titles (Patta)	7641
No. of farmers holding these land patta	13678
Large	3190 (42%)
Total	**7641**

Source: Dantewada Block Agriculture Office & Census 2011

Table 3.3 – Landholding Titles in Dantewada

The data is seemingly straightforward wherein 13678 farmers cultivate in 7641 land pattas. However, due to lack of availability of data segregated by ownership of land sizes, it is not possible to come up with the exact number of marginal, small and large farmers & corresponding land under cultivation.

3.1.4. Cropping Patterns and Productivity of Major Crops

- **Kharif Season:** The dominant cropping season, with paddy (rice) as the major crop cultivated under rainfed conditions. In addition, traditional millet varieties such as Kodo, Kutki (Little Millet), and Ragi (Finger Millet) are grown, along with pulses like Kulthi (Horse Gram), Moong (Green Gram), Urad (Black Gram), and Arhar (Pigeon Pea). Maize is also cultivated in some areas, primarily for fodder and household consumption.
- **Rabi Season:** Limited farmers are taking crops in this season, due to low irrigation coverage. Only farmers with irrigation access cultivate rabi crops. The dominant crops include gram and mustard, but their cultivation remains restricted.
- **Cropping Intensity:** The block has a cropping intensity of 102%, indicating minimal double cropping. Rice-fallow cropping is the dominant system; most of the fields remain fallow after the Kharif season due to inadequate irrigation.

Field Crops

Season	Area- ha (2024-25)	Yield (q/ha) (estimated)	Production-MT (estimated)
Kharif Crops			
Paddy	18000	1.6055	28899
Kutki	2200	0.494	1086.8
Ragi	600	0.741	444.6
Kodo	200	0.741	148.2
Horse Gram	300	0.494	148.2
Other Pulses (Moong, Urad, Tur)	400	0.741	296.4
Til	200	0.494	98.8
Rabi Crops			
Moong (Green Gram)	400	0.741	296.4
Urad (Black Gram)	200	0.741	148.2
Chana (Gram)	50	0.8645	43.225
Wheat	40	1.482	59.28

Source: Block Agricultural Officer, Dantewada, C.G.

Table 3.4 – Cropping patterns and productivity of major crops

In Dantewada block, the average paddy yield is around 6-7 quintals per acre. Farmers primarily cultivate local hardy varieties suited to the undulating terrain and rainfed conditions. The Minimum Support Price (MSP) for paddy is ₹2,300 per quintal, and the Chhattisgarh government provides an additional ₹8 per kilogram, effectively raising the procurement price to ₹ 3,308 per quintal.

Paddy productivity in different sowing methods as per the crop-cutting experience of NIRMAAN in the Dantewada district

Sowing method	Average Yield (MT per Ha)	Remarks
Broadcasting (Traditional Method) (n=382)	1.66	Commonly practised by the majority of the farmers (~90% farmers)
Transplantation Method (n=145)	1.88	Used in lowland fields where water is sufficient (~5-8% farmers)
Line Transplantation Method (n=36)	2.04	Used in lowland fields where water is adequate, very few farmers
SRI (System of Rice Intensification (n=49)	2.12	Practised by a few farmers, the highest yield

Source: NIRMAAN

Table 3.5 – Paddy productivity in different sowing methods

Paddy productivity (Dantewada district)

Year	Kharif				
	Area (Hectare)	Production (Tonnes)	Yield (Tonne/Hectare)	Yield (Tonne/Acre)	Yield (Quintal/Acre)
2020-21	71,518.00	1,10,049.00	1.54	0.606299213	6.062992126
2021-22	71,200.00	1,01,916.00	1.43	0.562992126	5.62992126
2022-23	70,549.00	1,40,290.00	1.99	0.783464567	7.834645669
Average	**71,089.00**	**1,17,418.33**	**1.65**	**0.65**	**6.51**

Source: DES | Area, Production & Yield - Reports

Table 3.6 – Paddy productivity

Fruit crops

Crops	Area-ha (2024-25)	Production-mt
Mango	1412	827.3
Cashew Nut	788	63.7
Banana	260	592.2
Guava	178	154.3
Lemon	110	80.2

Source: Block horticulture office

Table 3.7 – Fruit crops

Vegetable crops

Crops	Area- ha	Production- mt
Arbi	540	770.3
Tomato	465	761.0
Bhindi	375	388.3
Chilli (Green)	365	365.0
Brinjal	242	441.6

Source: Block horticulture office

Table 3.8 – Vegetable crops

3.1.5. Land Use Pattern

The Dantewada block exhibits a diverse agricultural landscape shaped by its undulating terrain, where farmers cultivate crops based on variations in slope, divided into upland, midland, and lowland areas. Dantewada's agricultural landscape is dominated by **paddy cultivation in lowland areas**, while other crops are grown on a much smaller scale. The land use pattern is structured as follows:

Upland Areas (Marhan)

In the upland areas, locally referred to as *marhan*, farmers typically cultivate short-duration, e.g., *Marhan Chudi, Sathk, Gudma, etc.* (≤90 days), hardy rice varieties and millets due to the limited soil moisture retention. Landholdings are typically small, ranging from 2 to 3 acres and often scattered across multiple plots. Some farmers have converted parts of their *marhan* land into *baadi* plots (approximately 50–70 decimal[13]) during the Kharif season. These *baadi* plots are used for cultivating short-duration rice. At the same time, vegetables such as ridge gourd, cowpea, bitter gourd, bottle gourd, okra, tomato, and brinjal are grown on the bunds under rainfed conditions. While the primary use is household consumption, any surplus vegetables are sold in local markets.

[13] One Decimal is equivalent to 435.6 square feet.

Midland Areas (Tikra)

Midland areas have slightly better moisture retention than uplands and are primarily used for cultivating medium-duration paddy varieties with a duration of 90 to 120 days. The slope of these areas is also comparatively less than that of the upland areas. These areas support more consistent cropping during the Kharif season and contribute to household food availability.

Lowland Areas (Gabar)

Lowlands are perceived as more fertile and moisture-rich zones in the landscape. These varieties were prioritised or optimised for growing long-duration paddy varieties, e.g., *Neemphul, Javaphul, Loktimachi, Chudi, Hardighati, Kalamal, etc.* (120-150 days). In specific patches, vegetables are cultivated during the Rabi season. Due to their productivity, farmers focus on lowland cultivation, both for household food security and to generate income through market sales.

3.1.6. Soil and Land Characteristics

Dantewada block features a diverse range of soil types, including lateritic, yellow clay, sandy loam, and black soils, each with varying degrees of fertility. This variation is closely linked to the region's topography, which ranges from upland to lowland areas, influencing both soil distribution and land use patterns.

In the **upland areas**, **sandy loam soils** dominate. These soils are generally light, well-drained, and easy to cultivate, but have a **low water-holding capacity** due to their high sand content, making them less suitable for water-intensive crops. **Midland zones** typically have **mixed soil types**, such as **yellow clay soils**, which exhibit moderate fertility and water retention but are prone to compaction and surface crusting. The **lowland areas** are characterised by **heavier black soils (block soils)** that are relatively more fertile and moisture-retentive, making them better suited for paddy and other water-demanding crops.

A significant concern across the block is **soil erosion**, particularly in upland and midland areas. The undulating terrain contributes to **moderate to high surface runoff**, particularly during the monsoon season, resulting in nutrient loss and topsoil degradation. This not only reduces soil productivity but also undermines the sustainability of rainfed agriculture, the region's dominant farming system[14]. In the Dantewada block: 12656 hectares of area have Bhata (Laterite soil is present), followed by Matasi (Yellow clay soil) in 8940.56 hectares of land, Dorsa (Sandy loam) present in 7473.76 hectares of land, and Kanhar (Block soil) 5in 795 hectares of land.[15]

3.1.7. Agricultural Practices in the Dantewada Block

Land Preparation

Farmers in Dantewada use both draught animals and mechanised methods for land preparation. A large majority of the farmers use tractors to prepare their low and midlands. Major land preparation activities include ploughing twice to four times using tractor-mounted cultivators, levelling the land every 4-5 years, and puddling with a tractor in large, low-lying areas where the transplantation-based method is used for sowing. The preparation process varies based on the terrain and soil conditions. Fields are prepared using both tractors and draught animals, with tractors being preferred for lower-lying, flat fields and animals used in undulated, muddy fields, mainly in the uplands. On average, each village in the landscape has 5-6 tractors that farmers collectively use for land preparation and other agricultural tasks.

[14] Information is based on the discussion with Dantewada KVK, agriculture department and farmers.
[15] As per the Block Factsheet developed by the district administration. See here.

Land levelling is a high-investment activity for farmers, as fields are undulated and uneven in topography and require multiple hours of tractor-mounted land leveller operations to level them. Only a few farmers have undertaken land levelling activities in their fields so far.

Sowing

The majority of farmers use broadcast sowing for all major crops — paddy, millets, and pulses — during the Kharif season. While broadcasting is the only method for seed sowing in upland areas, farmers use either broadcasting or transplantation in the midlands.

Some farmers practise transplanting in areas where water is available for puddling and flooding. For normal transplantation, farmers cultivating one acre of paddy nursery require 10-15 kg of seeds, whereas, in the System of Rice Intensification (SRI) method, they use 2-3 kg of seeds for transplantation. Even farmers who practice transplanting or SRI-based paddy sowing do so only on smaller plots, e.g., 1-2 acres of their total land. Most farmers use their own saved seeds for cultivation, although some purchase certified seeds (in 30 kg packets) from LAMPS or acquire seeds through exchanges with farmers in the villages.

For direct seeding, farmers broadcast approximately 35-40 kg of seeds per acre. Dry seed sowing is the predominant method in areas with high water flow. Early dry sowing helps ensure that the paddy saplings reach a sufficient height by the time heavy water flow begins. In muddy land, farmers practice broadcasting sprouted seeds to ensure better germination. When the field is muddy in lowland regions, farmers also adopt the *Biasi* method, which involves ploughing the field after initial seedling establishment to enhance plant growth. Several local rice varieties are commonly grown in the region, including Chudi, Loktimachi, Neemphul, Jeeraphul, Sathka, Gudma, and Hardighati. Farmers prefer these local varieties due to their suitability to local climatic conditions, superior taste, and resistance to pest infestations, particularly whitefly, which they claim is less prevalent in traditional rice varieties.

Nutrient Management

Due to comparatively larger land holdings, limited availability of organic manure (cow dung), and the rainfed nature of farming, nutrient management is not a common practice for field crops in the Dantewada landscape. Only a small number of farmers prepare and use bio-inputs for field application. Some farmers prepare compost at home and apply it to their fields, but the widespread use of organic fertilisers remains limited. Based on the availability of cow dung, farmers apply the dried cow dung manure once every 3-4 years in the fields.

Sometimes, farmers in Dantewada apply green manure to their fields, particularly when the Agriculture Department distributes seeds such as dhaincha (sun hemp). These seeds are sown during the pre-kharif or fallow period, and the biomass is ploughed back into the soil before flowering.

The proximity of fields to forest areas and the availability of trees in the fields allow natural decomposition of a substantial amount of plant biomass, such as leaves, seeds, and other such material. Farmers also believe that water flowing from the forest contains many nutrients and helps maintain the fertility of their soil.

Pest and Disease Management

Farmers in Dantewada do not use chemical pesticides for pest and disease control. They report that local rice varieties have lower pest infestations, making external pest control measures less necessary. Instead, they rely on traditional and organic pest management practices.

The proximity of fields to forest areas and the availability of trees in the fields allow natural decomposition of a significant amount of plant biomass, such as leaves, seeds, and other such material. Farmers also believe that water flowing from the forest contains a lot of nutrients and it helps in maintaining the fertility of their soil.

For pest control, farmers use:

- *Karla* (plant found in forest) leaves, *Salfi* leaves, and *Mahua siti* (residue of mahua left after fermentation and distillation of liquor) as organic pest repellents.
- Neem oil for controlling powdery mildew in vegetables and other crops.
- Spiderwebs are used to trap and remove pests from plants.
- Some farmers prepare bio-leaf extracts.

Farmers reported no major diseases have been observed in the region, likely due to the cultivation of hardy traditional varieties.

Weed Management

Manual weeding is the most common practice in the landscape, primarily due to the availability of family labour for weeding, the difficulty of mechanical weeding in broadcasted paddy fields, and the lack of appropriate mechanical weeders in the landscape.

Harvesting

Farmers primarily practice manual harvesting, with both men and women participating. During the kharif season, harvested crops are bundled and threshed. Threshing is done either by mechanical threshers or by animals. After harvesting, some farmers store paddy straw for livestock feed, while others leave the paddy straw in the field, as there are cultural and religious beliefs that prevent them from taking their paddy straw back to their homes. Some of the harvested produce is reserved for household consumption, while the surplus is sold directly to (i) traders, (ii) local markets, and (iii) LAMPS. Farmers cultivate vegetables in backyard gardens (*baadi*), and the fresh produce is either used for household consumption or sold in local markets and the Geedam and Bacheli weekly market.

> In some of the villages in landscape, there is a strong religious and cultural belief system based on the assumption that certain areas belong to a particular deity, and they should not take back paddy straw and some other agriculture commodities from their area to other deity's areas. This belief systems limits the availability of dry fodder to livestock during the winter and summer months.

In some villages in the landscape, there is a strong religious and cultural belief system that holds that certain areas belong to a particular deity and that they should not take back paddy straw and other agricultural commodities from their location to other deities' areas. This belief system limits the availability of dry fodder to livestock during the winter and summer months.

Post Harvesting

After the threshing of paddy, farmers set aside part of the produce for household consumption and next year's seed requirement. Paddy is dried and cleaned at the household level before storage. Farmers use traditional drying and cleaning techniques to ensure proper storage and maintain grain quality.

In other crops, such as millets and pulses, there are minimal post-harvest operations before they are sold in the market. For self-consumption, farmers either process commodities manually at the household level using traditional crafts or have them processed in nearby markets.

Grain Storage Practices

Farmers store rice primarily for year-round household consumption. Traditional bamboo drums (locally crafted), plastic drums, and poly bags are commonly used for storage.

3.1.8. Market System for Agricultural Produce

As highlighted earlier, paddy is the primary crop grown in the Dantewada landscape. Farmers typically prefer to consume their own paddy, as it is cultivated without chemical fertilisers or pesticides, making it more desirable for household consumption. Accordingly, they first set aside a sufficient quantity of

paddy to meet their family's consumption needs for the entire year, including requirements for seed, festivals, and social occasions. Only the surplus production, if any, is sold in the market.

For other crops such as millets, pulses, and oilseeds, a similar practice is followed. After reserving enough for household consumption, the remaining produce is sold either through the Bhoomgaadi Farmer Producer Company or at local haat (weekly village) markets. This pattern reflects the predominantly subsistence nature of farming in the region, with market engagement occurring only when there is excess beyond the family's needs.

- As of February 2025, a total of 16,124 farmers are registered under the paddy procurement system from the Dantewada district.
- 33,431.56 metric tonnes of paddy have been procured from 8,317 farmers, indicating that only 51.58% of registered farmers directly sell their produce at procurement centres.
- Six procurement centres exceeded their buffer storage limit, leading to 9,172.76 metric tonnes (27.44%) being stored at these centres, while 14,606 metric tonnes (43.68%) were sent to millers for processing.

Some of the major markets and their functions are as follows:

Major markets	Main commodities	Remarks/ Character
Public Procurement System (MSP procurement)	Normal variety of paddy *(Mota dhan)*	LAMPS procures paddy at a procurement price of Rs. 31 per kg (the Final procurement price has been fixed at Rs. 31 per kg, inclusive of the state government's bonus for the last two years). While the GoI has increased MSP, the procurement price has remained fixed at Rs. 31 per kg.
Local traders	NTFPs and other items	The majority of sales of NTFPs and other items happen to local traders, generally at exploitative prices.
Weekly Haat markets	Vegetables, fruits, pulses, paddy, and millets	Significant market systems for both selling and buying a range of agricultural, NTFPs, and other products. Horticultural crops, such as mango, guava, banana, and vegetables (including tomato, chilli, and coriander), are mainly sold at block-level markets and village haats.
Bhoomgaadi FPC	Scented and other indigenous rice varieties, millets, pulses, and other non-perishable commodities	Bhoomgaadi procures from both members and non-members, depending upon the demand projection.

Some of the local haat markets in the landscape and their distance from Dantewada:

Location	Day	Distance (km)	Location	Day	Distance (km)
Kirandul	Sunday	50	Geedam	Sunday	13
Bhansi	Monday	20	Chhindnar	Monday	30
Bacheli	Wednesday	25	Dantewada	Wednesday	0
Katekalyan	Friday	45	Barsur	Friday	35
Nakulnar	Saturday	25	Tumnar	Saturday	30

3.1.9. Technology Access

Physical Technology & Mechanisation

The usage of tractor-mounted equipment for ploughing, land levelling, threshing, and transportation has increased significantly in the Dantewada block. This is gradually replacing the farming operations that draft animals once did. There are tractors and the necessary implements to support mechanised agriculture. Farmers hire these implements either on an hourly or per land unit basis.

Since farmers in the landscape have fragmented, undulating land parcels with varying slopes, along with a considerable number of trees in the mid- and uplands, they sometimes find it challenging to perform agricultural operations with large implements. Additionally, with the increasing cost of mechanised farming operations and the limited availability of bullocks, farmers believe that smaller equipment powered by solar/ batteries could be more suitable for local farming conditions.

Technology – Digital

During the field visit, it was observed that digital technology adoption in agriculture remains limited among farmers in Dantewada. The use of mobile applications for weather forecasting and crop-based recommendations is minimal. The adoption of smartphones is increasing, particularly among young farmers. The farmers with smartphones are also accessing the need-based internet. The use of mobile applications, such as WhatsApp and YouTube, is becoming increasingly common among smartphone users. **Few women own smartphones**, but in **villages like Bhairambandh**, some Women **SHG members use smartphones** for communication and watching informational videos, suggesting potential for digital literacy initiatives.

Overall, both awareness of and adoption of digital technology, as well as access to information and knowledge through digital platforms, are minimal. However, local youths have shown a willingness to explore digital communication and knowledge sharing through media and platforms.

During a visit to the **Geedam APMC market**, it was observed that **digital payment adoption remains low** among local farmers and women engaged in direct selling. Most **small-scale sellers of agricultural and horticultural produce accept** only cash. In contrast, **larger traders dealing in bulk agricultural commodities accept digital payments**.

3.1.10. Access to Formal Finance for Agriculture

Kisan Credit Card (KCC) and Institutional Banking

- The **District Central Co-operative Bank** has a branch at the block level to facilitate transactions for farmers.
- As of **February 2025**, **5,040 farmers have been issued Kisan Credit Cards (KCC)**
    - **Three thousand four hundred eighty-four farmers belong to revenue villages** (having land titles).
    - **1,556 farmers hold forest patta (land rights for forest dwellers)**

3.1.11. Institutions (SHGs, FPOs, CSOs, PACS) & Gender

Large Area Multi-Purpose Societies (LAMPS): The block has 7 LAMPS covering 1648 farmers[16], which are part of 21 LAMPS in the Dantewada district. These societies provide credit, input supply, and food grain procurement services to the member farmers. To enhance their role, efforts are being made to transform LAMPS into Multi-Service Centres (MSCs). These MSCs will offer agri-inputs, warehousing, custom hiring services, processing facilities, and market linkages, making LAMPS more economically sustainable and beneficial for farmers. These LAMPS are also responsible for procuring paddy. The following data was received from the District Cooperative Bank in Dantewada.

- Procurement is conducted at the Minimum Support Price (MSP) set by the government.
- As of February 2025, a total of 16,124 farmers are registered under the paddy procurement system.
- For the year 2024-25 paddy procurement season, a total of 33,431.56 metric tonnes of paddy have been procured from 8,317 farmers, indicating that only 51.58% of registered farmers directly sell their produce at procurement centres.

Bhoomgaadi Farmer's Producer Company Ltd: Promoted by the district administration with the support of NIRMAAN, Bhoomgaadi is a collective of 3,000 tribal organic farmers – primarily women –

[16] https://drive.google.com/file/d/1fQeAitLs-mDTQIYYloxiP8m, includingONatl, includingWtJZ/view?usp=sharing

from Dantewada district of Chhattisgarh. Incorporated in 2016, Bhoomgaadi aims to connect the indigenous and diverse organic produce of the community with the urban market in India. Bhoomgaadi organises tribal women and small and marginal farmers from remote villages to gain collective bargaining power and market scale. Bhoomgaadi procures more than 30 types of produce from the farmers, including various indigenous varieties of paddy, millets, pulses, oilseeds, spices, and some quantities of forest produce.

3.1.12. Women's Participation in Agriculture

Women in Dantewada play a central role in agricultural activities, contributing significantly to crop production, livestock management, and the collection of Non-Timber Forest Products (NTFPs). Their participation extends across multiple stages of farming, from sowing seeds to applying biofertilizers and biopesticides, weeding, and harvesting, as well as post-harvest processing. Women are actively engaged in sowing, weeding, transplanting, and harvesting crops, especially paddy, millets, and vegetables. Women sell produce at nearby haat markets.

- **High engagement in Agricultural activity:** Women are actively involved in various agricultural activities across different crop cycles. They participate in land preparation, sometimes using draught animals, and play a crucial role in sowing, intercultural operations, weeding, and harvesting. Additionally, they engage in the preparation and application of biofertilizers and biopesticides, as well as post-harvest activities such as threshing, cleaning, and storage, which further add to their workload.
- **Non-Timber Forest Product (NTFP) Collection and Trade:** Women are also responsible for collecting, processing, and storing NTFPs, including mahua, tendu leaves, tamarind, and medicinal plants. They often take these products to local markets for sale, generating additional household income. In horticulture, women are primarily responsible for selling fruits and vegetables in nearby markets.
- **Alcohol Brewing and Livelihoods:** Many women are engaged in the traditional brewing of liquor using mahua flowers and salfi (palm extract), which they sell in the local market. This serves as a key source of income for several households.
- **Livestock Management and Household Responsibilities:** Beyond agriculture and forest-based livelihoods, women also manage livestock, feeding and caring for cattle, goats, and poultry. Alongside this, they handle all household responsibilities, including cooking, cleaning, fetching water, and caring for children.

3.1.13. Enablers & Constraints in Agriculture Production

Inputs	Enablers	Constraints
Seeds	• Farmers primarily use their own saved seeds and local varieties to cultivate paddy and millets, and sometimes to grow vegetables; these seeds are resilient to local climatic conditions. • Traditional seed exchange practices among farmers within and across villages ensure the availability of diverse seed types, enabling farmers to cultivate a range of varieties over time. • Some farmers practice seed treatment using organic materials such as cow dung, cow urine, and saline water to enhance seed quality. • Locally preferred paddy varieties, including Chudi, Loktimachi, Neemphul, Jeeraphul, Sathka, Gudma, and Hardighati, are widely	• Farmers are not maintaining pure lines of local seed varieties, leading to genetic mixing over time. • Absence of seed selection practices through the identification of healthy plants at the growth stage, leading to the unavailability of selected quality seeds. • Dependence on traditional seed sources restricts crop diversification and potential productivity improvements. • Lack of awareness regarding proper seed treatment practices and the importance of maintaining pure lines of local varieties. • Due to water scarcity, farmers are unable to raise seedlings for paddy transplantation and other horticulture crops.

Inputs	Enablers	Constraints
	grown due to their superior taste and lower pest infestation.	
Nutrient Management	• The sale of chemical fertilisers is already banned in the district, creating a level playing field for all farmers in the landscape. • Availability of composting material like leaves, forest plants, seeds, and fruits. • Some farmers prepare compost at home and use traditional bio-fertilisers. • Farmers are leaving paddy residues in the field for composting, which also adds nutrients to the soil.	• The practice of open grazing of animals is a significant contributor to the limited availability of manure for households to use for agricultural purposes. Most farmers do not use any external bio-fertilisers due to restricted access and availability in the village and nearby places. • Insufficient nutrient application in the soil leads to a decline in soil fertility, ultimately resulting in lower productivity. • There is a gap in awareness and interest in the preparation of bio-fertilisers and management practices. • Lack of financial incentives for the application of organic manure/ fertilisers.
Pesticides and weedicides	• Farmers' knowledge and awareness of the indigenous pest management practices.Such as using neem oil (in vegetable cultivation), mahua siti spiderwebs, and karla plant or salfi leaves. • Local paddy varieties exhibit natural resistance to pests, reducing dependency on synthetic pesticides. • Tribal farmers consume certain weeds (akin to leafy vegetables) that grow in the rice field, such as Silyari Bhaji, integrating them into their diet. This limits extra efforts towards weed removal.	• Limited preparation and use of bio-pesticides such as paanch patta kada, Agniastra, etc., despite the presence of cultivation of other horticulture and pulse crops. • Farmers are not accustomed to purchasing agricultural inputs from the market; this limits their behaviour, even when buying bio-inputs from BRC or other local enterprises.
Appropriate agricultural equipment	• Availability of tractors and implements for mechanised farming operations. • The use of heavy implements, such as the Rotavator and MB plough, is limited in the region, which prevents deep ploughing and high soil disturbance. • Availability of bullocks and draught animals for farming operations	• Limited availability of mechanised, smaller agricultural implements, which are better suited to undulated terrains. • Due to a single cropping season, farmers are finding it challenging to cover their investment in agricultural implements; thus, their availability is limited. • Both the quality and availability of draught animals are getting worse with each passing year. Also, the cost of bullocks is increasing. This is leading to high dependence on mechanisation. Farmers are finding it challenging to undertake 'Biasi' operations in their fields, which the draught animals essentially do.
Extension Systems	• Traditional Knowledge & Practices of the local communities for different farming operations. • Practice of exchanging seeds, manure, knowledge, and labour for farming operations.	• Changing farmers' behaviour and practices in a remote location like Dantewada is a slow and gradual process that may take considerable time.

Inputs	Enablers	Constraints
	• Availability of Jaivik Karyakartas at the village level to help farmers in improving their practices and prepare bio-inputs for application in their fields.	• Availability of human resources to deploy as local cadre/extension officers • Lack of training institutes/facilities for the regular training of communcadresadre/farmers around agroecological practices.

3.1.14. Enablers & Constraints – Markets and Trade (Storage, Warehousing, Processing, Logistics, Certification)

Enablers	Constraints
• **Local Market Access:** Farmers sell agricultural produce such as paddy to LAMPS and millets to Bhoomgaadi. Some farmers sell millets and horticultural produce directly at weekly markets (Haat Bazaars) in Dantewada, Geedam, and other locations. • **Paddy Procurement by Government:** The government procures paddy (mota dhan) at ₹31/kg (₹23/kg MSP + ₹8/kg bonus by the Chhattisgarh government). • **Presence of Small-Scale Mills:** Rice mills and Oil extraction units are present in village clusters, supporting basic processing. • **The growing demand for Organisations** like Bhoomgaadi FPC promotes local millets, creating opportunities for farmers to sell their produce at better rates. • **Storage of Produce for Household Needs:** Farmers store paddy and millet at home for consumption, ensuring year-round food security. • **Organic & Traditional Crop Appeal:** A preference for organic, certified traditional rice varieties and millets can create niche market opportunities.	• **Limited Storage & Warehousing Infrastructure:** The limited prevalence of proper dry godowns/warehouses and cold storage facilities contributes to increasing post-harvest losses and distress sales, especially for horticultural produce. • **Lack of Value Addition & Processing Units:** Minimal processing facilities exist in the block. While small-scale rice mills and oil mills exist at the village cluster level, there are also a few rice mills at the block level. Additionally, there is a lack of processing facilities for millets (*kodo and kutki*). Community institution-level successful processing businesses are hard to find. • **No Access to Institutional & Digital Markets:** eNAM (Electronic National Agriculture Market) and other digital trading platforms remain unutilized, restricting access to better prices and broader markets. • **Weak Supply Chain & Logistics:** Poor rural road connectivity in remote areas and a lack of proper transportation facilities increase post-harvest losses and transportation costs. • **Financial Digitalisation Gaps:** Cash-based transactions dominate local trade, limiting access to digital payment in the tribal community.

3.1.15. Existence of Payment for Ecosystem Services (PES) Mechanisms

Farmers cultivate local paddy, millets, and vegetables without fertilisers, pesticides, or weedicides, which supports soil health, water conservation, and ecological balance. Additionally, the landscape has natural forest cover, diverse flora and fauna, and indigenous agroforestry systems, which contribute to carbon sequestration, watershed protection, and biodiversity conservation. Despite the region's chemical-free farming practices and rich biodiversity, currently, there are no active Payment for Ecosystem Services (PES) mechanisms in Dantewada.

Agriculture's Connection with Other Domains

Agriculture in the Dantewada block landscape is deeply intertwined with animal husbandry and forestry, forming a holistic, interdependent system that sustains rural livelihoods. The following are key connections:

Agriculture and Animal Husbandry

- **Livestock as a source of seed treatment and manure:** Farmers use cow dung and urine as seed treatment material. In some households, farmers prepare a mixture of cow dung fertiliser and apply it to the field during land preparation.
- **Land Preparation:** Farmers still **use bullocks for ploughing, particularly in muddy lowland areas and upland** areas where tractors are unable to reach and are challenging to ply.
- **Fodder and Crop Residue:** Paddy straw, maize stalks, and millet husks are stored and **used as animal fodder**, ensuring livestock nutrition.
- **Dung for Energy:** Some farmers use **dung cakes as cooking fuel**, reducing dependency on external energy sources.
- **Covering the storage container:** Farmers used to paint containers with a paste made from cow dung to prevent paddy from being contaminated by pests and diseases.
- Dung from animal husbandry is used as an input in biogas production.

Agriculture and Forestry

Agroforestry and Livelihoods: Farmers are collecting and selling a range of agroforestry products. Mango, Tamarind, Jamun, Amla etc. Farmers are also collecting NTFPs, such as **mahua, tamarind, sal seeds, and tendu leaves**, from forests, which provides them with a significant income. Some products, such as **mahua flowers, Salfi, and Chhind (date palm), are used in liquor production**, which is a substantial part of the local economy.

Agroforestry for food: It plays a crucial role in household food security in Dantewada. Various forest-based produce, including seasonal fruits, leafy vegetables, seasonal mushrooms, and tubers, are an essential part of the local diet. These naturally available resources supplement household nutrition and provide a sustainable year-round food source. Women, in particular, gather **tubers and seasonal mushrooms**, which they consume fresh or dry for later use.

Forest leaves as compost: The **leaves from forest trees naturally decompose in agricultural fields**, enriching the soil with organic matter. Farmers sometimes incorporate these leaves directly into their fields, where they **break down and act as natural compost**, improving soil fertility.

Pest and Disease Management: Farmers use **Neem leaves/ Neem oil and Salfi leaves** as **natural pesticides** in their fields.

Soil and Water Conservation: Forest cover in **hilly terrains** helps **reduce soil erosion and increase groundwater recharge**, indirectly benefiting agriculture.

Fodder Availability: Farmers allow their livestock to graze in **forested areas**, reducing dependence on cultivated fodder crops.

Firewood for Cooking: Many households rely on **firewood from forests** as an alternative energy source.

3.1.16. Current Schemes (Opportunities for Convergence, Fund Availability)

Convergence committees, intended to facilitate coordination across departments in agriculture, rarely function in the spirit for which they were established. While structures like the District Level Convergence Committee (DLCC) exist, actual convergence is primarily driven by district authorities such as the Collector or Zilla Panchayat CEO. Weekly review meetings led by the Collector may touch upon convergence, but these are mainly for departmental reviews rather than genuine collaborative planning and decision-making. Overall, functioning convergence mechanisms are minimal at the block or gram panchayat level. Regarding local institutions, the effectiveness of the Gram Sabhas varies from village to village. In some villages, they are active and have been engaged in discussions on organic farming, passing resolutions, and introducing social control measures for cattle and forest management, among other initiatives. However, overall awareness and participation remain moderate,

with significant scope to strengthen the role of Gram Sabhas, particularly in areas like Community Forest Resource (CFR) management.

3.1.17. Organic Farming in Dantewada and Government Initiatives for Promotion

Dantewada district, situated in the tribal heartland of Chhattisgarh, has demonstrated a growing interest in sustainable agricultural practices, particularly **organic and natural farming. Recognising** the region's ecological sensitivity and the potential of traditional practices, the Government of Chhattisgarh has launched several initiatives to promote organic agriculture to improve rural livelihoods, conserve natural resources, and ensure long-term soil health.

In Dantewada, organic farming is promoted through schemes like the **Paramparagat Krishi Vikas Yojana (PKVY)**, under which **500 hectares** have been brought under organic cultivation, and the **Jaivik Kheti Mission**, a state-led initiative with **80 hectares** currently covered. These emphasise training, certification, and collective marketing support to farmers practising organic methods.[17]

Additionally, broader rural development and agricultural enhancement schemes complement the organic movement:

- **The Rashtriya Krishi Vikas Yojana (RKVY)** is helping to create infrastructure, such as storage units and irrigation systems, which are critical for handling and preserving organic produce.
- **National Horticulture Mission (NHM)** aids in the development of nurseries and post-harvest infrastructure for horticultural crops, many of which are grown organically in the region.
- **The Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)** improves irrigation access, ensuring that even organic plots receive adequate water.
- **Soil Health Management Schemes** ensure that farmers regularly test soil and use inputs judiciously, reinforcing the sustainability of organic farming.

Through these integrated efforts, Dantewada is gradually emerging as a hub for **natural and organic agriculture**, linking traditional tribal knowledge with modern-day sustainability goals, and empowering local communities—especially women and smallholders—to build resilient agroecological livelihoods.

3.1.18. Climate-Related Challenges

In Dantewada, the impacts of climate change are becoming increasingly evident through shifts in rainfall patterns and temperature fluctuations. One of the most prominent changes is the irregular and intense nature of rainfall. Rain now tends to arrive in fewer but heavier spells, disrupting the timing critical to crops like paddy. At times, the monsoon arrives late and ends with intense downpours damaging harvested crops, while in other years, excessive rainfall at the beginning damages germination and early crop growth. These erratic patterns, including unpredictable dry spells between rain events, are directly affecting agricultural productivity. In some cases, heavy rainfall has led to significant soil erosion, with entire sections of farmland washed away, resulting in structural losses that cannot be recovered.

Beyond cultivated agriculture, forest-based livelihoods are also being impacted. Unseasonal summer rains have disrupted the flowering and fruiting cycles of key non-timber forest products, such as tamarind and mango, and have also impacted the quality of the final produce. Warmer winters are suspected to be affecting fruiting processes, with a likely decline in both the quantity and quality of forest produce. These ecological shifts, though sometimes subtle, are undermining the reliability of forest resources that many depend on for income and subsistence.

While chemical inputs are minimal in the region, farmers are spending more time and effort monitoring their fields. The need for greater vigilance and labour to respond to rapidly changing weather conditions is becoming a notable burden. Although the effects of rising temperatures on livestock are less well documented locally—partly due to different human-animal relationships and low-intensity rearing practices—there is concern about emerging risks, particularly with the increasing frequency and early onset of heatwaves. Cyclones do not directly hit Dantewada, but their indirect effects are

[17] As per the Chhatisgarh Natural Farming State Profile on the bwesite of the NITI AAYOG

evident in unseasonal, heavy rains that further disrupt agricultural routines. Overall, climate variability is increasing instability in both farming and forest-based systems, with growing implications for livelihoods, resource health, and long-term resilience.

Several climate-induced risks affect Dantewada's agriculture and natural ecosystems:

- **Soil Degradation and Erosion:** Heavy rainfall events and deforestation contribute to topsoil erosion and declining soil fertility.
- **Dry spell:** The region heavily depends on monsoons, making it vulnerable to dry spells and delayed rainfall, which affect sowing patterns. Prolonged dry spells reduce groundwater recharge, limiting irrigation potential.
- **Limited Irrigation Facilities:** Only 2.33% of the total cropped area is irrigated, leaving significant reliance on rain-fed farming. Borewells, ponds, and check dams are inadequate for large-scale irrigation.
- **Forest Degradation:** Rising temperatures and erratic rainfall stress local biodiversity and reduce the availability of non-timber forest products (NTFPs), which are vital for tribal communities. Communities have reported a significant reduction in the availability of NTFPs.

3.1.20. Opportunities (Building on Existing Strengths)

One of the key opportunities for promoting agroecology in Dantewada stems from the local administration's initiative to integrate organically grown paddy—procured through the MSP system—into the Public Distribution System (PDS).

This progressive move not only incentivises farmers to adopt organic and agroecological practices but also aligns with local preferences, as communities show a strong inclination towards consuming safe, chemical-free rice. By replacing conventionally sourced rice with locally grown organic paddy in the PDS, this initiative can create a supportive policy and market environment that reinforces agroecological transitions.

Prevalence of Indigenous Crops & Rich Biodiversity:

The Dantewada block is home to a wealth of agro-biodiversity, with farmers cultivating traditional PES indigenous paddy varieties, such as *Chudi, Jeeraphul, Hardi Gati, Javaphul, Neemphul,* and *Loktimachi*. These indigenous varieties are not only pest-resistant but also hold high cultural value and are sought after for their unique taste and aroma. Cultivation of minor millets (kodo and kutki), vegetables (indigenous varieties), and tuber crops (indigenous varieties) in upland and forest-adjacent areas highlights a village community's wisdom and agro-ecological way of farming. It therefore opens avenues for promoting nutritional security through consumer awareness campaigns and the creation of local organic markets, providing access to diverse products for health & nutrition-conscious consumers. The district's emphasis on biodiversity conservation also sets the stage for exploring Payment for Ecosystem Services (PES), where farmers are rewarded for maintaining ecologically sustainable landscapes.

Chemical-Free Agriculture & Certified Organic Farming

Farmers in the Dantewada block (and the district too) widely practice low-agri-input (natural inputs—both external and internal) agriculture rooted in traditional knowledge. This existing orientation toward synthetic-chemical-free farming provides a strong foundation for expanding **organic certification in the area**. While the Large Area Certification pilot project is being implemented in the district, it presents an excellent opportunity to build forward-looking community institutions and scout and/or create market opportunities to fetch better prices.

Indigenous Seed System

The vibrant system of **community-based indigenous seed saving and exchange** among farmers in Dantewada plays a crucial role in the **preservation of the diversity of indigenous seeds**. This practice not only ensures seed sovereignty but also enhances resilience to climate variability and market

uncertainties, offering a critical entry point for strengthening **in-situ conservation** initiatives and participatory plant breeding. Conceptualisation and Creation of a Seed Bank to maintain the diversity and preserve the genetic purity of indigenous seed could be explored at a village-cluster level to augment the practice and to create a business line.

Community-Based Approaches & SHG Participation

Women-led Self-Help Groups (W-SHGs) in Dantewada are already engaged in small-scale food processing, seedling nurseries, and marketing of seasonal produce. With further investment in **capacity building, packaging, and market access**, these groups can become key players in the value chain of such **rural agribusinesses**. Strengthening SHG federations and linking them with **e-commerce platforms of Farmer-Producer Organisations (FPOs)** can enhance their income and bargaining power.

Government Schemes & Convergence Opportunities

There is significant scope to align ongoing initiatives in Dantewada with schemes such as PMKSY (to expand irrigation through community tanks and check dams), NHM (to promote kitchen gardens and horticulture), and RKVY (to support agricultural infrastructure). Institutions like NABARD can provide soft funding for the construction of cold storage facilities, processing units, and packaging centres, enabling better post-harvest management and greater value retention at the local level.
Agroforestry & Sustainable Land Use Practices:

The integration of wild fruits, tubers, and leafy vegetables into daily diets reflects existing agroforestry practices that can be further enhanced through structured interventions. Promoting multi-tier cropping systems that incorporate fruit trees, shade-tolerant crops, and seasonal vegetables can support year-round food and income security, particularly for marginal and tribal farmers in upland areas.

Processing & Value Addition Potential

While Dantewada has basic agro-processing units, such as paddy mills, oil expellers, and dal mills, these are often underutilised due to inconsistent supply, lack of business models, or insufficient technical support. Establishing **cluster-level common facility centres (CFCs)** with improved technologies for **millet cleaning, de-husking, grading, drying, packaging**, and market linkages can unlock the potential for **value-added agri-enterprises**. Linking these efforts with branding—such as ***a "Naturals from Dantewada"*** label—can enhance product visibility and demand.

Vegetable cultivation in Baadi (homestead) by one of the households

Collection of cow dung for application in the Baadi

Storage of paddy for household consumption and seeds for the next season

An indigenous tool used for hulling paddy at home for self-consumption purposes

An agricultural field post-harvesting of the Kharif crop

Storage of maize for consumption and seed purposes

Fig. 3.1 – Images from the field around Agricultural Practices

3.2. Non-Timber Forest Produce

Non-Timber Forest Produce (NTFP) is an alternative term used for Minor Forest Produce (MFP). In this report, while NTFPs have been used extensively, MFPs, as mentioned in the referred government literature and data, have been retained.

3.2.1. Classification of NTFPs

- NTFP may be segmented into the following four categories based on their use.
  - Food items sourced from fruits, nuts, tubers/rhizomes, leaves and stalks
  - Medicinal items sourced from leaves, flowers, seeds, galls, barks, roots, whole plants and exudates
  - Industrial use items sourced from fruits, seeds, fibre, resin and sap
  - Domestic use items sourced from small wood (firewood), grass (fodder), bamboo, bark and pods (fibres)
- Medicinal-use and industrial-use items are generally of high value, while food-use and domestic-use items are of moderate to low value.

- Furthermore, items sourced from leaves, galls, barks, roots, exudates, and whole plants are available over a more extended period, while those sourced from flowers, seeds, and tubers/rhizomes are seasonally available.
- Therefore, many food and household items are likely to be available for more extended periods, while industrial and medicinal items are restricted to specific seasons, except for a few.

In light of this natural cycle, it is essential to develop multi-commodity-based intervention plans that provide collectors and/or their collectives with a stable income from regular business throughout the year. This approach, however, requires enumerating and quantifying various types of NTFPs collected by the villagers.

NTFPs in Dantewada

The production system of NTFPs in Dantewada is from Tropical forests and from farmers' agricultural lands (typically an agroforestry system). Production in wastelands/public lands, as well as cultivation of select species, was not observed. Tribal villagers' lifestyle is co-terminus with the forest. Every village household collects a range of Non-Timber Forest Products (NTFPs), including fuelwood, edible flora and fauna, and a variety of other produce, which are collected, dried, cleaned, stored, and sold as needed. Forests have a significant influence on how tribes live. Hence, managing and protecting forests is one of the most essential elements, grounded in traditional practices. Village-level institutions, such as FPC and VSS, often overlook this.

NTFPs are reported to be collected by villagers

Name of NTFPs collected	Scientific Name	Collected from	Uses	Period of Collection
Fuel wood		Only Forest land	Single	Throughout the year, except for the rains
Tendu leaf	Diospyros melanoxylon	Both Agri & Forest Lands	Single	45 days
Char fruit (*char guthli*)	Buchanania lanzan	Only Forest land	Multiple	1 month
Mahua flower	Madhuca longifolia	Both Agri & Forest Lands	Single	2 months
Mahua seed (*Tora*)	Madhuca longifolia	Both Agri & Forest Lands	Single	15 days
Bamboo (*Baans*)	Bambusa vulgaris	Only Forest land	Multiple	As required
Harida fruit	Terminalia chebula	Only Forest land	Multiple	1 month
Baheda fruit	Terminalia bellirica	Only Forest land	Multiple	1 month
Amla fruit	Phyllanthus emblica	Only Forest land	Multiple	1 month
Tamarind	Tamarindus indica	Both Agri & Forest Lands	Multiple	1 month
Mango fruit	Mangifera indica	Both Agri & Forest Lands	Multiple	1 month
Elephant Foot Yam (*Jimikand*)	Amorphophallus paeoniifolius	Only Forest land	Multiple	As required
Mushroom (Futu)	Agaric fungus (Termitomyces heimii)	Only Forest land	Single	Several timelines
Sal seed	Shorea Robusta	Only Forest land	Multiple	15 days
Sal Leaf	Shorea Robusta	Only Forest land	Single	As and when required
Siali Leaf	Shorea Robusta	Only Forest land	Single	As and when required

Non-Timber Forest Produce Collection Calendar

This Forest Produce Collection Calendar for Dantewada Block was developed based on insights gathered during group discussions with forest-fringe dwellers (primary collectors of NTFPs). It reflects the community's collective knowledge, enabling edge decoding of seasonal patterns in forest reutilisation.

Month	Forest Produce Collected	Frequency of Visit	Notes
January	Sargi leaves, Tamarind (Imli), Chiyur leaves, Mahua flowers	~15 days/month, 2 times/day	Households visit the forest regularly; firewood and *Chakda* (Red Ants) are collected year-round
February	Mahua, Tendu, Cashew, Ber, Tamarind	Daily, from early morning till daytime	Peak season for Mahua collection; entire households are engaged
March	Mahua, Tendu, Imli, Bella, Ber	Daily visits	Continued collection of seasonal forest fruits and flowers
April	Tora, Char, Belwa, Mango, Indigenous Date, Chuchundi	Frequent visits	A variety of early summer fruits were gathered
May	Amla, Mango, Sail, Jamun, Kusum (for oil), Sragi, Siyadi fruits, Tendu leaves	Regular visits	Fruits and oil-yielding seeds; high-value NTFPs like Tendu leaves are collected
June	—	—	Generally low forest activity; focus shifts to farming and rains
July	Various mushrooms (Futu): Sargi soda, Banyan futu; Amaranthus, Kuniyari, Karot.a leaves	During rains	Monsoon mushrooms and leafy greens collected; highly nutritious and seasonal
August	Tubers: Baigur, Manni, Kand kadu, Jimikand (Elephant Foot Yam), Suar kand, Krishmati	Regular collection	Underground tubers used as staple food substitutes
September	Leafy vegetables, edible leaves (Sal, Sargi), tubers	Intermittent	Fewer varieties, but the forest still provides food for consumption
October	Tubers, leafy vegetables, utility leaves (Sal, Sargi)	Occasional	Seasonal dependence for greens and tuber crops continues
November	Leafy greens, miscellaneous wild edibles	Occasional	Focus on survival foods, supplementing agriculture
December	Leafy vegetables, roots, firewood, *Chakda* (Red Ants)	Frequent	Wild food collection continues alongside fuelwood gathering

Uncultivated Food: Leafy vegetables *(bhaji)* collected from the forest and the field

The following is a compiled list of leafy vegetables (locally known as *bhaji*) commonly collected from forests and agricultural fields in the Dantewada block. These names were documented during group discussions with community members as part of the field data collection process. The list reflects the rich diversity of wild and cultivated leafy greens consumed in the region.

S. No.	Uncultivated Food: Leafy vegetables (Local names)	Collected during
1.	Pipal Bhaji	February, March
2.	Kusum Bhaji	February, March
3.	Charota Bhaji	June, May
4.	Bohar Bhaji	March April
5.	Chunchuniya Bhaji	April, May
6.	Koliyari Bhaji	May, June
7.	Chiyur Bhaji	January, February, March
8.	Mulod Bhaji	February, March
9.	Tuma kusil Bhaji	February, March
10.	Silyari Bhaji (present in rice field)	June, July
11.	Awali Bhaji	May

S. No.	Uncultivated Food: Leafy vegetables (Local names)	Collected during
12.	Jungali Kochai Bhaji	June, July
13.	Kanda Bhaji	Year around
14.	Bhanda Bhaji/ Khatta Bhaji	Year around
15.	Chech Bhaji	Year around
16.	Palak Bhaji	Year around
17.	Lal Bhaji	Year around
18.	Methi Bhaji	Year around
19.	Munga Bhaji (Moringa)	Year around
20.	Kutani Bhaji (present in the maize field)	July, August
21.	Kumhar Bhaji	November, December
22.	Juu Bhaji	February, March

3.2.2. Profile of Major Non-Timber Forest Products

It is understood that the Mahua Flower, Mahua Seeds, Char Guthli, Tamarind and Mango contribute to ~80% of a household's income earned from NTFPs. The following section briefly discusses the prevalence of activities surrounding the major NTFPs, the current status of these NTFPs, activities carried out across various value chain stages, and the impacts observed and/or reported by the primary collectors of these NTFPs.

Mahua (Flower)

Mahua is one of the most essential NTFPs collected by villagers. Mahua trees present in the agricultural land of the respective villages are owned by the villagers, while mahua trees in the forest are common property. The villagers exercise their usufruct rights, which contribute significantly to the local economy. Additionally, villagers also go to the forest to collect mahua flowers and seeds. A few primary collectors clean the ground to pick up mahua flowers by putting fire on the material (leaves, thorns, etc.) on the ground. It is harmful, and villagers have reported incidents of forest fires. Such fires destroy both flora and fauna, and ungerminated mahua is collected by tying a net around the trees; however, this practice is followed by only a handful of collectors in the block. The flower that drops does not touch the ground.

Plastic containers and bamboo baskets are used to collect flowers from the trees. The sundried flowers are threshed typically with a flail with the help of a flat wooden plank to remove '*zeera*' from the flower. These sundried flowers are then stored in either iron or plastic drums. The storage technique is unique, wherein one member of the household presses the sun-dried flowers in the drum to literally make it air-tight. When filled to the brim, the drum is then covered.

Ten years ago, over a season, one household with seven mature mahua trees would collect around two drumfuls (7 quintals) of sun-dried mahua flowers. Gradually, the collection quantity, as estimated by the collector, has decreased to the extent that collecting from the same seven mature trees yields just about one drumful, potentially resulting in a 50% reduction in the mahua collected. While there is no scientific evidence to explain the reasons for this reduction, communities have attributed it to the old age (ageing) of the mahua trees, the lack of new mahua tree plantations during the life cycle of the people discussed, and the adverse impacts of climate change. No new mahua plantations have occurred in the memory of villagers, either by them or by the Forest Department. This may be surprising, but the (i) gestation period of fruiting of mahua trees, (ii) intensive care and watch & ward of young mahua plants (milch animals love them), (iii) better alternatives (*salfi*), etc., may be the reasons.

Both men and women collect mahua flowers from agricultural land and/or forest land. Drying of flowers, flailing dried flowers to remove *seeds*, storing dried flowers, and taking a portion of the stored mahua for selling to traders or for making liquor are gender-agnostic tasks, and both men and women in the family carry out these functions. Primary collectors flail-dry mahua flowers to remove zeera, preventing them from rotting later on. A portion of the compressed mahua flower is taken out whenever required by the household. The storage container is typically made of iron and holds approximately 6-7 quintals of dried mahua flowers. Although the dynamics of liquor preparation have not been captured, many families earn their livelihood by preparing and selling mahua liquor.

Primary Collectors usually sell dried mahua flowers in the local weekly haat bazar. During the start of a collection season, i.e., mid-February to mid-April (~60 days), prices are generally determined by the last year's inventory of dried mahua flowers and an estimation of flower production, among other factors.

It would not be an exaggeration to mention that mahua flowers are predominantly utilised to make liquor. In contrast, a minuscule portion of the supply is employed by Food Companies (start-ups) to produce mahua *laddu*, mahua tea, and mahua RTS (Ready-to-serve), among other products. Mahua, used to make liquor, is sold at Rs. 30-60 per kilogram, while food companies reportedly pay Rs. 100 per kilogram for food-grade mahua. Interestingly, these companies' quality specifications include flowers collected from the net (*jaali),* flowers with *cumin (zeera),* and flowers with a brownish-yellow colour. One such food company operating in Bastar reported that export demand for mahua products is gradually increasing, although sales of mahua products are currently prohibited. They also shared that their products, particularly mahua tea and mahua *laddu,* are available at Tribes India (TRIFED's retail outlets). A summary of present situation & current practices and major impacts of these are captured in the table below:

Present Situation & Current Practices

Value Chain Stages	Present Situation & Current Practices
Pre-Collection	• Predominance of old trees • Practice of forceful harvesting of immature mahua fruits • HHS is unsure of the seasonal (yearly) production • Production depends on a host of factors • Generally, a sound output happens every other year
Collection	• The collection area in the forest is far off in many villages • Time-taking activity • The collection was preceded by cleaning the floor under the Mahua trees with fire • Heavy fires in the forest and • Increased incidence of cutting of trees (so-called unproductive trees)
Post-Collection	• Drying on -mud floor, dung-coated mud floor, polythene, tar roads
Marketing	• Sun-dried raw produce is sold • Individual hh level sales to traders in the local haat bazaar • Sold in local measures *(soli and paili in vogue*)
Value Addition	• Generally, liquor is made from the flowers both by tribal households and commercial distillation units. • Few households earn their livelihood from selling mahua liquor. They employ traditional brewing practices, using a low-cost distillation apparatus to produce liquor from flowers.

Major Impacts

Impact
• Decreased production capacity of the tree. • Decreased yield of oil from immature seeds.
• Decreased fruit-bearing capacity of trees is adversely affecting the system.
• The number of mahua trees is decreasing.
• Due to higher moisture, the seed turns black.
• Less Income due to (i) cheating in weight, (ii) intermediary paying less than the prevailing market rate

Tamarind

A significant majority of households—estimated at around 90–95%—collect tamarind from trees located within their homesteads, agricultural fields, and, in a limited number of cases, from nearby forested areas. On average, each household has at least 3 to 5 tamarind trees integrated into its landscape. Most of these trees are mature and have been part of the household's surroundings for several decades, often passed down through generations. However, there are also younger tamarind trees that have sprouted and established themselves naturally, without deliberate planting or intensive care by the households.

Tamarind trees typically grow in backyard spaces and along field boundaries, where they regenerate easily due to favourable growing conditions. These naturally occurring saplings often survive and grow into mature trees without much external intervention. One key reason for their survival is that they are not commonly targeted by grazing animals, as these trees are not found in agricultural areas or on common lands.

Present Situation & Current Practices

Current Practices
Method and Time of Collection: Tamarind collectors harvest the fruit by climbing trees, shaking branches with their feet or hands, and beating them with sticks.
Beating the fruits with sticks damages developing leaves. Flowers and fruits are also smashed, thus affecting growth and regeneration.
Semi-ripe fruits are mixed with ripe harvest, resulting in a higher moisture content in the stock, which increases the likelihood of damage and losses during storage.
Tamarind tree owners set fire to the ground near the tamarind trees to make collection easier.
Less care for naturally grown tamarind plants below tamarind trees: During harvesting, the tree owner or labourers damage naturally grown small plants while climbing on the tree.
The harvesting method adopted by the person who takes the lease of the tamarind trees

Impacts

Impact
If tamarind fruit is not collected at the right time, the fruit dries on the tree. A month's delay can reduce its value to nearly zero. Thus, not collecting tamarind at the proper time adversely affects both production volume (quantity) and quality.
Regular heat slowly reduces trees' reproductive and regenerative abilities, potentially adversely affecting the area's ecology.
Naturally grown tamarind plants from naturally fallen fruit do not survive for long. Lack of care during harvesting and free grazing of goats, sheep, etc., does not support the growth of these plants, resulting in a gradual decrease in the number of tamarind trees.

Mango

Around 30% of hhs across all the 60 villages of Dantewada CD block have 'non-descript/ mango trees. These are popularly referred to as trees bearing *'desi'* mangoes. These trees are found in the lands near the households' homesteads (*baadis*).

All the hhs who own mango trees pluck unripe and pick ripe mangoes for different purposes. Mango tree owners create a hook to pluck unripe mangoes from the branches, while collecting ripe mangoes from the ground, including those that have naturally fallen, as well as those gathered by climbing the tree and shaking the mango-laden branches. Both the unripe and ripe mangoes undergo a simple process to obtain mango slices.

Slices obtained from unripe mangoes are known as *amchur* and are sold in the market, while slices of the mature mangoes are used for household consumption. Collectors first use hook to pluck the mangoes from the branches, second peel the outer skin of the mangoes with the help of iron knife, third slice the pulp into thin wafers, followed by drying them in the sun, on either mud floor or dung coated mud floor, for a couple of days, and aggregating the sun dried mango slices (*amchur*) in either bags or drums. The above process results in the production of *Amchur,* which is then sold to traders in the local haat bazars. Careful observers noted that the entire process must be completed within a 30-day window, during which collector-households earn a significant cash income.

It is incumbent on the owner of the mango trees to pluck unripe mangoes. S/He is guided by their eye estimation and by the physical observation of a sample of mangoes plucked from the tree to decide on the plucking of the mangoes.

While the same process is undertaken to obtain pulp slices from the ripe mangoes, the care and level of hygiene are reportedly much better than those in unripe mangoes. One of the primary reasons for

the behaviour change is that unripe mango slices are intended for markets, while ripe mango slices are for household self-consumption. There are a few areas where interventions to maintain quality, as desired by the market, may increase the price HHS fetches, thereby improving income accrual.

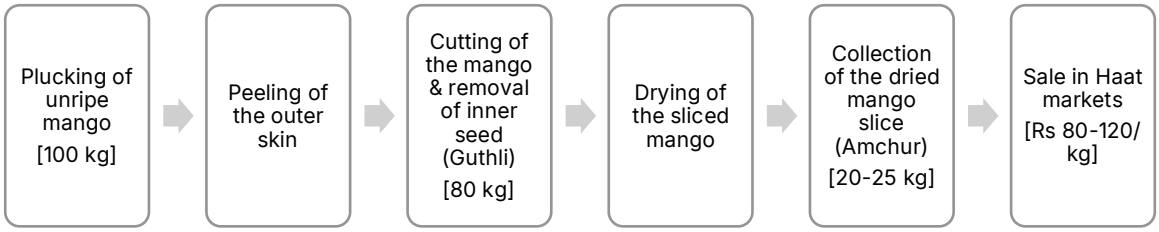


Fig. 3.2 – Process of Amchur (Dried Mango) making

Char Guthli

The Majority of the households report collecting charcoal from the forest. However, the number of households engaged in char collection is comparatively lower than for Mahua, tamarind, and mango, as char is only available in forests. At the same time, other MFPs are also available on farmers' own land.

Chironji has a *guthli* (seed) that contains a *dana* chironji (kernel) inside. The kernel has a mild, sweet yet acrid flavour. Across India, people use this as a nut to add to sweetmeats. Tribal communities cook the skin of the fruit as a vegetable, but rarely eat the kernel. They take it to weekly *haat*s (markets) and sell it to traders.

These days, people have become impatient and do not wait for the fruits to ripen. Often, they lop off branches instead of picking up fruit. They do this fearing that others will take away their produce," he says. But the impact is that some of the fruits are still not mature, in many, even the seed has not developed, let alone the kernel.

The Chhattisgarh State Minor Forest Produce (Trading and Development) Cooperative Federation Ltd buys guthli directly from the collectors, processes it, and sells it through a tender process. Minimum Support Price for char guthli, as set up by Govt. of India, is Rs. 126 per kg and together with Rs. 12 per kg Incentive (Bonus) Wages given by State Govt. along with MSP Collection Rate, the Minimum Support Price + Incentive (Bonus) Wages (Rs. per Kg.) comes to be Rs. 138 per kg.

For a detailed analysis of the functioning and outcomes of the MSP Scheme for Minor Forest Produce in the district, refer to *Annexure 1: Performance of Minimum Support Price (MSP) Scheme for Minor Forest Produce*.

Mahua Seed

Primary Collectors generally expel seeds for oil, leaving the oil cake as a byproduct, with the expeller charging a service fee. The traditional practice of using low-cost, innovative oil expellers (made from wood/ stone/ iron) for processing oilseeds is almost negligible.

Sal / Siali Leaf

Villagers undertake a series of actions, such as collecting sal leaves, stitching them, and drying the stitched leaves. Mostly, women forest dwellers go to the forest and pluck sal/ siali leaves from the branches of sal/ siali trees. They then arrange tender (*kutcha*) leaves and bind them in bundles using local rope. A part of the collected leaves is converted to hand-stitched cups and plates. Stitching of sal leaves by '*kathi*' (of bamboo, khajuri/ date-palm), followed by drying of the same. These plates and

cups are intended for use at community festivals and household-level events (such as weddings), with a minimal likelihood of resale. The majority of collectors do not participate in the sal leaf business, primarily because sal leaves are scarce in forests. Currently, there are no partnerships among sal leaf processing units, large traders, sal machine owners, spare parts suppliers, and women collectors to build upon/ leverage an existing enterprise ecosystem.

Fermented Traditional Drinks

Traditional and heritage-fermented drinks, such as mahua, salfi, and chhind, are a significant source of livelihood for tribal people. These drinks are also an integral part of their culture. Tribals in Chhattisgarh are authorised to sell fermented drinks at local or tribal markets. It contributes a significant share of revenue to rural economic development. Below are the details of major NTFPs that are used to make fermented drinks[18]:

Mahua (Madhuca longifolia var. latifolia (Roxb.) A.Chev.)

Mahua, a member of the **Sapotaceae** family, is primarily found in the forests of the north and central India, namely in the states of Chhattisgarh, Jharkhand, Madhya Pradesh, Bihar, Uttar Pradesh, Kerala, Gujarat, and Odisha. It is naturally found in the forest of the Bastar plateau in Chhattisgarh. Mahua flowers, which hold strong cultural significance for tribal people, are distilled and fermented to produce "mahua *daaru*," an alcoholic beverage with an alcohol content of 20–40%. Mahua drink is offered to deities by Bastar tribal groups because they consider it part of their cultural heritage. Mahua is always present throughout all their cultural ceremonies.

Chhind Ras (Phoenix sylvestris (L.) Roxb.)

The Khajur palm, often referred to as Indian Date or Wild Date Palm, is a member of the Araceae family and is well-known for its nutritional value as well as a variety of medicinal and non-medicinal characteristics. Alcohol and sugar are prepared using the Chhind juice *(ras)*. In rural regions, Chhind juice is often used to make jaggery. According to tribal villagers, a mature tree produces 100–250 litres of juice throughout the season.

Salfi (Caryota urens L.)

Salfi, a member of the Araceae family, is a local drink made from the sap of the tree, which is known to be intoxicating on its own. It is commonly referred to as “Bastar Beer” in this region. The drink is smooth and mild in flavour. Salfi, which is white in colour, resembles coconut water but is less sweet; in fact, it has a slightly bitter taste. To collect it, men climb the tree with an earthen pot and cut with Haasiya, allowing the sap to flow into the pot. When sap begins to drip from a cut on a flowering branch, yeast in the air starts fermenting it. Salfi has a relatively short shelf life, so it must be consumed fresh — within an hour of being collected from the branch — or it can cause stomach upset due to excessive fermentation. The tree represents prosperity and holds great importance in the rural region of Bastar. The tribes use the drink for various occasions and celebrations.

Household income from the collection of NTFPs

As mentioned earlier, households in Dantewada collect a range of NTFPs from both the forest and their agricultural fields, primarily during January to June. This is also the time when the majority of households do not engage in any agricultural activities in their fields. Based on the discussions with community members and the team of NIRMAAN, on an average, households in Dantewada earn 25-50% of their annual income from the collection of NTFPs, depending upon the – (i) number of Mahua, Tamarind and Mango trees owned by them, the number of households for the collection, (ii) extent of value addition and processing (e.g. mahua liquor) and (iii) proximity of the village to the forest. Among the NTFP basket, multiple NTFPs contribute to household income to varying degrees. The following table summarises the percentage contribution of different NTFPs to households' annual revenue.

[18] Adapted from- A Study on Marketing of NTFPs in Bastar Region of Chhattisgarh state with special reference to Fermented Traditional Drinks by Sarvesh Kaushik Patel, Pooja an integraln integralatel

Name of the NTFP	% Estimated contribution
Mahua Flower	40-60%
Mango	15-25%
Imli	10-15%
Tendu leaves	10-20%
Mahua Seed	~5%
Others (Char, tendu fruit, yams and other uncultivated foods)	5-15%

Table 3.9 – Estimated household income from the collection of NTFPs

Existence of Payment for Ecosystem Services (PES) Mechanisms

Currently, there are no active Payment for Ecosystem Services (PES) mechanisms in Dantewada. However, the region holds high potential for PES due to the availability of forests that host biodiversity of flora and fauna. Landscape's forest cover, diverse flora and fauna, and indigenous agroforestry systems contribute to carbon sequestration, watershed protection, and biodiversity conservation.

Additionally, Dantewada district's commitment to organic farming creates a significant enabling mechanism. Farmers cultivate local paddy, millets, and vegetables without synthetic fertilisers, pesticides, or weedicides, which supports soil health, water conservation, and ecological balance.

Current Schemes (opportunities for convergence, fund availability)

Insofar as the Dantewada block is concerned, it is challenging to find relevant schemes around NTFPs that are of relevance to convergence while benefiting primary collector households.

Enablers and Constraints in NTFPs (inputs, process, outputs, markets and trade)

Enablers	Constraints
• Almost all the households are engaged in NTFP collection, primary processing and selling. • Dependence on NTFPs has led to the conservation of NTFP-bearing trees, such as Mahua, Tamarind, and Mango, on farmers' private land. • There exists significant engagement of women in NTFP collection, processing and selling. Women thus keep the income earned from NTFPs. • Households possess traditional knowledge, practices, and equipment for the drying, primary processing, and storage of NTFPs. • Local market systems, particularly the weekly haat bazars, are the first markets where the villagers sell their NTFPs. • Stored NTFPs at the household level serve as a source of liquid assets, which are used to tide over emergency financial needs or otherwise. • Announcement of MSP (refer to annexe-1) for the majority of the NTFPs from the Government, along with a bonus from the Government of Chhattisgarh.	• The efforts towards the plantation/regeneration of NTFP-based plants, such as Mahua, Tamarind, Char, and Kusum, have been minimal, both by individuals and community institutions. • Gradual reduction in the productivity of NTFP-bearing trees due to climatic and non-climatic factors, while the communities' efforts towards collecting NTFPs are on the rise as the number of trees is reducing, and collectors need to go deeper in the forest to collect some of the NTFPs. • Unsustainable harvesting and collection practices for some NTFPs, such as burning the ground for Mahua flowers, plucking branches for Char, plucking unripe mangoes with a bamboo hook, and shaking mango branches to drop ripe mangoes, are still in use. • The absence of community-based institutions for managing, processing, and marketing NTFPs at the village/cluster level serves as a deterrent to the broader adoption of good collection practices. • Lac production and Tasar Cocoon production have decreased significantly in the villages of the Dantewada block, with villagers unable to find either product in the forests. • Adopting improved collection and processing practices is necessary to enhance the quality of NTFPs collected/processed. For example, grading mahua requires minimal external materials for collection and drying, and oxidation in dried mango can be minimised by adopting better practices.

Enablers	Constraints
• A large number of uncultivated foods collected from the forest serve as a source of food and nutrition for the village community, especially for women and children.	• Minimal value addition and processing at the community level (such as deseeding of Tamarind, value-added product of Mahua, etc.) • While MSP is in place for NTFPs, procurement mechanisms are not well-developed, and procurement by Government agencies remains limited. • Traders in local haat markets and other traders do not always provide monetary incentives for product quality, which hinders collectors' adoption of practices to improve quality. • A high level of manual effort is involved during the collection, primary processing and storage of NTFPs in homes.

Collection of Mahua during April 2025

Collected Mahua flowers from one of the households

A typical site for Mahua flower collection, some farmers burn the ground to clear the area.

Drying of the Mahua flower at home

One of the households drying Tamarind (Imli)

Uncultivated food: Tubers collected from the forest

Storage of dried mahua flower

An indigenous tool used for thrashing the mahua flower to remove jeera

Fig. 3.3 – Images from the field around NTFP collection and other processes

3.3. Animal Husbandry

Livestock rearing, primarily of cattle and small ruminants, is prevalent across most households in the Dantewada landscape. Among the different kinds of livestock reared by communities, indigenous cattle are the most common, followed by poultry and goat rearing. There are also some households involved in pig rearing, duckery, and fishery activities. However, the number of such households is not much, particularly in the villages visited during the study. In the Dantewada landscape, livestock rearing, particularly of large animals (cattle), is significant for communities in supporting their agricultural activities. Meanwhile, small ruminants serve as a source of livelihood, meeting consumption needs, and providing an additional source of income. Despite the significant prevalence of animals in the landscape, there is surprisingly little human-animal conflict.

According to the 20th livestock census conducted in 2019, the livestock population data are presented in the table below. Although the data is available only for the Dantewada district, not the Dantewada

block, as per discussions with local stakeholders, the district-level numbers can also be applied to the block.

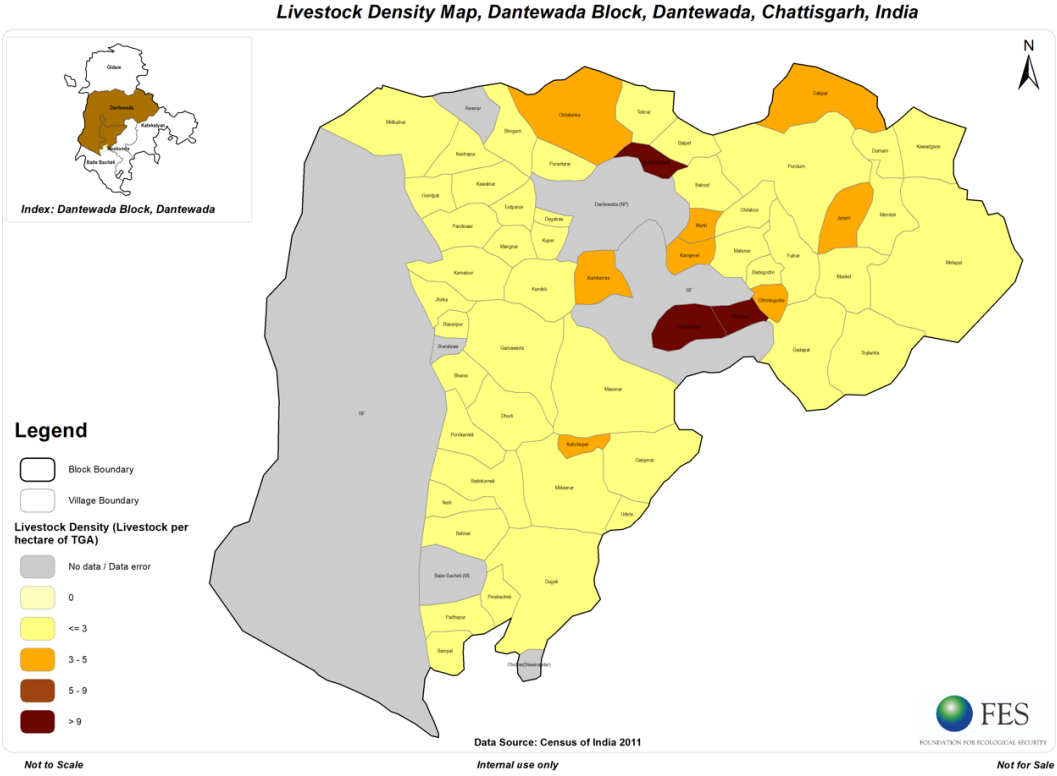


Fig. 3.4 – Livestock Density Map, Dantewada Block

Livestock population in Dantewada Block

Livestock Type	Breed Type	Category		Total
		Male	Female	
Cattle	Exotic	395	2023	2418
	Indigenous (Desi)	104818	80394	185212
Buffalo		10734	6836	17570
Goat		33980	41765	75745
Sheep				94
Pig	Exotic	19	12	31
	Indigenous (Desi)	21794	21042	42836
Poultry	Indigenous (Desi)			NA

Source-20th livestock census[19]

Household-level availability of Livestock[20]

Livestock Type	Livestock availability (Per 1000 hh)
Cattle	4476
Buffalo	592
Sheep	63
Goat	1762
Pigs	894
Poultry	NA

[19] The 20th district wise livestock census by cattle type (2019)
[20] Source:- https://epashuhaat.com/India/e-pashudhan/?index.php (19th Livestock census)

Secondary data from both livestock populations and household-level livestock availability indicate higher availability of large animals (~5 animals per household) than of small ruminants (~2.5 animals per household). Also, the population of Indigenous and non-descript animals significantly exceeds that of exotic animals. These exotic animals are well-suited to local climatic conditions and are primarily fed on available feed and fodder found in agricultural lands, common lands, and forest areas. The livestock rearing practices in the landscape can be classified as **'low investment and low output'** due to minimal investment in breed improvement, extension, feed, fodder, animal care, and market development.

3.3.1. Livestock rearing practices and production - Large Animals (Cattle)

Large animals in the Landscape are mainly composed of onomastic Indigenous cattle, along with a limited population of buffalo and exotic cows. The number of livestock owned by households in the project landscape varies from 2 to 3 cattle per household to 20-25 cattle per household. Among families that own buffaloes, the number ranges mainly from 1 to 3 per household. The following table provides an overview of cattle ownership in the project landscape.

Utility of Cattle for Households

Agriculture-related activities

The most common and significant use of cattle for households is for agricultural activities.

- Draught animals (mostly bullocks) are primarily used for land preparation activities, such as ploughing, land levelling, puddling, and seed sowing, among others.
- Bullock carts are also used to transport agricultural produce and other materials.
- Most farmers use cow dung in agriculture. Some farmers also use Cow dung to make compost for agricultural applications, and cow urine is used to make bio-inputs.

Some farmers purchase a pair of bullocks every year for land preparation activities, as farmers leave these animals for open grazing in forest and common lands after the Kharif harvesting and in some cases, these animals do not return or die in the forest. Thus, there is a need to promote a habit of supervised grazing and having cattle shed at the hh level.

Practice of Milking for Consumption

- There is no practice of milking the Cows by the tribal community in the project landscape. This has been a longstanding tradition and cultural belief within the community for generations. This practice is also influenced by the fact that milk and milk products are almost negligible in the community's landscape.
- Although the number of households owning buffaloes in the project landscape is minimal, discussions with farmers revealed that most buffalo owners do not milk their animals and use them for agricultural purposes.
- There are some households from communities like Yadav and Dhakad (Mostly OBC communities) residing in villages near urban areas, engaged in milking their buffaloes.

Current Status of Cattle Rearing Practices

Practice	Current Status
Shelter and housing	In the project landscape, most households have sufficient space for livestock housing, typically maintaining their animals in the backyard. The majority of the farmers keep their animals in open space with no provision for roofing or proper flooring. Some farmers construct ***kutcha*** **(temporary) animal sheds** using locally available materials such as mud, wood, and thatch. The absence of **a sloped floor** makes it challenging to collect cow dung and urine efficiently, limiting their use for composting and bio-input preparation. Additionally, the availability and condition of sheds often depend on the number of cattle a household owns. In some cases, the sheds are **too small to accommodate the entire livestock population.**

Practice	Current Status
Feeding	Open grazing of cattle in agricultural fields (left after crop harvesting) and in forest lands is one of the most common practices for feeding the animals. The practice of stall feeding at homes or the provision of concentrated feed or any other improved feed is limited. **June/July-November:** During this period, when most farmers have Kharif crops on their land, supervised grazing is commonly practised on communal and forest lands during the daytime. The animals are brought back to their owners by evening and remain there overnight. Either the livestock owners themselves or a designated village caretaker takes the herd out to graze from morning to evening. **November/December- June/July:** During this period, the majority of farmers allow their cattle to graze freely without any supervision, as agricultural fields remain fallow during the Rabi season. While some cattle return home at night, others stay in the fields and only return occasionally. Even in some of the cases, the animals return in 15-20 days, or farmers have to look for them at the end of that period. There are also cases when animals are not found in the forest, and as a result, farmers have to purchase new animals.
Breeding	In the Dantewada landscape, **natural random breeding of cattle is the predominant practice.** No specific breeders are selected to improve genetic quality, and breeding occurs randomly within the village cattle population. During field visits, it was reported that **breeders' records are negligible,** making it challenging to track lineage, productivity, and genetic improvements in livestock.
Veterinary services	Since most cattle are indigenous, farmers have reported a lower incidence of fatal diseases. However, preventive practices such as vaccination and deworming are hardly followed by farmers. In cases of disease or other health issues, farmers often follow their indigenous practices, such as applying herbs collected from the forest or using home remedies. There are Pashu-Sakhis in some villages to provide basic veterinary services, but their role is limited. Access to and availability of veterinary hospitals and medical staff were found to be limited. There are instances of disease, such as foot-and-mouth disease, and other infections among animals.
Extension services	As farmers in the landscape have a good number of cattle with minimal productive and economic outputs, their access to extension services is minimal. Wherever available, the Pashu-Sakhis are the primary source of extension services for the farmers in the project landscape.
Markets	The significance of markets is minimal for cattle rearing, as there are minimal transactions or trading of both animal products and live animals. Cow dung is a significant byproduct of cattle farming and is primarily used by farmers for their own agricultural purposes; a few farmers also sell it to others within the village.
Institutions	There are no **dairy cooperatives or dedicated institutions** in the project villages that focus specifically on cattle or livestock development.
Availability of Grassland	Patches of grassland are interspersed within the forested and agricultural landscapes. The Dantewada block has a total grazing land area of 7,713 hectares, accounting for approximately 13.20% of the landscape's total geographical area. These areas serve as grazing grounds for livestock and are integral to the pastoral way of life of local communities.
Average household income	No actual household-level income, except for receiving manure for agricultural fields and the use of cattle for agrarian purposes.

Enablers and Constraints in Cattle Rearing

Enablers

- **Availability of Grazing Land** – The landscape has significant forest and common land for cattle grazing, reducing dependence on fodder cultivation.

- **Availability of a good herd size of cattle**: There is already sufficient cattle available in the landscape to ensure FYM and cow urine for composting and field application.
- **Traditional Knowledge & Indigenous Breeds** – Farmers have **traditional knowledge about animal care and** rearing, and local indigenous breeds are well-adapted to the climate and disease resistance.
- **Low-Cost Rearing Practices** – Since most households have **backyard space**, they can keep cattle with minimal additional costs for housing or feed.
- **Government Schemes & Livestock Programs** – Various **state and central government initiatives** (such as Rashtriya Gokul Mission, National Livestock Mission, Govardhan Yojna) could support cattle rearing with subsidies, veterinary services, and breed improvement.

Constraints

- **Seasonal Open Grazing Practices** – During the Rabi season, cattle are left to graze unrestrictedly, resulting in limited manure availability at the household level and difficulties in monitoring animal health.
- **Unstructured Breeding Practices** – Natural breeding is the norm, with no record-keeping or selected breeders, leading to uncontrolled crossbreeding and potential genetic dilution of indigenous breeds.
- **Social Beliefs and Taboos**: The social belief that milk from cows/buffaloes should not be extracted and that milk and other dairy products should not be consumed limits the economic potential of milk sales.
- **Housing & Waste Management –** Most animal sheds are *kutcha* structures with poor flooring and drainage, making it challenging to collect dung and urine for composting and limiting the benefits of livestock integration in organic farming.
- **Insurance Services:** Large Animals - Cattle are neither part of the milk nor manure economy and provide a value that is implicit and has not been accounted for in monetary terms. Cattle insurance is negligible in the landscape. No insurance products that could insure the existing cattle were found in the landscape.
- **Limited Access to Veterinary Services –** Remote location and inadequate veterinary infrastructure make it difficult for farmers to access timely healthcare, vaccinations, and disease management services.

3.3.2. Livestock rearing practices and production - Small Ruminants

As indicated in the livestock census, the goat population is the most significant among small ruminants, followed by pig rearing. Here is a category wise account of these components.

Goat Rearing

Goat rearing is a vital component of the culture and a key source of livelihood for tribal communities, as it serves as a risk-mitigating strategy against crop failure and weather unpredictability. It also provides instant liquidity for immediate financial needs, in addition to being a source of livelihood; its meat is a valuable source of nutrition for local communities.

Particulars	Data point
% of households having cattle	~60% (out of 60 villages, in 40 villages, more than 80% hh have a goat, while in another 20 villages, less than 20% households have a goat)
Average herd size	~5 (Male-2, Female-3) Only 10% households may have more than 10 goats

Source: Discussion with the NIRMAAN Team in Dantewada.

Table 3.10 – Livestock Ownership and Herd Profile

Current status of goat-rearing practices

Indigenous goat varieties, such as Anjori[21], are common in the landscape. The goat herd size varies from 2 to 50 animals per household, with an average of 2-3 goats.

Major Practices	Current Status
Housing and Shelter	Most households keep goats on their premises. Some households that have goat sheds have made them with locally available materials. However, these sheds generally do not have proper provisions for feeding, watering, and manure collection. Constructing raised platforms and sheds is not a common practice in landscape design.
Feeding	In Dantewada, **open grazing** remains the predominant practice for goat rearing. Goats are typically allowed to graze freely in **forests, common lands, and harvested agricultural fields** after the Kharif season. They feed on a diverse range of **leaves, shrubs, and grasses**, making them well-adapted to the local ecosystem. **Households rarely practise stall feeding**, as goats primarily rely on natural forage. Additionally, the **use of concentrated feed, mineral mixtures, or supplemental nutrition** was not observed or reported during discussions with farmers. This reliance on open grazing helps reduce input costs but may also limit growth rates and overall productivity.
Breeding	**Natural breeding** is the predominant practice for goat breeding, with breeding occurring naturally among the available does within the village. There is **no systematic selection of breeding bucks.** As a result, there is **limited control over genetic traits**, leading to inconsistent growth rates, disease resistance, and productivity. Additionally, there are **no practices to trace genetic history or maintain breed purity**, which can lead to progressive genetic dilution.
Veterinary services	During discussions with farmers in Dantewada, **high occurrences of diseases among goats** were frequently reported, with some ailments proving fatal and leading to significant mortality. The **absence of systematic vaccination and deworming practices** further exacerbates the problem, making goats highly susceptible to infections and reducing overall herd productivity. Although **government veterinary hospitals** are present in some villages, **farmers' utilisation of veterinary services remains limited** due to limited awareness, distance from facilities, and a traditional reliance on home remedies. Many farmers reported seeking professional treatment **only in severe cases**, often after the disease had already progressed, resulting in **low recovery rates and significant economic losses**. Additionally, **shortages of veterinary staff and irregular availability of medicines** further discourage timely interventions, making disease management a critical challenge for goat rearing in the region.
Extension services	Apart from **Pashu-Sakhis** and **ad hoc interventions by the Animal Husbandry Department**, there are **no structured or reliable extension services** available in the landscape to support improved goat management. The **lack of extension services** creates a significant gap in knowledge dissemination, preventing farmers from adopting better goat management practices, despite the potential of goat rearing as a viable livelihood option in the region. Farmers often **lack access to technical guidance** on essential aspects such as **disease prevention, balanced nutrition, breed improvement, and housing management**.

[21] Anjori is a medium sized goat, used for meat purpose. It is distributed in Raipur, Durg, Rajnandgaon, Kanker, Dhamtari, Mahasamund districts of Chhattisgarh state. Majority of animals are brown in colour. It is hardy and well adapted to the local climate.

Major Practices	Current Status
Markets	**Farmers primarily sell live goats**, as there is **no established practice of selling goat meat** among tribal communities in Dantewada. The sale of goats is **informal**, with transactions taking place at **weekly haat markets** and through **direct dealings with local traders** who visit villages to procure animals. The **pricing mechanism is informal, mainly**, as **neither traders nor sellers weigh the goats** before sale. Instead, the price is determined through a **visual assessment**, in which traders estimate the **animal's weight, health, and overall condition and quote a price accordingly.** Negotiations take place between buyers and sellers, with final prices typically **arrived at through informal bargaining.**
Institutions	No specific institutions are working on goat rearing. However, some SHG groups promoted by SRLM are working on goat rearing in villages across the landscape.
Average household income	~ Rs 30,000 (It might vary from Rs 20000-50000 depending upon the herd size)[22]

Enablers and Constraints in Small Ruminants Rearing (inputs, process, outputs, market, and trade)

Enablers	Constraints
• **Cultural Significance & Traditional Knowledge** – Small ruminants, especially goats, pigs, and poultry, are an integral part of tribal culture and livelihoods, making it easier for communities to engage in rearing. • **Existing Local Market Demand** – High local demand for goats and pigs, particularly in **weekly haat markets**, ensures a ready market for farmers to sell their animals. • **Availability of Land for Housing Spaces** – Most households have sufficient backyard space for constructing animal shelters. • **Availability of Grazing Land** – **Common lands, forests, and post-harvest agricultural fields** provide ample areas for open grazing, reducing feeding costs. • **Government Support & Schemes** – Various **state and central government schemes** support livestock rearing, including subsidies, insurance, and financial assistance for animal health care. • **Traditional Knowledge of Rearing Practices** – Farmers already have **basic knowledge of goat rearing**, reducing the need for intensive training. • **Potential for Value Addition** – Opportunities exist for **collective marketing, weight-based selling, meat processing, and organised supply chains**, which can improve farmers' income.	• **Limited Financial Resources for Investment** – Communities in the landscape lack the resources to **invest in constructing improved housing, feeding, and healthcare**, which limits productivity. • **Lack of Transparent Market Systems** – The absence of **standardised pricing mechanisms**, weighing practices, and organised markets often leads to **exploitation by traders**. • **Social Beliefs & Traditional Practices** – Some tribal beliefs discourage the adoption of **scientific veterinary services**, such as **vaccination, deworming, and disease prevention measures**. • **High Mortality Rates** – The **prevalence of fatal diseases, lack of vaccination, and inadequate veterinary care** leads to high mortality among goats and sheep. • **Absence of Selective Breeding Programs** – The **lack of quality breeding stock** for breeding has led to a lack of effort to **improve genetic traits,** reduce productivity, and disease resistance. • **Limited Extension Services & Veterinary Care** – Beyond **Pashu-Sakhis and sporadic government interventions**, there is **no structured extension service** to guide farmers on improved goat management. • **Limited Awareness & Adoption of Improved Practices** – Even when support is available, **low literacy levels and traditional knowledge systems** slow the adoption of improved goat-rearing techniques.

[22] *Source: Discussion with NIRMAAN team in Dantewadaincubating*

Enablers	Constraints
	• Attacks by stray dogs, especially during the summer, have become a significant issue in the villages. (It's the time when school hostels are closed and stray dogs move from urban to local areas in search of food).

Poultry

A large majority of the households in the project landscape keep backyard poultry, with a range of flock sizes. All households have Indigenous (desi) poultry birds and use them for both self-consumption and sale.

Particulars	Data point
% of households having cattle	~100% in the village
Average herd size	~5 Poultry Birds (Close to 10-15% hh have more than 10 poultry birds)

Table 3.11 – Poultry Ownership and Herd Size

Current Status of Poultry Rearing Practices

Major Practices	Current Status
Housing and Shelter	Mostly kept in open space within the houses.
Feeding	Feed on whatever is available in the houses and nearby fields; there is hardly any practice to feed any specific feed material. Some households do provide paddy or other grains available at home.
Breeding	**Natural random breeding. Households have made baskets for breeding poultry. There are also baskets for incubating eggs by mother birds.** Indigenous Birds lay eggs 2-3 times a year, and at one time lay 12-16 eggs.
Veterinary services	A high occurrence of disease outbreaks means several birds die frequently. Access to veterinary services is not available to households. Farmers use indigenous practices and knowledge to care for their animals. Most practices are curative rather than preventive, aimed at reducing mortality.
Extension services	Apart from **Pashu-Sakhis,** there are **no structured or reliable extension services** available in the landscape to support improved poultry management. The focus of **Pashu-Sakhis** is also very limited to poultry.
Markets	Mostly sold in the village itself, the next level of markets are the weekly haats. There is strong demand for indigenous birds at the Haat Markets; they fetch higher prices than exotic birds. Due to higher prices, local communities sometimes sell indigenous birds in the market and purchase broilers for their own consumption.
Institutions	Are there any specific institutions that specialise in goat rearing? However, some SHG groups promoted by SRLM are working on goat rearing in villages within the Landscape.
Household income	~ Rs 3000 per household per annum[23]

Enablers and Constraints in Poultry Rearing (inputs, process, outputs, markets, and trade)

Enablers	Constraints
• Backyard poultry rearing is already part of the community's traditional livelihoods. • Low resource-intensive activity with the potential to yield better returns.	• The average flock size of 4-5 birds is too small for any kind of structured intervention.

[23] Source: Discussion with NIRMAAN team.

- Households have enough space for constructing poultry sheds if needed.
- Existing Local Market Demand – High local demand for desi birds and eggs, both within the villages and local weekly haat markets. The prices are better than for exotic birds or birds coming from outside locations.

- There are no practices of feeding improved feeds to birds at home, leading to lower feed-to-meat conversion.
- Access to both extension services for improved practices and to veterinary care for timely, preventive care is not available. The focus of Pashu-Sakhi is not much on the poultry-based interventions.
- Farmers lack access to Hatchery units to purchase healthy chicks for rearing. In most cases, the growth is natural.
- There is a high mortality rate from disease outbreaks, especially during the monsoon season.
- Attack by stray dogs and other domestic animals

Pig Rearing

The nondescript pig has been a critical livestock species among tribal communities for a long time. Pigs are farmed primarily for the production of pork—communities in Dantewada farm pigs for both sale in the market and their own consumption. Like goat rearing, pig rearing is also a traditional practice among the tribal community, as there is a good demand for pig meat in the local area. Pig-rearing practices are similar to those of goat-rearing, with minimal or no external input. The pigs are primarily raised in the backyard. Free-range and cleaning systems for pig farming are most commonly used, followed by semi-centralised systems (outdoor pens) and centralised systems (indoors). Housing is also standard, with a temporary piggery/house built from locally available wood and bamboo. The roofing material consisted of a plastic cover and a thatched roof. All other practices, such as breeding, feeding, veterinary services, animal care, etc., are similar to goat rearing. Pig marketing is limited to either weekly haat markets or within villages.

Shed for goats at one of the huts in the landscape

Open grazing by the goats in one of the landscape villages

5

Open space for keeping cattle in the backyard	*Open grazing by the cattle during April*

Fig. 3.5 – Images from the ground around livestock management practices

3.4. Fisheries

The main rivers flowing through Dantewada are Indravati, Shankhini, and Dankini. The river systems, notably the Dankini and Shankhini, along with smaller streams and ponds, constitute the aquatic ecosystems of the Dantewada landscape. During their course, these rivers pass through dense forests, deep valleys, and rugged hills, also contributing to the water supply for the fertile lands of this region. A total of three canals and 13 ponds are present in the block area. Aquatic plants such as water hyacinth, lotus, and various algae species thrive in these water bodies. These aquatic habitats are home to freshwater fish species like rohu, catla mrigal, etc. There are, however, around 800 water tanks in the landscape offering a potential for promoting fishery activity in the landscape.

Very few households in a village practise aquaculture (fish rearing). These households have farm ponds/, which are used to rear fish. Typically, these ponds are used for irrigation, but they also serve as a means to rear fish. Households buy fries (newly hatched fish) from vendors visiting villages. While relevant government departments also supply fire, both quantity and quality are not up to the mark. Reportedly, households just leave the fries to grow naturally over a year-long period. No feed is given to the fish. The villagers who rear fish have not received any training. Issues of water overflowing from the ponds (and fish getting lost as a result) due to inadequate pond infrastructure were reported as everyday occurrences, with little to no remedial action taken. Fish are mainly harvested for their own consumption and are not inclined for commercial purposes. It was shared that once the harvest date is determined, the farm pond owner invites neighbours to catch the fish, which are then cooked and enjoyed by the neighbourhood. Surplus, if any, is sold in the village to either visiting vendors or retail customers.

3.5. Natural Resource Management

This section captures the key data, information, current practices, and challenges related to natural resources—including soil, water, forests, and biodiversity—in Dantewada district. The majority of the information presented here pertains to the Dantewada district.

3.5.1. Current Status of Soils of Dantewada Block (Landscape)

Dantewada lies within the Bastar Plateau agroecological zone, which is characterised by diverse, geologically complex soils shaped by undulating terrain, varied parent materials, and intense monsoonal activity.

Properties of Soil in Dantewada District

- Texture and Structure: The soils range from sandy topsoil to clayey subsoil, exhibiting moderate to high porosity (42.44% to 61.73%) and varying water-holding capacities (33% to 73.86%).[24]
- Organic Carbon Content: The organic carbon content in these soils varies between 1.22% and 3.45%, indicating a moderate level of fertility. [25]

[24] https://media.neliti.com/media/publications/430247-role-of-porosity-and-water-holding-capac-33579a4b.pdf?utm
[25] https://media.neliti.com/media/publications/430247-role-of-porosity-and-water-holding-capac-33579a4b.pdf?utm

- Soil Reaction (pH): The soils are generally acidic, with pH values ranging from 5.2 to 7.6, which can influence nutrient availability and crop selection.[26]

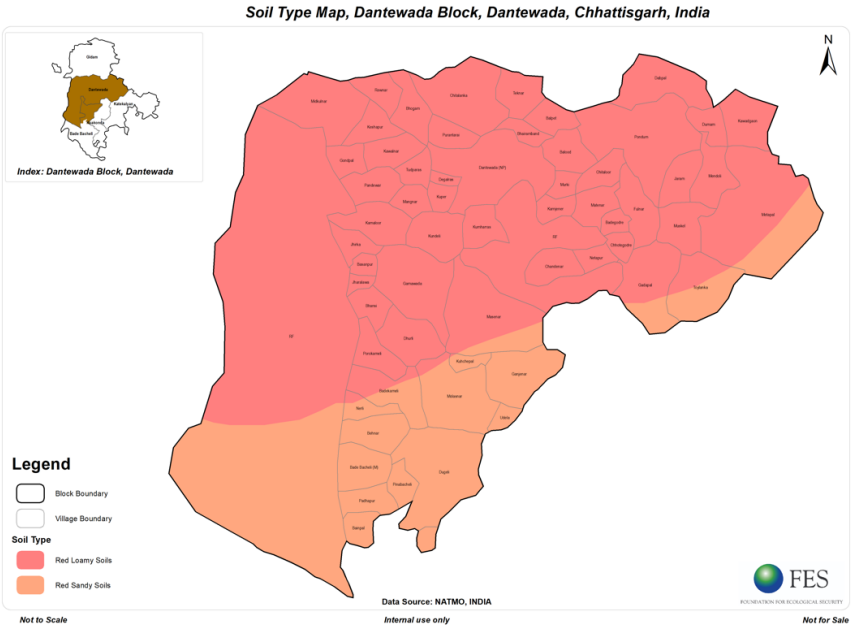


Fig. 3.6 – Soil Type Map, Dantewada

Soil Types

Soil	Local Name	Area in ha
Red loamy Soil	Matasi	8940.56
Laterite Soil	Bhata	12656.5
Black Soil	Kanhar	5795.18
Sandy loam	Dorsa	7473.76

Source: Agriculture Department, Dantewada

Table 3.12 – Soil Types and Their Distribution in the Study Area

Red Yellow Soil: The red-yellow soil is primarily red due to the presence of ferric oxides, which coat the soil particles. The red-yellow soil is typical in areas where rainfall leaches soluble minerals, leading to a loss of chemically basic components and an increase in oxidised iron, which imparts the reddish hue. These soils are often referred to as ferritic soils[27].

Red Sandy Soil: Red sandy soil has a higher sand content than clay, allowing for quick drainage, faster spring warming, and easier tilling. The red colour indicates the presence of iron, which helps prevent iron deficiency in plants, although the soil is often acidic and low in nutrients. Adding organic matter and careful watering can help mitigate these issues. Red sandy soil is ideal for crops such as watermelons, peaches, and peanuts and can support intensive dairy farming due to its excellent drainage[28].

Red Loam Soil: Red loam soil is a mixture of clay, sand, silt, and organic matter. The soil is rich in iron, giving it a red brick-like appearance, and has a pH value of up to 6.6%. Due to its low water-absorption capacity, red loam soil requires regular irrigation and is best suited for paddy and coarse grains.

[26] https://media.neliti.com/media/publications/430247-role-of-porosity-and-water-holding-capac-33579a4b.pdf?utm
[27] *https://edurev.in/t/367905/Chhattisgarh-Climate-Soils?utm*
[28] *https://edurev.in/t/367905/Chhattisgarh-Climate-Soils?utm*

Black Soil: Black soil, also known as regur or black cotton soil, is well-suited for cotton cultivation. Black soil has several notable characteristics[29].

- This soil is ideal for growing wheat, gram, oilseeds, pulses, cotton, and soybeans.
- It is mature soil with a high water-retention capacity.
- It swells and becomes sticky when wet and shrinks upon drying.
- It is rich in iron, lime, calcium, potassium, aluminium, and magnesium, but deficient in nitrogen, phosphorus, and organic matter.
- The soil's ability to develop wide cracks when dry allows for self-ploughing

Laterite Soil: Laterite soil is rich in iron and aluminium and forms in hot and wet tropical areas through the long-term weathering of parent rock.

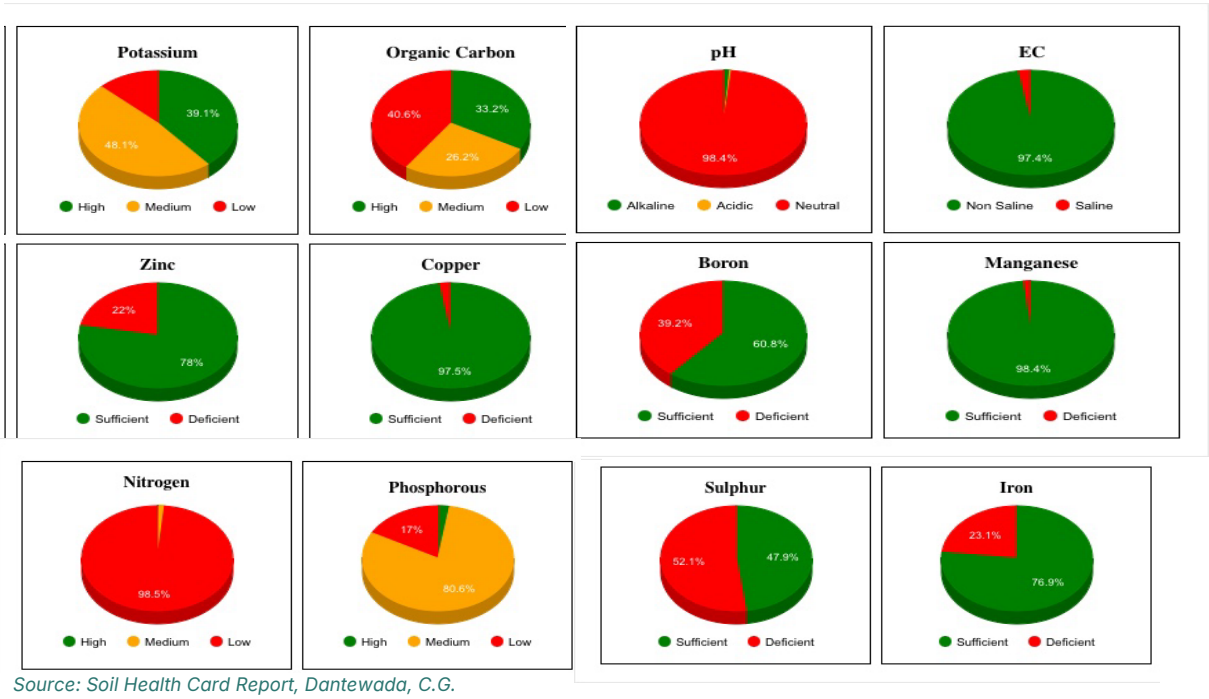
This soil type is characterised by:

- An extremely red colour due to the leaching of alkalis and silica.
- Accumulation of sesquioxide in the top layer.
- Crust formation near the surface, nodular concretions, and induration.
- An acidic soil reaction with poor base saturation.

The monsoon climate plays a significant role in the formation of laterite soil. The alternating wet and dry seasons cause rock erosion and breakdown, leading to the formation of this soil. Laterite soil has a **low water-holding capacity and is generally infertile**, though it can still support the cultivation of cereals, millets, kodo, mites, potatoes, and oilseeds.

Status of Nutrients in the Soils in Dantewada

Based on soil samples collected by the Agriculture Department during 2023–24, the nutrient status of soils in Dantewada block (South Bastar, Dantewada) has been assessed. A total of 4,000 representative soil samples were tested across the block, covering 12 key parameters related to both major and micronutrients.



Source: Soil Health Card Report, Dantewada, C.G.

Fig. 3.7 – Soil Nutrient Profile of Dantewada

[29] https://edurev.in/t/367905/Chhattisgarh-Climate-Soils?utm

Soil Erosion in Dantewada: An Emerging Concern

Soil erosion is a significant land degradation issue in the upland and midland regions of Dantewada block, primarily driven by the topographical features, fragile soil structure, and intense seasonal rainfall typical of the area. The district falls under the hot, moist sub-humid agroclimatic zone, receiving high annual rainfall, particularly during the monsoon season. However, the soils in upland and midland areas are light-textured, lateritic or red sandy loam in nature, with low water-holding capacity, poor binding strength, and relatively shallow depth. During heavy monsoon rains, surface runoff intensifies, especially in sloped upland areas. This runoff often carries away the topsoil rich in organic matter and nutrients, severely affecting soil fertility and crop productivity.

Moreover, runoff water from surrounding forested highlands flows with high velocity toward agricultural fields in the midland zones. In some instances, this has led to localised landslides or gully formation, damaging fields, bunds, and check dams. These processes not only contribute to the loss of fertile soil but also increase siltation in water harvesting structures such as ponds, check dams, and tanks, thereby reducing their effectiveness in water retention and irrigation.

Primary Enablers and Constraints for the Soils in Dantewada

Enablers	Constraints
• **The sale of Chemical Inputs is prohibited**. The promotion of organic farming practices has significantly reduced the use of chemical fertilisers and pesticides. Furthermore, the ban on the sale of inorganic fertilisers and pesticides serves as an enabler to promote agroecological practices in the district and improve soil health. • **Abundant Organic Biomass**: The district's proximity to forests provides ample plant and forest biomass. When incorporated into the soil, this organic matter enhances its fertility and structure. • **Natural Nutrient Enrichment from Forest Runoff:** Runoff water from surrounding forests carries decomposed organic materials, enriching agricultural soils with essential nutrients. • **Minimal soil disturbance**: Farmers in Dantewada often use minimal tillage, which reduces soil disturbance and preserves soil structure and moisture content. • **Natural Fertilisation through Open Grazing:** The practice of open grazing allows dung to be deposited across fields, thereby enhancing soil fertility without requiring additional labour.	• **High Soil Erosion Rates**: The district's undulating terrain, combined with minimal watershed interventions in ridges, results in significant soil erosion, especially during heavy rain. • **Limited Use of Composted Manure**: Despite the availability of organic materials, composting practices are not widely adopted, thereby missing opportunities to enhance soil fertility. • **Predominance of Single Cropping Patterns**: Many farmers practice single cropping, primarily cultivating paddy once a year. This limits soil nutrient diversity and can lead to nutrient depletion over time. • **Shallow Soil Depths:** Certain areas in Dantewada have shallow soils, limiting root growth and reducing the soil's capacity to retain moisture and nutrients. • **Soil Compaction Issues**: In areas where chemical fertilisers were previously used, farmers have reported soil hardening, making ploughing more difficult and reducing soil aeration.

3.5.2. Water Resources in Dantewada Block (Landscape)

Dantewada is endowed with a network of rivers, streams, and water bodies that form the backbone of its aquatic ecosystem and agricultural landscape. The major rivers flowing through the region include the Indravati, Shabari, Godavari, Shankhini, and Dankini. Among these, the Indravati River is particularly significant. Originating in the Eastern Ghats of Odisha, the Indravati flows approximately 240 miles before merging with the Godavari River at Bhadrakaali, a site in the Dantewada district. This river is a vital tributary of the Godavari, supporting local livelihoods and biodiversity.

During field observations, the **Shankhini and Dankini** rivers stood out as key components of the aquatic systems in Dantewada. These rivers, along with numerous smaller seasonal streams, natural ponds, and water channels, contribute to the region's ecological richness. Flowing through dense forests, rugged hills, and deep valleys, these water bodies not only nourish the landscape but also provide essential water resources for agriculture and domestic use in the villages.

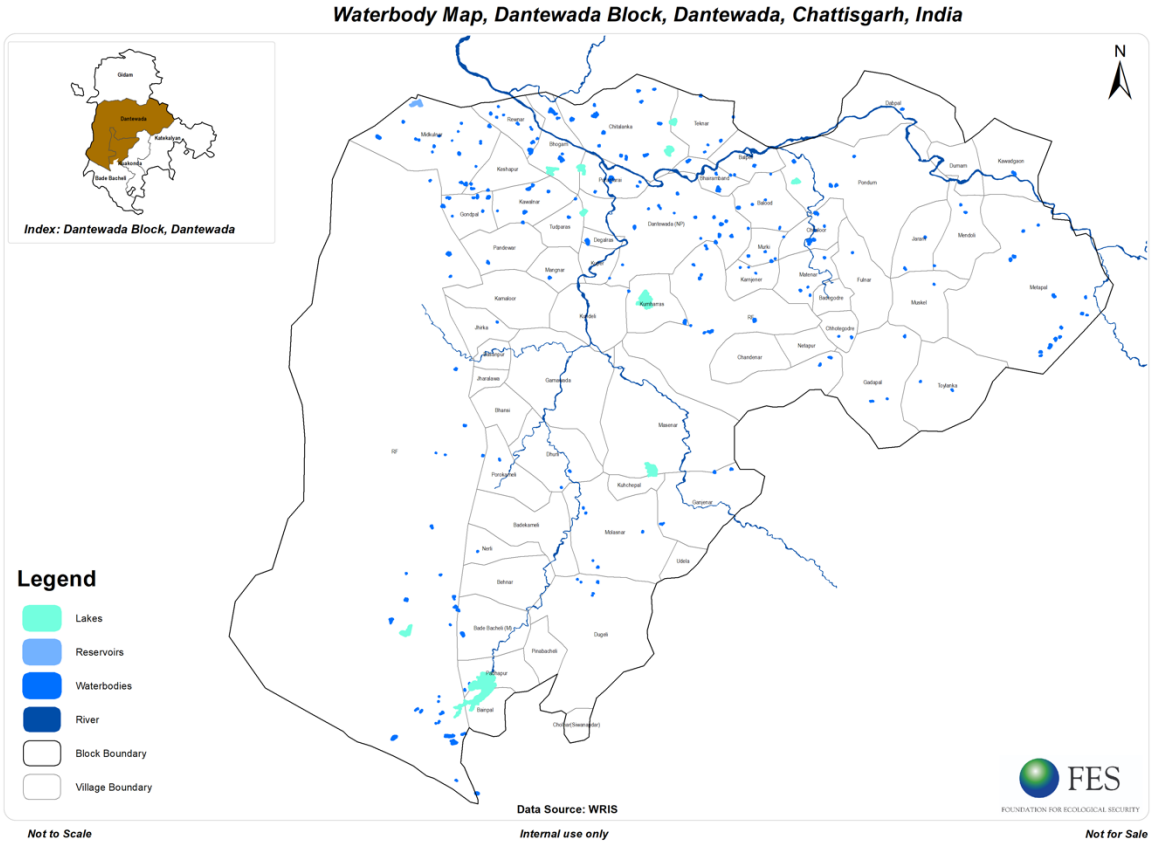


Fig. 3.8 – Waterbody Map, Dantewada

Despite this relatively rich hydro-geographical setting, irrigation infrastructure remains underdeveloped. The Dantewada block has only three functional canals and 13 ponds recorded across its territory. Consequently, access to irrigation is minimal. During the Rabi season, which relies heavily on monsoon rains, only 2.33% of the total cropped area is irrigated. Most cultivation during this season remains rainfed. The key sources of irrigation during this period include:

- **Borewells**, covering approximately **538 hectares**, indicate the growing dependence on groundwater.
- **Ponds**, supporting irrigation on around **42 hectares** of land.
- **Canals**, providing water to **35 hectares** of cropped area.
- **Check dams**, which serve localised irrigation needs on about **40 hectares** of land.

Pre-monsoon and post-monsoon maps of Dantewada indicating depth to water levels in Dantewada district

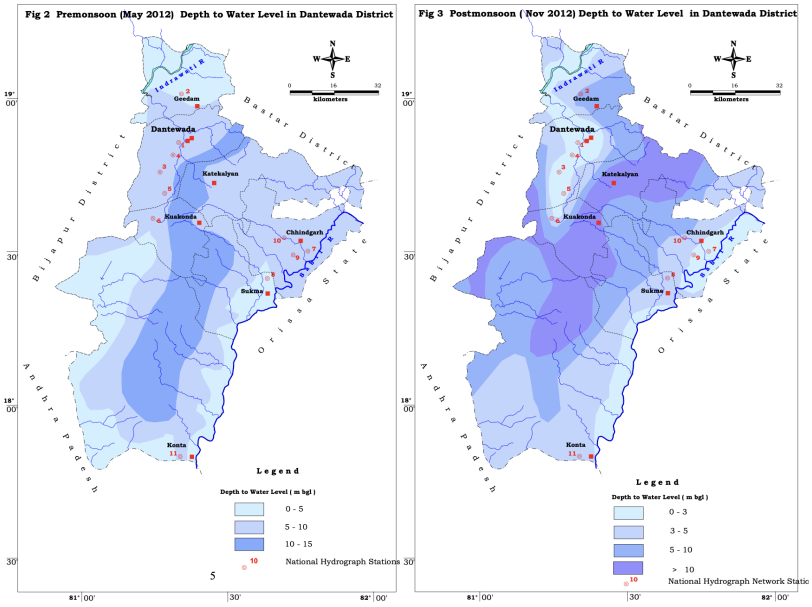


Fig. 3.9 – Pre-monsoon and Post-monsoon (May and Nov 2012) Depth to Water Level, Dantewada

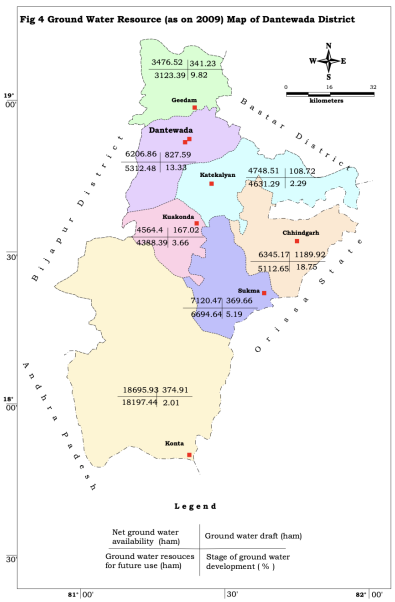


Fig. 3.10 – Ground Water Resource Map, Dantewada, 2009

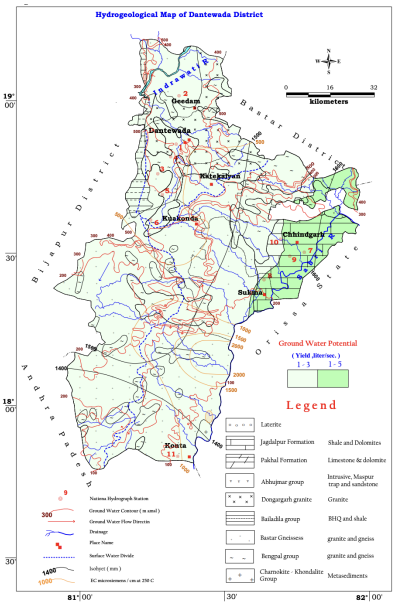


Fig. 3.11 – Hydrogeological Map of Dantewada

3.6. Biodiversity

The Dantewada district of Chhattisgarh lies within the Gondwana Biodiversity Zone, which is predominantly comprised of tropical forests. The forests of Dantewada are predominantly classified as Southern Tropical Dry Deciduous, interspersed with patches of Moist Deciduous forests.[30]

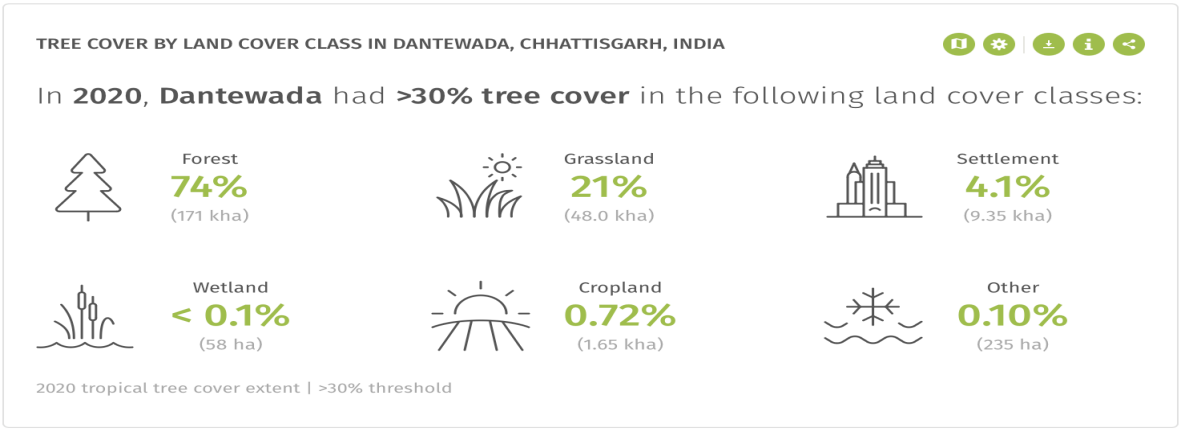


Fig. 3.12 – Tree cover by land cover class in Dantewada

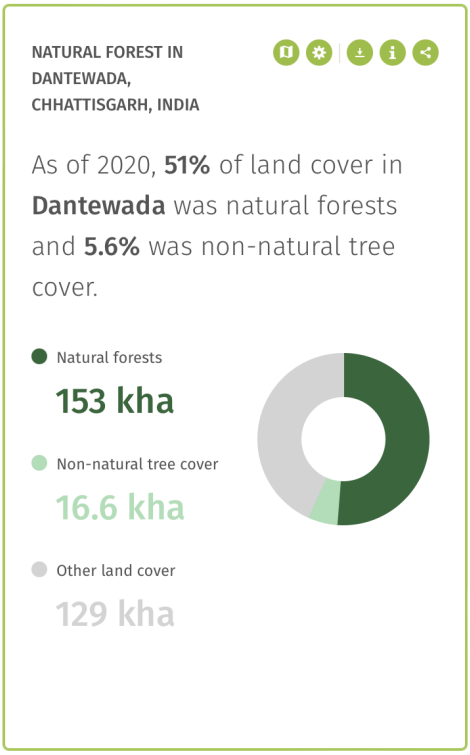


Fig. 3.13 – Natural Forest in Dantewada

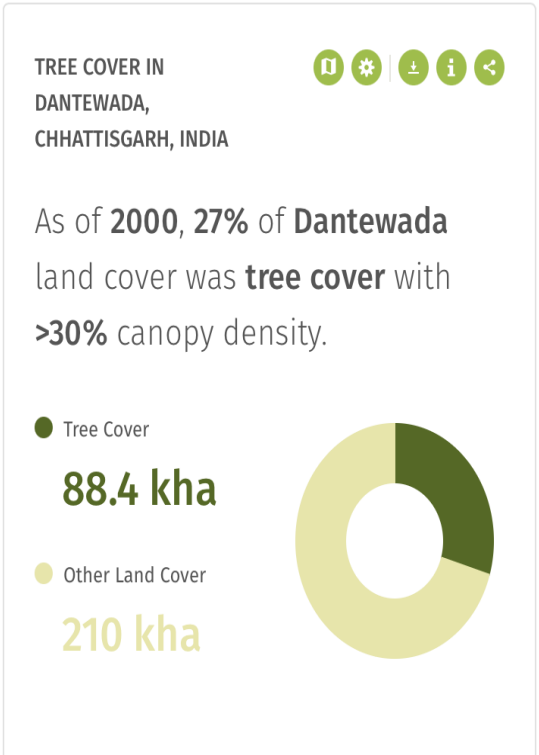


Fig. 3.14 – Tree cover in Dantewada

Source: Global Forest Watch

[30] https://www.researchgate.net/publication/326444580_Impact_of_Mining_on_Forests_and_Its_Biological_Diversity_at_Kirandul_Iron_Ore_Mines_Dantewada_South_Bastar_Chhattisgarh_A_Case_Study

Agroforestry and Non-Timber Forest Products (NTFPs)

The Dantewada block's agroforestry systems are enriched with a variety of species: the district's forests are rich in Tora, Harra, Saja, Tendu, Karanj, Teak, Kusum, Bamboo, and Mahua. These forests yield valuable NTFPs, including tamarind (Imli), mango, jamun, cashew, indigenous date, amla, and various seasonal mushrooms and tubers. These products play a crucial role in the livelihoods of tribal communities, offering both nutritional and economic benefits.

- **Fruit-Bearing Trees:** Tamarind (*Tamarindus indica*), Mango (*Mangifera indica*), Jamun (*Syzygium cumini*), Cashew (*Anacardium occidentale*), Indigenous Date (*Phoenix loureirii*), and Amla (*Phyllanthus emblica*).
- **Seasonal Produce:** Diverse species of mushrooms, e.g. futu and tubers, e.g. Elephant yam and Colocasia.
- **Leafy vegetables:** More than 15 types of leafy vegetables are eaten by the communities living in the area. *E.g.. Spinach, Methi, Lal Bhaji, Amaranthus (Khatta bhaji), Kusum Bhaji, Koliari Bhaji, Bhohar bhaji, Kanda bhaji, Pepal bhaji, Moringa bhaji and Chunchunia bhaji.*
    - **Faunal Diversity**
    - Dantewada's forests and varied habitats support a rich array of wildlife:
    - *Major Wildlife Species:*
- **Mammals:** The region is home to rare Wild buffalo, Tigers, Barasinghas, Leopards, Nilgai, Gaurs, Sambar, Sloth Bears, Chausingha, Dhole, Striped Hyena, Muntjac, Flying Squirrel, Wild Boar, Porcupine, Pangolins, Langurs, and Monkeys.
- **Reptiles:** Common species include Freshwater Crocodile, Indian Chameleon, Monitor Lizard, Common Krait, Cobra, Russell's Viper, and Indian Rock Python.
- **Birds:** The area hosts a variety of avifauna, including Bulbul, Parrots, Peafowl, Crimson-breasted Barbet, Pheasant, Teetar, Racket-tailed Drongos, Tree Pie, Egrets, and Herons.[31]

Dominant Tree Species of the Dantewada

- Madhuca Longifolia (Tora/Mahua): A characteristic species of the region's dry deciduous forests, found both in forest and private lands.
- Diospyros melanoxylon (Tendu): Commonly occurring species.
- Boswellia serrata (Salai): Widespread and notable in these forests.
- Lagerstroemia parviflora: Conspicuous in the forest landscape.
- Bambusa arundinacea (Thorny Bamboo): Present but generally of poor quality.
    - Additionally, the area supports various shrubs, herbs, and grasses, including species like Clerodendrum infortunatum (Bhat), Helicteres isora (Marur phalli), and Indigofera cassioides (Saknya/Kathi).[32]

Aquatic Life

The aquatic habitats in Dantewada, including rivers and ponds, are home to freshwater fish species such as Rohu (*Labeo rohita*), Catla (*Catla catla*), and Mrigal (*Cirrhinus cirrhosus*), as well as small, indigenous fish commonly found in local ponds and other water bodies.

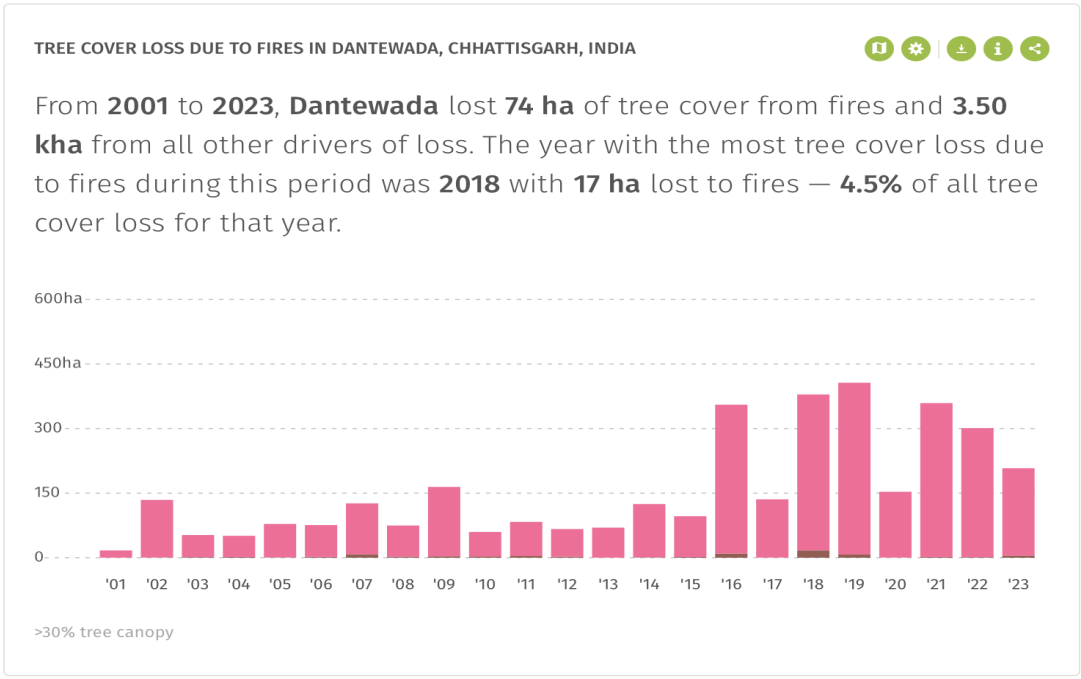
Agro-Biodiversity

The cultivation of diverse traditional crops characterises the Dantewada agricultural landscape.

- **Cereals and Millets:** More than 20 indigenous paddy varieties are being cultivated by the farmers based on their crop duration, nutrient requirements, soil types and other factors. Beyond the dominant paddy (rice) cultivation, farmers also grow various millets, including finger millet (*ragi*), kodo millet, and little millet (*kutki*). These millets, once integral to the local diet, have seen a decline in cultivation due to changing food preferences and the availability of subsidised rice through the Public Distribution System (PDS). [33]
    - **Pulses and Oilseeds:** Crops like urad (*black gram*), moong (*green gram*), and kulthi (*horse gram*), as well as oilseeds such as Niger and Til, are cultivated by farmers.

[31] Josh, J. (2013, December 3). Chhattisgarh: Wildlife. *Jagranjosh.com*. https://www.jagranjosh.com/general-knowledge/chhattisgarh-wildlife-1386066993-1?utm_source
[32]Journal, I. (n.d.-c). *Biological measures for rehabilitation of the Mined-Out area in Dantewada, Chhattisgarh, India*. Slideshare.
[33]Badave, A. (2016). Organic Farming initiatives in Dantewada: From subsistence to sustainability. In *NewsReach* (pp. 7–9).

- **Horticultural Practices:** Beyond staple crops, farmers in Dantewada block cultivate and grow the following horticultural crops:
    - **Fruits commonly grown include mango**, Cashew nut, Banana, Guava, Lemon, Papaya, jackfruit, Custard apple, Coconut, Amla, and ber.
    - **Vegetables:** A variety of leafy greens and other vegetables such as Arbi, Tomato, Okra, Chilli, Brinjal, Radish, Turmeric, Onion, Potato, Cauliflower, Cabbage, Bottle gourd, Spinach, Amaranthus, Lal bhaji, Cow pea, Pumpkin, and Bitter guard.



Source: Global Forest Watch

Fig. 3.15 – Tree cover loss due to fires in Dantewada

Crop Residue Burning in Dantewada Block (Landscape)

Burning of crop residue and stubble is not a significant problem. It is therefore a good practice for residue management.

Role of Institutions in Natural Resource Management

Gram Panchayats (Formal Regulatory Bodies):

In Dantewada, Gram Panchayats are involved in planning and implementing the following NRM-related activities.

- Watershed development,
- Soil and water conservation activities, such as deepening ponds and reducing soil erosion.
- Gram Panchayat Development Plans developed by the Gram Sabha are essential for integrating agroecology-based activities. Thus, GPs are among the most important institutions for NRM-related activities.
- Implementation of MGNREGS for land levelling, pond creation, and plantation.
- Allocation and protection of common resources such as grazing lands and village tanks.
- Management of minor forest produce (MFP) under rights devolved through the Forest Rights Act (FRA) and PESA.

The role of Gram Sabha under PESA is vital, as it holds decision-making power over natural resources, including the approval of land use changes, mining, and the collection of forest produce.

Forest Department and Van Suraksha Samiti (VSS)

The Chhattisgarh Forest Department governs a large portion of forested land in Dantewada. The department has institutionalised local forest management committees to involve local communities in protecting, afforesting, and sustainably using forest resources. JFMCs:

- Operate under state-level forest programs and centrally sponsored schemes.
- Support livelihood activities linked to forest produce, such as tendu leaf and bamboo collection.
- Help in forest fire management and plantation drives.

As the allocation of community forest rights is a recent development in the Dantewada block, the presence of community institutions to maintain, protect, and plan community forest areas is not evident. Even if these committees are formed, communities in general are not aware of them and will require significant efforts towards awareness, leadership development, and effective planning of the areas.

Community-Based Organisations (CBOs), FPOs, and SHGs

Institutions like Self-Help Groups (SHGs), Farmer Producer Organisations (FPOs) such as Bhoomgaadi, and Village Development Committees (VDCs) play a role in:

- Promoting agroecological practices, seed banks, and composting.
- Participating in watershed and water user associations.
- Creating awareness and building capacity for effective resource governance.

Many of these groups also link to livelihoods and enterprise development, especially for women and tribal communities.

3.7. Energy (Grid and Renewable)

3.7.1. Status of grid energy

Electricity coverage in the area is generally adequate, with no regular load shedding. Outages typically occur due to faults, and the delays are often attributed to the time required for repairs, reflecting the overall poor quality of rural electricity services. Household electricity access is widespread and consistent. However, electricity connections for irrigation pose more challenges, especially when nearby infrastructure is lacking, such as transformers. While government schemes exist to support group applications by farmers, implementing these processes can be challenging, making access to irrigation electricity less reliable.

3.7.2. Status of Solar and Biogas Adoption in Dantewada Block

During field visits and interactions with farmers in the Dantewada block, it was observed that the adoption of renewable energy technologies such as solar and biogas remains very limited. While both technologies have been promoted in the past through various schemes and organisational initiatives, visible usage at the field or household level is currently negligible.

Biogas: Declining Usage Despite Previous Interventions

Several biogas units were established in the past under government- and NGO-led programs, and some households utilised them for cooking. However, usage has significantly declined in recent years. Farmers mentioned that one key constraint is the reduced availability of cow dung and slurry, which are essential for biogas plant operations. It has also been shared that the earlier biogas units had higher capacities, and households were unable to arrange the required volume of cow dung for them. This shortage arises from a change in livestock management practices—particularly during the Rabi

and Zaid seasons when animals are not kept in sheds during the day and are only tied at night. This limits the pile of dung, making the continuous operation of biogas plants impractical.

Additionally, maintenance issues and a lack of follow-up support have also contributed to the discontinuation of biogas use. Farmers reported that many units are now non-functional, despite having initially benefited from subsidies and training.

Solar Energy: Underutilised Despite Infrastructure

The use of solar energy is also limited. A few households have installed solar panels to meet their domestic electricity needs, primarily for operating lights and small appliances. However, many of these systems are currently non-operational or used irregularly due to technical issues, battery degradation, or lack of repair services. Since there are only a limited number of borewells and the district administration is not permitting the installation of new ones, the need for solar-powered pumps is also restricted. Thus, despite the availability of subsidies and schemes for solar pumps under PM-KUSUM and other state programs, awareness and uptake in the block remain low.

3.8. Nutrition

Dantewada, situated in southern Chhattisgarh, is a predominantly tribal district with distinct socio-economic and ecological characteristics. The district faces significant challenges in addressing malnutrition, especially among children and women. This report synthesises key data and trends from the District Nutrition Profile developed by the International Food Policy Research Institute (IFPRI), using NFHS-4 (2015–16) and NFHS-5 (2019–20) data. The data presented here are for the Dantewada district, as information for the Dantewada block is limited. However, this information is equally relevant to the Dantewada block.

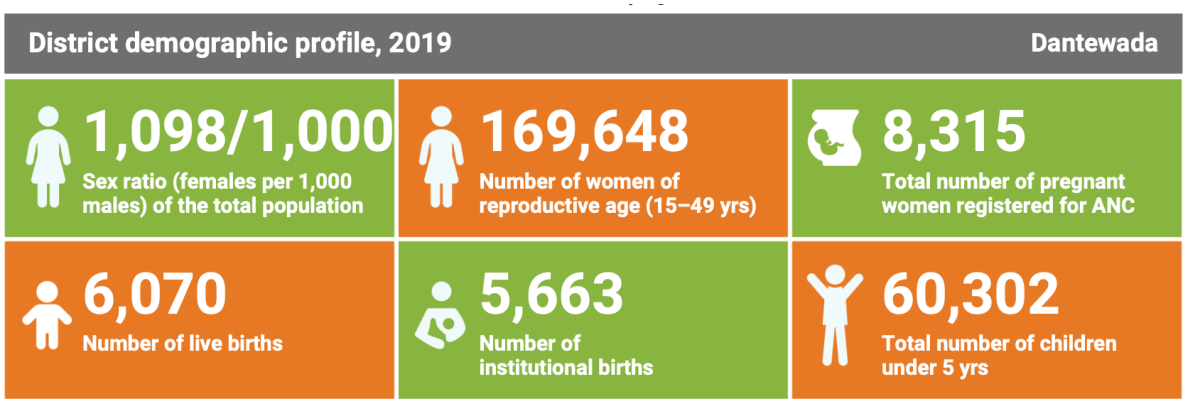


Fig. 3.16 – District Demographic profile of Dantewada, 2019

3.8.1. Nutrition Outcomes in Children (Under 5 Years)

In Dantewada district, the nutritional status of children under 5 years of age is concerning. According to the latest data, **46% of children are stunted**, indicating widespread chronic undernutrition and poor linear growth. **Wasting**, which reflects acute malnutrition, is prevalent in **19%** of children, with **10%** suffering from **severe wasting**, a critical condition requiring urgent intervention. The prevalence of **underweight children** also stands at **46%**, closely aligning with the stunting rate and highlighting compounded nutritional deficiencies. Simultaneously, **10% of children are overweight or obese**, pointing to the **emerging double burden of malnutrition** in the district. Most alarmingly, **90% of children are anaemic**, suggesting widespread iron deficiency and possibly recurrent infections, which severely impact growth, immunity, and cognitive development.

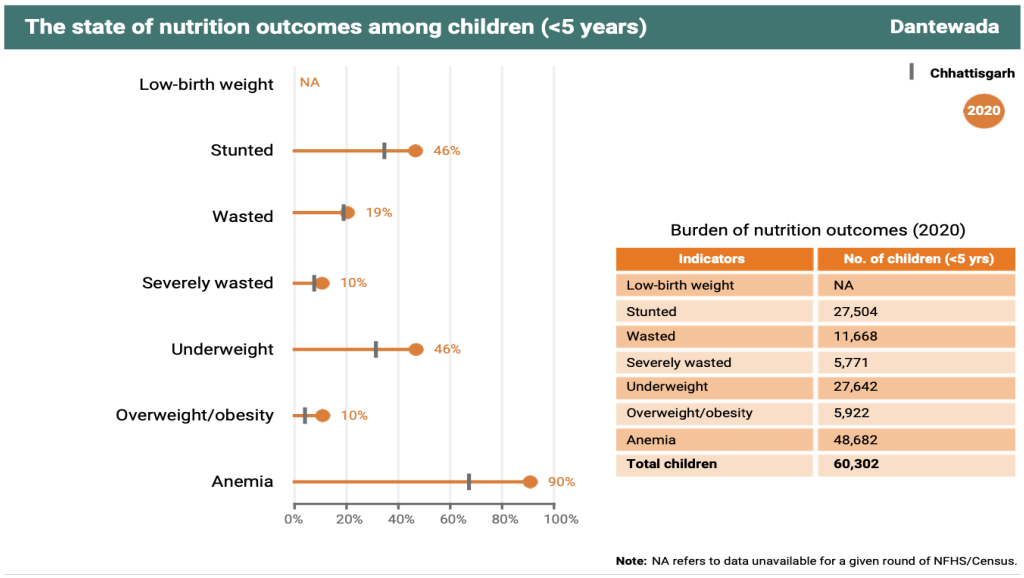


Fig. 3.17 – State of nutrition outcomes among children (<5 years)

3.8.2. Nutrition Outcomes in Women (15–49 Years)

The nutritional status of women aged 15 to 49 years in Dantewada reflects a dual burden of malnutrition and rising non-communicable diseases. **Underweight continues to affect 26% of women**, indicating persistent undernutrition and associated health risks. At the same time, **7% of women are overweight or obese**, pointing to the emergence of nutrition-related lifestyle issues. The burden of **non-communicable diseases is increasing**, with **19% of women reporting hypertension** and **8% affected by diabetes**, underscoring the need for integrated health and nutrition interventions. **Anaemia remains a significant public health concern**, affecting **77% of non-pregnant women** and **63% of pregnant women**, which has profound implications for maternal health, pregnancy outcomes, and overall well-being.

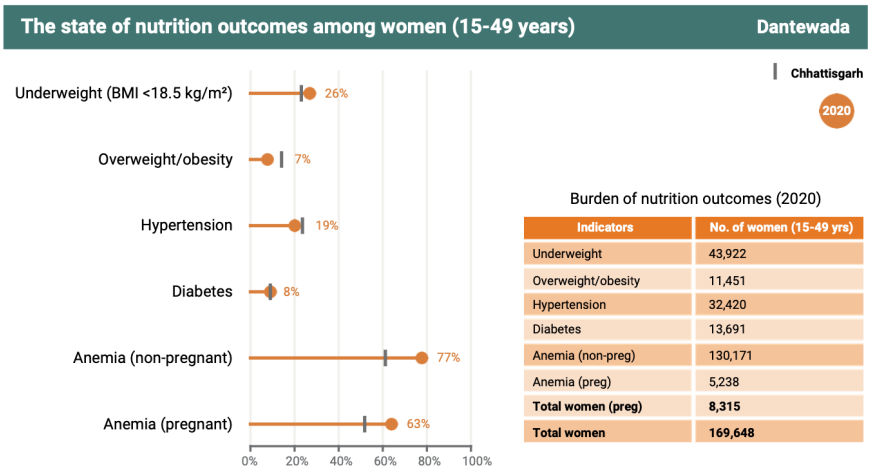


Fig. 3.18 – State of nutrition outcomes among women (15-49 years)

3.8.3. Immediate Determinants of Child Nutrition

The immediate determinants of child nutrition in Dantewada district point to several critical gaps in maternal and child health practices. **Only 27% of pregnant women consumed iron-folic acid (IFA) for 100 or more days**, and an even lower **13% completed the recommended 180 days**, indicating suboptimal adherence to essential micronutrient supplementation during pregnancy. While the **early initiation of breastfeeding is relatively low at 34%**, the **rate of exclusive breastfeeding is high at 86%**, which is a positive indicator. However, **data on the timely introduction of complementary foods, dietary diversity, and minimum meal frequency for children are unavailable**, making it difficult to comprehensively assess the quality of infant and young child feeding practices.

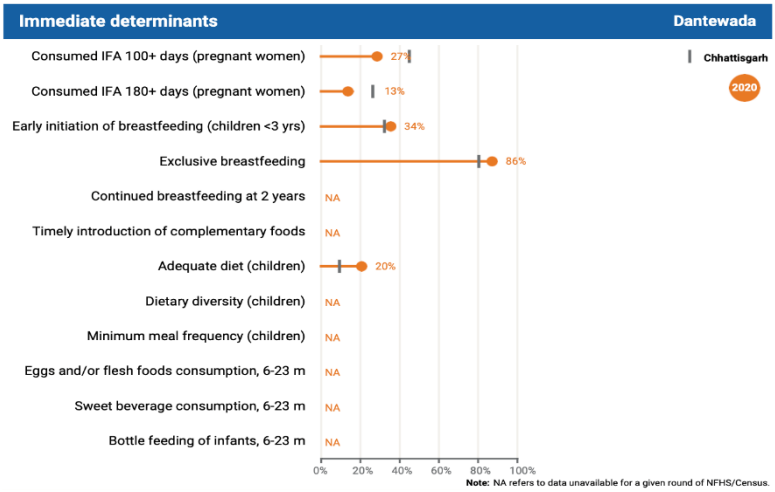


Fig. 3.19 – Immediate Determinants of Child and Maternal Nutrition

3.8.4. Underlying Determinants

The underlying determinants of nutrition in Dantewada district highlight critical socio-economic and infrastructural challenges. **Only 24% of women have completed 10 or more years of education**, which limits their opportunities for informed health and nutrition practices. **Early marriage remains prevalent**, with **16% of women aged 20–24 married before the age of 18**, and **7% of adolescent girls aged 15–19 already pregnant or with children**, increasing their vulnerability to poor health outcomes. On the infrastructure front, **60% of households have access to improved sanitation**, while **95% benefit from improved drinking water sources**, indicating moderate progress in basic amenities. Encouragingly, **82% of households are covered under health insurance**, reflecting the effective outreach of government schemes. However, **data gaps on safe disposal of waste and household poverty status** hinder a comprehensive understanding of the broader determinants influencing nutritional outcomes.

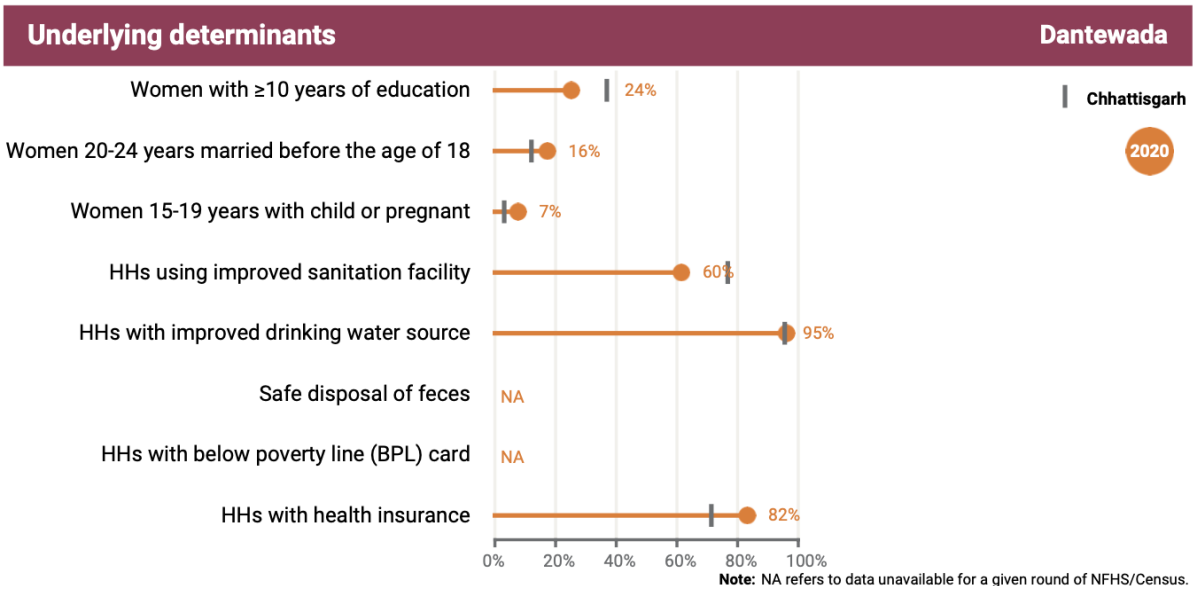


Fig. 3.20 – Underlying Determinants of Nutrition in Dantewada

3.8.5. Coverage of Health and Nutrition Interventions

The coverage of health and nutrition interventions in Dantewada district shows encouraging progress in several key areas, though significant gaps remain. High coverage levels are observed for critical maternal and newborn health services, including institutional births (90%), MCP card registration (99%), iodized salt usage (98%), tetanus immunization during pregnancy (97%), IFA supplementation for pregnant women (90%), skilled birth attendance (89%), and postnatal care for both mothers and newborns (85%). However, coverage remains moderate for early antenatal care registration (65%), completion of four or more ANC visits (68%), and financial assistance under the Janani Suraksha Yojana (69%). There is a lack of available data on several critical interventions, such as deworming, Vitamin A supplementation, paediatric IFA, complementary feeding practices, nutrition education, preschool enrolment, and care-seeking for childhood illnesses, which limits a comprehensive assessment of service delivery across the continuum of care.

3.8.6. Dietary Diversity

Dietary diversity is widely used as a proxy for nutritional status because it reflects the likelihood of meeting nutrient requirements, is strongly associated with health outcomes, and can be measured quickly and cost-effectively in diverse populations. However, existing indicators such as the Minimum Dietary Diversity for Women (MDD-W) focus primarily on micronutrient adequacy and overlook important components related to NCD risk, including the consumption of ultra-processed foods and sugar-sweetened beverages. The Diet Quality Questionnaire (DQQ), developed by the Global Diet Quality Project, addresses this gap.

The Diet Quality Questionnaire (DQQ) was used to assess food consumption in Dantewada block, adapted for local diets and administered in July–August 2025. Indicators analysed include Dietary Diversity Score (DDS), protective and risky food consumption, Global Dietary Recommendation (GDR) score, and food source (own production vs. market). Definitions of these indicators are provided in the main report.

Minimum Dietary Diversity

Only one in four respondents (22%) in Dantewada achieved a Minimum Dietary Diversity (MDD)[34] of five or above (Figure 1). Gender-based differences were small, with 23% of men and 20% of women meeting the threshold, compared to the national MDD-W of 33% for rural women (and 41% for all women). The mean dietary diversity score in the surveyed households was 3.5, substantially lower than the national average of 4.6.

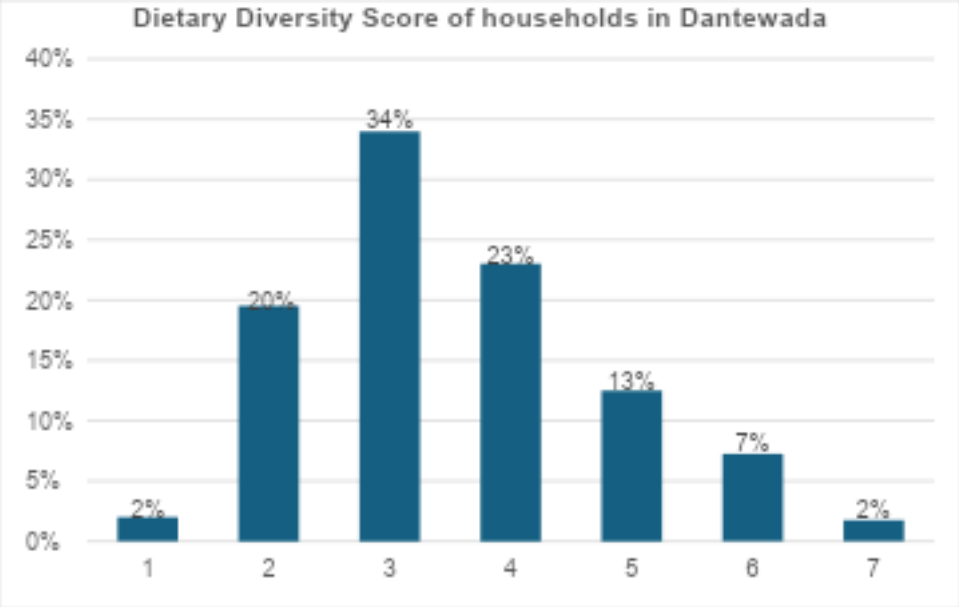


Fig. 3.21 – Dietary Diversity Score of households in Dantewada

Consumption of Healthy and Unhealthy Foods

Only one out of 10 households (11%) in Dantewada consumed all five essential healthy food groups (All-5; cereals/starchy foods, pulses, vegetables, fruits, animal-source foods), compared to 28% nationally. Notably, 88% of households consumed at least one fruit or vegetable in the past 24 hours, meaning 12% reported zero fruit or vegetable intake, slightly better than the 22% observed nationally. Dairy consumption was extremely low in Dantewada (4%) compared to the national average of 70% (Figure 2), while intake of meat, poultry, and fish was also lower than the national average (24% versus 28%). This reflects dietary reliance on staples and pulses, with limited integration of animal-source and dairy foods.

[34] The DDS was calculated based on reported consumption of the following 10 food groups: whole grains and starchy staples; pulses and legumes; nuts and seeds; dairy products; meat, poultry, and fish; eggs; dark green leafy vegetables; vitamin A-rich fruits and vegetables; other vegetables; and other fruits. A score of one is assigned for each food group consumed and a DDS of five or more was considered an indicator of minimum dietary adequacy, as per FAO guidelines.

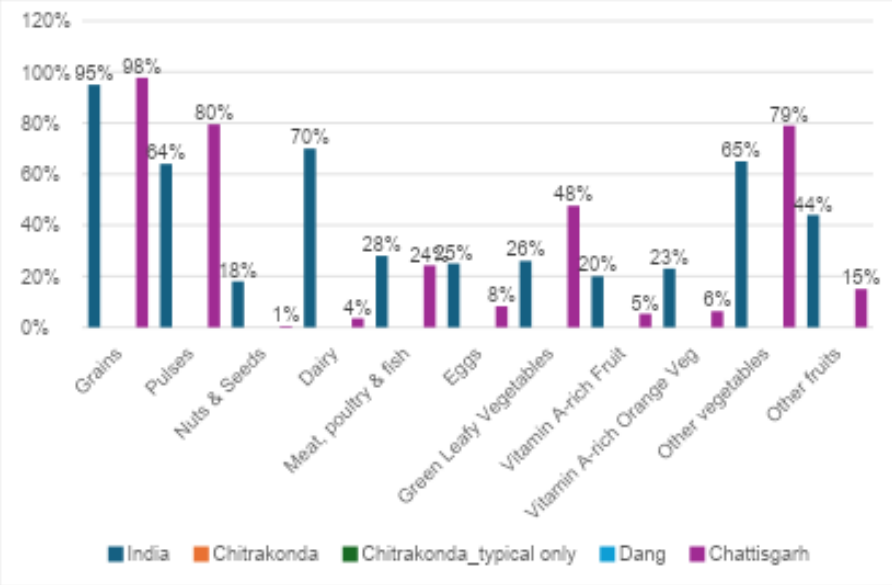


Fig. 3.22 – Consumption of 10 food groups in India and in Chattisgarh

Along with the consumption of protective foods such as pulses and vegetables, the survey also revealed a low presence of unhealthy food consumption in Dantewada, though at much lower levels than the national average (Table 1). Specifically, only 17% of respondents reported consuming more than one sugary food or beverage in the previous 24 hours, compared to the national rural average of 34%. Similarly, just 6% consumed a fried or salty snack, far below the national rural prevalence of 36%. The consumption of sweet foods (24%) and sugar-sweetened beverages such as tea, coffee, or soft drinks (9%) was present but remained lower than national averages. These findings suggest that while dietary diversity remains a challenge, Dantewada households are comparatively less exposed to ultra-processed and unhealthy foods, providing an opportunity to strengthen healthy dietary practices before market-driven dietary transitions intensify.

Indicator	India Score	India Score for Rural households	Total (n=397)	Female (n=199)	Male (n=198)
All-5	28%	24%	10%	10%	11%
At least one vegetable	71%	69%	84%	84%	84%
At least one fruit	44%	39%	19%	20%	19%
At least one pulse, nut or seed	67%	64%	79%	80%	78%
At least one animal-source food	78%	72%	32%	28%	35%
At least one starchy staple	95%	94%	97%	97%	97%
MDD-W	41%	33%	22%	22%	NA
Dietary Diversity Score (DDS)	4.64	4.33	3.48	3.45	3.52
Zero vegetable or fruit consumption	22%	25%	15%	14%	16%
At least one vegetable or fruit	78%	75%	85%	86%	84%
Pulse consumption	64%	62%	79%	80%	78%
Nuts or seeds consumption	18%	17%	0%	0%	1%
Whole grain consumption	67%	69%	3%	3%	3%
Processed meat consumption	6%	5%	2%	1%	3%

Salty or fried snack consumption	38%	36%	6%	4%	8%
Deep fried food	23%	22%	3%	2%	4%
Sweet foods consumption	39%	35%	24%	24%	24%
Soft drinks (sodas, energy drinks, sports drinks)	13%	11%	9%	6%	13%
NCD-Protect[35]	3.35	3.23	2.18	2.19	2.17
NCD-Risk[36]	1.49	1.37	0.52	0.45	0.59
GDR Score[37]	10.86	10.86	10.66	10.74	10.58
At least one whole grain, pulse, nut or seed	87%	86%	79%	80%	78%
More than one sugary food or beverage	39%	34%	17%	13%	22%
More than one salty ultra-processed food	19%	17%	1%	1%	2%
Fast food or instant noodles	13%	11%	2%	2%	3%

Nutrition Indicators calculated for India[38], Rural India, and Dantewada landscape, disaggregated by gender

Table 3.13 – Nutrition Indicators calculated for India, Rural India, and Dantewada landscape, disaggregated by gender

The consumption of sugary foods and beverages in Dantewada was primarily due to sugar-sweetened tea or coffee, as well as the intake of sweet foods such as biscuits, packaged sweets, or traditional mithai (Table 2). The consumption of soft drinks or packaged juices was minimal.

Food group	India	Dantewada
Sweet foods	39%	24%
Sugary tea, coffee, or milks	64%	32%
Fruit or packet juice	14%	0%
Soft drinks	13%	10%

Table 3.14 – Consumption of Sweet Foods, Beverages, and Traditional Drinks in Chattisgarh

Own Production of Food Groups

Households in the Dantewada consumed primarily rice, green leafy vegetables, common vegetables (Tomatoes, eggplant, okra/lady finger, French beans, cauliflower, cabbage, or beetroot), and pulses. They reported high market (or PDS) dependence across various food groups. Less than half (46%) of households consumed rice that they had produced. Very few households reported consumption of millets, but those that did report consumption also reported self-production. Three out of four households produced their own pulses (76%) and green leafy vegetables (75%). However, most

[35] *Protective food consumption:* The NCD-protect score reflects the consumption of healthy foods, which are whole grains, pulses, nuts and seeds, fruits and vegetables and is calculated on a scale of 0-9, with a higher score reflecting higher consumption of healthy foods. These foods are considered to have a protective effect against malnutrition, infectious diseases, as well as non-communicable diseases.
[36] *Unhealthy food consumption:* The NCD-Risk score reflects the consumption of unhealthy foods, which are soft drinks, sugary foods, sugar-sweetened beverages, salty and fried foods, ultra-processed foods, instant noodles, and processed meats (like sausages). They are considered to be unhealthy foods that the global dietary recommendations recommend limiting or avoiding. The NCD-Risk score is also calculated on a scale of 0 to 9, with a higher score reflecting a higher consumption of unhealthy foods.
[37] *Global Dietary Recommendations (GDR) score:* The GDR score is reported on a scale of 0 to 18, reflecting adherence to global dietary recommendations. The higher the GDR score, the better the adherence. GDR is calculated as: GDR = NCD-Protect - NCD-Risk + 9
[38] Global Diet Quality Project. 2024. "DQQ Results Dataset 2021-2024." Harvard Dataverse. https://doi.org/doi:10.7910/DVN/KY3W8A. Accessed at dietquality.org on August 19, 2025.

households purchased common vegetables and only 6% consumed their own produce. Consumption of animal-source foods was also low, but about a quarter (24%) of households consuming chicken grew their own.

Food Category (DQQ)	Food Item	% Own Production	Count	% reporting consumption
01. Foods made from grains	Rice	46%	361	91%
	Wheat	37%	27	7%
02. Whole grains	Finger millet	75%	12	3%
	Little millet	100%	7	2%
03. White roots or tubers	Tuber	40%	270	68%
04. Pulses	Common pulses	76%	316	80%
05. Vitamin A-rich orange vegetables	Orange vegetables	75%	4	1%
06. Dark green leafy vegetables	Green leafy vegetables	75%	116	29%
07. Other vegetables	Common vegetables	6%	305	77%
	Gourds	22%	55	14%
08. Vitamin A-rich fruits	Yellow fruits	68%	19	5%
	Orange fruits	-	-	
10. Other fruits	Common fruits	12%	57	14%
	Other fruits	-	-	
11. Baked or grain-based sweets	Sweets	1%	89	22%
12. Other sweets	Other sweets	0%	15	4%
13. Eggs	Eggs	3%	15	4%
14. Cheese	Cheese	-	2	1%
15. Yogurt	Curd	-	4	1%
16. Processed meats	Processed meat	43%	7	2%
17. Red meat (ruminant)	Mutton	100%	1	0%
	Pork	61%	18	5%
19. Poultry	Chicken	24%	42	11%
20. Fish or seafood	Fish	50%	52	13%
21. Nuts or seeds	Nuts	0%	2	1%

Table 3.15 – *Household Food Production and Consumption Patterns by DQQ Category*

Discussion

The results from Dantewada reveals that majority of the households consumed grains and pulses frequently, and leafy and other vegetables were reported more often than national averages, However, overall diet quality and diversity were low with the mean DDS of 3.5 and only 22% achieved MDD above five food groups indicating limited access to and use of nutrient-dense groups such as dairy, eggs, nuts and seeds, and vitamin-A rich fruits and vegetables. These gaps matter for essential micronutrients such as iron, vitamin A, calcium and fibre in everyday diets.

Further inquiry is necessary for infants and young children under two years, given the very low household intake of dairy, eggs, and vitamin-A rich produce. While dairy is not central to local food

culture, context-appropriate supplementation strategies (e.g., eggs, small livestock, or fortified options) may be needed depending on child nutrition status.

Ultra-processed snack foods and sugary beverages remain comparatively low. This relatively low penetration of market-processed foods offers an opportunity to reinforce healthier choices before exposure rises, especially among youth.

Data on self-production across food groups was most insightful. Consumption of whole grains (millets), milk, eggs, and other animal-source foods was low and is likely a result of low production of these foods. Both consumption and self-production was high only for pulses and market dependence was high for common vegetables. Further enquiry is needed to understand the quantity of healthy foods consumed as market-dependence could lead to consumption of insufficient quantities.

Overall, Dantewada's diet quality shows insufficient diversity. Programming should prioritize increasing regular access to and intake of fruits, vegetables, eggs, dairy or fermented dairy alternatives, nuts and seeds, and vitamin-A rich produce while preserving the current advantage of low ultra-processed food consumption through food literacy, community norms, and market shaping that favours minimally processed, nutrient-dense foods.

3.9. Women's Role in Institutions & Livelihoods

Women's involvement in formal institutions remains limited despite their significant contribution to agricultural and rural livelihoods. However, they actively participate in self-help groups (SHGs), cooperatives, and community-based organisations.

- **Participation in Self-Help Groups (SHGs):** Women-led SHGs play a crucial role in promoting financial inclusion and fostering entrepreneurship by providing access to credit and skill development opportunities. During the discussion with DPM and CG-SRLM, it was explained that the Dantewada block has more than 1000 SHGs with more than 3000 women members, and that 80% of the activities undertaken by these SHGs are related to agriculture. It is also documented that women are more active in the community and perform all agricultural and allied-sector work. Women's groups under NRLM also engaged in enterprise activities, including making mahua laddu, Imli sauce, *Dheki* Rice, and Jaggery powder. Also, women's groups under Gauthan were producing vermicompost and cultivating turmeric.
- **Role in Panchayati Raj Institutions (PRIs):** While some women hold positions in local governance due to reservation policies, their participation in Gram Sabhas and overall active roles are limited.
- **Participation in FPOs:** Bhoomgaadi FPC has a mixed representation of male and female members, with female members serving as shareholders (30%) and board members (20%).

3.9.1. Involvement of women in Agriculture, Livestock and NTFPs:

Women's Role and Participation in Agriculture

The table below highlights the degree of women's participation across various stages of agricultural work, categorised as High, Medium, or Low. A few key observations are as follows.

- Women participate heavily in labour-intensive tasks, such as weeding, manual harvesting, post-harvest activities (cleaning and drying), and grain storage. These activities are often time-consuming and physically demanding.
- Medium participation is observed in tasks such as seed selection and storage, sowing/ transplanting, pest and disease management, and selling at local markets.
- These activities require both labour and decision-making, suggesting that women contribute not only physically but also through their traditional knowledge and experience. Their growing role in market-facing tasks also points to a shift toward greater economic involvement.

- Activities, where women have low participation, include land preparation (ploughing and bund making) and irrigation. These tasks are typically male-dominated, often due to cultural norms, the need for physical strength, or the need to control tools and equipment.

Activity	High	Medium	Low
Land preparation (ploughing, bund making)			√
Seed selection and storage		√	
Sowing/transplanting		√	
Weeding	√		
Irrigation (water application/management)			√
Pest and disease management		√	
Harvesting (manual)	√		
Post-harvest processing (cleaning, drying)	√		
Storage (grain, vegetables, etc.)	√		
Selling in the local market			√

Table 3.16 – *Women's Participation Across Agricultural Activities*

Women's Role and Participation in Livestock-Related Activities

Note: only a few households currently undertake activities marked in yellow.

Women's Activities Participation in NTFP

Activity	High	Medium	Low
Collection of NTFPs, including fuelwood	√		
Post Collection- Drying and Storage of NTFPs	√		
Value addition by changing the form of NTFPs *(e.g. mango to amchur, and mahua-based liquor)*	√		
Selling of forest produce in local markets			

Engagement of women in Decision-making

Activity	High	Medium	Low
Participation in key household decisions (e.g., crop selection, livestock management, use of household income)	√		
Influence on decisions about food consumption and nutrition		√	
Access to and control over productive resources (land, livestock, tools, credit)			√
Control over income generated from livelihood activities		√	
Involvement in enterprise or value-chain level decision-making	√		
Membership and active participation in SHGs, cooperatives, FPOs, or Panchayati Raj Institutions		√	
Ability to influence community-level planning (e.g., resource allocation, infrastructure)			√
Access to training, extension services, and decision-support tools		√	

CHAPTER 4

Rational for the Recommendations

Households in the villages of Dantewada block engage in a wide range of activities related to land and forests. In fact, they draw their livelihoods from multiple sectors (e.g., agriculture, livestock, non-timber forest products, etc.) embedded in homestead land, agricultural land, forests, and other commons. It is therefore a felt need to work on potential livelihood activities across multiple sectors simultaneously. Interventions are designed with a predominant focus on strengthening industries, without missing the opportunity to leverage and build on existing complementarities and synergies across sectors and their domains.

At the household level, these interventions focus on increasing resilience, food and nutritional security, and enhancing income. These recommended interventions align with the Dantewada district's mandate to become an organic district. The interventions either leverage on the set of activities initiated by the administration, e.g. introducing extensive area certification, creating infrastructure for producing bio-agri inputs, and forming new local markets or build and complement the district's efforts towards a holistic agroecological approach to transform agriculture and allied (horticulture, animal husbandry and non-timber forest produce) sectors.

The interventions clearly are rooted in promoting and balancing gender equations. Women are at the centre of household, cluster, and landscape level interventions, with a clear mandate for participation and decision-making, since SRLM's community structure, *viz*. CLF, VO, and SHG are rooted in women; these interventions are suggested for implementation through the agencies of such women-led community institutions. Moreover, the JFM bodies, viz. Village forest committees, forest protection committees, and eco-development committees are also going to find women's participation and leadership. Strengthening the last-mile cadre of Jaivik Karyakarta, Krishi Sakhi, Pashu Sakhi, and NRM—the predominantly women champion change-makers at the grassroots—promotes women's agency and ensures the timely achievement of desired outcomes and outputs.

On the sectoral front, multiple sectors, including livestock, forest (NTFPs), agriculture, and horticulture, contribute to the rural households' income basket. On a cross-cutting note, promoting local breeds/ varieties/ resources and markets is the foundation for the recommended interventions. Suggested interventions either build on existing practices or strengthen them for an agroecology-led transition at scale.

Augmenting households' income while following sustainable practices (including agriculture, collection, harvesting, and rearing) is a salient and non-negotiable feature of the recommended interventions. In the livestock sector, strengthening the large animal economy at the household level is guided by the need to strengthen agriculture by gaining access to raw materials for preparing bio-inputs. Activities to enhance small ruminants (goats) and birds (poultry) are driven from an income and nutrition enhancement perspective.

Similarly, interventions recommended in the agriculture and horticulture sectors are designed to increase food security and combat malnutrition by integrating traditional knowledge and wisdom/or by introducing agroecological practices. The focus on post-harvest management includes implementing a range of recommended interventions to enhance existing cleaning, drying, and storage practices, improving quality and price recovery.
Interventions recommended around NTFPs focus on popularising sustainable collection and harvesting practices, which were once the hallmark of forest-fringe communities. Moreover, the planting of new

mahua trees and the regeneration of char have been recommended to address years of ignorance and negligence. Finally, recommendations ranging from improved physical measures for plucking fruit from trees to the use of better implements for value addition have been proposed to enhance quality and secure better prices.

Local markets in the form of weekly haat bazars are the lifeline of rural households. Households participate in these markets both as consumers (buyers) and producers (sellers). These markets, as part of the commons, are managed by institutions such as Gram Panchayats. These markets host agricultural produce grown using practices that may not be organic or agroecological. It would be imperative to transform these marketplaces (through awareness creation, new infrastructure, and basic amenities, among others) into sources of organic and agroecological produce and products, given the district's focus on transitioning to organic practices sooner or later. The creation of marketplaces that exclusively transact organic and agroecological goods would provide farmers with access to markets, and this is a real possibility.

Interventions aimed at creating suitable physical structures to arrest soil erosion and conserve water for irrigation, among others, have been desired and recommended. The exact set of activities and their economics for such interventions will be determined at a later date by the Anchor Organisations in consultation with relevant authorities.

Households' years of habit of engaging in a particular activity or behaviour would require sustained effort to transition into actual participants in the district's organic aspiration and to move towards agroecological systems. Additionally, it is also important to note that the support (advisory, etc.) to rural households as part of facilitating implementation should be (i) in the local language, (ii) invested in continuous handholding, and (iii) technically sound and easy to comprehend for better adoption. Recommended interventions, therefore, are activities that would provide the nudge above and aid behavioural change at the household level. Additionally, for certain recommended activities, setting up demonstration units has been suggested as a means to scale up.

Finally, the set of recommended interventions has been categorised into different levels, *viz.*

- Household level,
- Village level,
- Cluster level,
- Landscape level, based on the intervention's occurrence.

The repertoire of recommended interventions addresses the needs of different population segments. Agriculture related interventions address the immediate need of cultivators, particularly small and marginal farmers, which revolve around improving access and availability of traditional indigenous seeds, improving practices across the stages of crop cultivation (seed treatment, improved sowing methods of SRI, DSR etc., green manure application,), application of locally (household or cluster) made bio inputs for nutrient and pest management, availability of farm implements and machinery suitable for small holders especially women etc. Additionally, a range of cluster-level interventions, including establishing Crop Diversity Blocks, Community Seed Banks, Commercial Seed Banks, among others, have been recommended to address seed-related sub-sectoral gaps.

These interventions are destined to improve the quality of soil, enable the availability of water for critical irrigation, increase the yield of crops, and increase farmers' incomes, among others. An increase in agrobiodiversity is being attempted by recommending second and third agriculture crops aided by SWC works and the creation of irrigation infrastructure. Incidence of landlessness is negligible in Dantewada Landscape and hence all the above-mentioned interventions would not only address the need gaps but also serve as demonstrational/promotional measures for greater adoption.

Recommended interventions have attempted to make better land use either by augmenting/scaling up improved practices or by introducing improved practices in sync with the types of land. Farmers use their lowlands, characterised by relatively better fertility, water logging for certain varieties of paddy cultivation. Similarly, on the farmers' midlands and uplands (where the homestead land of a household

is also located), interventions to augment existing cultivation of vegetables, millet, certain paddy varieties, and agroforestry have been recommended.

Similarly, interventions to enhance the income of households from the collection of NTFPs and their value addition by improving their collection and value addition practices have been recommended. Along with economic considerations, these interventions would create greater awareness around sustainable collection practices and result in behaviour change of households. Envisaged regeneration, sustainable harvesting/plucking of NTFPs would mean better resource availability and improved ecological balance.

While interventions around large cattle are to create a better habitat for the cattle to remain stress-free, it is also expected to augment circularity by value-adding dung and urine into bio inputs and applying them in the homestead and farm land. For households with relatively lesser means to prepare bio-agri inputs, the recommended Bio Resource Centre are expected to provide easy access.

CHAPTER 5

Intervention Planning for Agroecological Transformation

PART 1 - DETAILS OF INTERVENTIONS

5.1. Agriculture

5.1.1. Establishing Community Seed Bank (CSB)

The Community Seed Bank (CSB) intervention aims to enhance seed sovereignty, preserve agro-biodiversity, and build climate resilience by promoting the use of locally adapted, traditional seed varieties. These seeds are better suited to local conditions, require fewer external inputs, and offer greater tolerance to climatic stress. CSBs ensure timely and affordable access to quality seeds, particularly benefiting small and marginal farmers, while also supporting food security, nutrition, and sustainable farming practices. By reviving traditional seed-saving knowledge and reducing market dependency, CSBs contribute to ecological sustainability and strengthen community-based seed systems."

Domains	Crops
Intervention	**Establishing a Community Seed Bank (CSB)- Local (desi) varieties of Millets (Kodo, Kutki, and Finger Millet (Ragi)), Oilseeds and Pulses**
When will it start functioning?	First Year
What will it do?	• Community-managed seed system • Preservation of Pure Lines of local (desi) varieties of Millets (Kodo, Kutki, and Finger Millet (Ragi)), Oilseeds and Pulses • Multiplication of pure lines, Quality Control, • Sales and Distribution
Who will implement it? (stakeholders, including institutions)	• NIRMAAN/ Implementing Agency • Community Institutions (SHG) • Early Adopter Farmers • FPC/ CLF
Key Issues and Challenges for Saturation	• Collection of seed and the requisite quantity required for saturation. The seed varieties are in demand ot available. Maintaining the purity of seeds and also preservation practices for the seed • Quality indigenous seeds with assured germination • Ensure preservation of pure line of local (desi) varieties of millets (kodo, kutki, and finger millet (ragi)), oilseeds and pulses • Demand generation and supply mechanisms

Domains	Crops
Intervention	**Establishing a Community Seed Bank (CSB)- Local (desi) varieties of Millets (Kodo, Kutki, and Finger Millet (Ragi)), Oilseeds and Pulses**
How it will be implemented	• A Community Seed Bank will be established at the cluster level (covering multiple villages) and managed by a community institution. • Progressive farmers would be identified for seed multiplication • CLF, FPC, or SHGs can generate demand at village/community group level meetings and establish supply mechanisms. • Capacity Building program for the maintenance of the Community Seed Bank, covered under cadre training.
Feasibility/ viability issues, if any	• Insufficient demand may render the Community Seed Bank commercially unviable. • Proper infrastructure is required to maintain seed viability. • May lack knowledge on seed selection, drying, grading, and storage practices.

Potential Funding Sources	• Community
	• Government Schemes
	  ○ Rashtriya Krishi Vikas Yojana (RKVY) – For promoting on-farm seed production and community seed banks.
	  ○ National Food Security Mission (NFSM) – Seed production and seed distribution support for pulses and cereals.

Key Milestones	• Indigenous seeds of crops cultivated by the farmers are available in adequate quantity to achieve the saturation • The desired number & type of crops for which seeds should be available are available • Year-wise increment in the number of farmers purchasing/ exchanging seeds from the Community Seed Bank • Year-wise, seed multiplier farmers are identified and supported to participate in See Bank activities.
Potential Unknowns	• Infrastructure availability • Skills: Business and Technical • Funds availability • Demand at the farmers' level • Policy change • Competition: Market triggers for non-indigenous seeds • Climatic Factors
Ecological, Economic and Social Benefits	**Ecological**: • Maintaining purity of several local (desi) varieties of millets (kodo, kutki, and finger millet (ragi)), oilseeds and pulses • Hybrid seeds, which usually require high nutrient intake, would be replaced by climate-resilient indigenous seeds requiring less nutrient intake & having less disease and pest infestation • The ecological footprint of water, etc., will be reduced • Preserving genetic material to ensure the availability of high-quality climate-resilient seeds in later years and for posterity **Economic:** • Farmer level- increase in germination rates, production and hence income **Social:** • Access to preferred paddy varieties • Women's participation (SHG) increased • Women's Decision-Making • Extension Services, Advisory and Knowledge Sharing by local cadre to local farmers

Domains	Crops
Intervention	**Establishing a Community Seed Bank (CSB)- Local (desi) varieties of Millets (Kodo, Kutki, and Finger Millet (Ragi)), Oilseeds and Pulses**
Key stakeholders involved and their roles in implementation	Community/Farmers as seed buyers and suppliers, Community institution, technical support provider (KVK, Ag unit).
Additional human resources required	Skilled human resources are needed for managing the operations of Community Seed Bank, including managing the quality
Institution required, if any	Either leverage existing CBOs, such as SHGs and Bhoomgaadi, or form a new institution to manage the Community Seed Bank.

5.1.2. Establishing Commercial Seed Bank (CISB): Production and Sale Model

The intervention on Establishing Commercial Seed Banks (CISBs) aims to preserve, multiply, and make available traditional paddy and vegetable seed varieties by creating a sustainable production and sales model rooted in local agroecological systems. CISBs will act as decentralised repositories of genetic diversity, ensuring timely and affordable access to quality indigenous seeds that are climate-resilient, pest-tolerant, and nutritionally valuable, thereby enhancing food security and dietary diversity for rural households.

The intervention will be implemented in partnership with progressive farmers, community-based organisations, NGOs, and technical institutions, including agricultural universities and ICAR institutes. It will be supported by a trained workforce, including managers, extension agents, and quality control staff.

Key challenges to saturation include building sufficient demand for traditional varieties, ensuring seed purity and quality control, maintaining storage infrastructure, and establishing reliable market linkages for commercial viability. Implementation will involve purchasing identified indigenous varieties from progressive farmers, establishing seed storage and processing facilities, and engaging trained human resources for management, quality control, extension, and sales. At a later stage, progressive seed-growing farmers would be asked to grow specific seed varieties to meet demand. The relatively modest setup cost strengthens the feasibility compared to the long-term benefits. Still, viability depends on sustained farmer participation, local seed preferences, and effective market development for traditional seed-based products. Funding sources could include government schemes for agrobiodiversity conservation, CSR funds from agri-based companies, NABARD, Biodiversity boards, and international donors promoting sustainable agriculture. Key milestones will consist of establishing seed bank infrastructure, procuring and storing initial seed lots, training farmers in quality seed production, establishing sales networks, and conducting annual reviews of adoption rates. Risks include climate variability affecting seed production, insufficient market demand, and challenges in maintaining community trust and equitable governance.

Nevertheless, ecological benefits include conservation of biodiversity and the revival of climate-resilient crops; economic benefits include the creation of localised seed enterprises and increased farmer income; while social benefits include strengthening traditional food cultures and empowering farming communities. Key stakeholders include farmers (seed producers and custodians), community seed banks and NGOs (mobilisation and awareness), technical institutions (quality and characterisation), government agencies (policy and funding support), and consumers (seed users). Additional human resources, such as managers, quality control specialists, extension workers, and labourers, will be needed to operationalise the CSB. Institutional arrangements with Farmer-Producer Organisations (FPOs), Biodiversity Management Committees, and Cooperative Seed Enterprises will be critical to ensure sustainability, governance, and scale-up. Overall, CISBs offer a practical, market-linked model for conserving indigenous seed diversity while generating ecological, economic, and social benefits at the community level.

5.1.3. Crop Diversity Block- Conservation of Traditional Seed Varieties

The Crop Diversity Block (CDB) – Conservation of Traditional Seed Varieties intervention aims to conserve, evaluate, and promote traditional varieties of paddy, vegetables, oilseeds, pulses, and

millets through in-situ conservation at the farmers' fields using a landscape-level approach. More than 300 seed varieties are envisaged to be conserved through this intervention. By systematically mapping local germplasm from farmers, seed banks, community institutions, NGOs, and ICAR-NBPGR, the initiative seeks to document, characterise, and revive rare, unique, and endangered varieties with traits such as drought tolerance, pest resistance, nutritional richness, and cultural significance. The intervention will be implemented by engaging selected farmers, supported by Community Resource Persons (CRPs), experienced farmers, and experts from local organisations. At the same time, institutional partners like ICAR-NBPGR, State Agricultural Universities, Community Seed Banks, Commercial Seed Banks, and grassroots NGOs will play key roles in technical backstopping, monitoring, and linkage building.

Among others, the intervention also focuses on the conservation and maintenance of indigenous seed varieties, particularly paddy, which are still prevalent in the Dantewada landscape. While an estimated 150 traditional paddy varieties exist in the region, around 50 are currently being conserved. To sustain and expand this effort to include conservation of all the 150 paddy varieties, a dedicated seed conservation plot—about half to one acre in size—will be maintained. This plot will serve as a mother centre for conserving, purifying, and making indigenous seeds available for multiplication.

Technical issues and challenges include ensuring seed purity and organic management at the CDBs, and sustaining farmer participation beyond the initial years. Implementation will follow an inclusive process—establishing one CDB of 2 acres, conducting participatory varietal selection (PVS), organising seed melas, recipe trainings, and food festivals to build awareness and demand, with characterisation and evaluation continuing over 2–3 years. Feasibility is strengthened by modest resource requirements (~₹3.5 lakh per CDB annually as per the detailed budget) and strong local participation. Convergence with ongoing government programs (e.g., Mission on Integrated Development of Horticulture, Millet Missions, Biodiversity Boards) and donor funding (CSR foundations, NABARD, BIRAC, international conservation funds) for CDB will be explored.

Key milestones include completion of diversity mapping, establishment of CDBs, two seed melas annually, characterisation of varieties, farmer-led PVS, and distribution of promising varieties through community seed banks. Potential risks include climatic variability affecting crop survival, loss of seed purity, limited market demand for traditional varieties, and uncertainty of sustained funding. However, the ecological benefits include conserving agrobiodiversity, reviving resilient crops suited to climate change, and maintaining soil health through organic/natural farming. Economically, the intervention opens avenues for developing niche markets for traditional grains and value-added products, while socially, it strengthens cultural food traditions, empowers farming communities, and builds local institutions.

The key stakeholders involved will include farmers (for conservation and feedback), CRPs (for field-level coordination), NGOs and local organisations (for capacity building and expert inputs), ICAR-NBPGR and SAUs (for technical guidance), and government/CSR/donor agencies (for funding and policy support). Additional human resources required include one CRP per CDB, experienced farmer facilitators, and technical experts for characterisation. Institutional strengthening through Community Seed Banks and Biodiversity Management Committees will be required to ensure long-term conservation, seed distribution, and knowledge sharing. Overall, CDB is a community-rooted intervention to conserve traditional seed diversity while creating ecological, social, and economic co-benefits.

5.1.4. Selection and Storage Practices for Seeds

Promoting seed selection and scientific storage practices is critical for achieving seed sovereignty and self-reliance in smallholder farming communities. Dependence on external seed sources makes farmers vulnerable to market price fluctuations, seed shortages, and poor varietal suitability to local agro-climatic conditions. Hence, the following intervention at the farmer level focuses on identifying, selecting, and preserving disease-free, true-to-type seeds from local crops, ensuring improved germination, better yields, and reduced post-harvest seed losses. By drying, grading, labelling, and using proper storage structures, farmers can maintain seed viability and enhance climate resilience.

This activity, as part of a package of practices, does not envisage any capex investment.

Domains	Crops
Intervention	**Selection and Storage Practices for Seeds**
When will it start functioning?	First year
What will it do?	Promote Seed Sovereignty, Improve Germination and Yield, Reduce Post-harvest Seed Losses,
Who will implement it? (stakeholders, including institutions)	Lead Farmers, Community Institutions, NIRMAAN/ Implementation Partners
Key Issues and Challenges for Saturation	Poor storage infrastructure and the availability of subsidised or hybrid seeds in the market discourage own-seed saving, due to a lack of awareness of seed selection criteria such as maturity, disease-free status, and varietal purity.
How it will be implemented	• **Step: awareness, demonstration, adoption, and community ownership.** • **Awareness Generation** for community members in mobilisation by NIRMAAN / Implementing Agency's team • **Identification and Training of Lead Farmers / Master Trainers**- Train them on seed selection (disease-free, true-to-type, fully matured). • Proper drying, grading, and labelling methods. Traditional and improved storage techniques. • **Community Demonstrations-** Organise on-field demonstrations during harvest, shown by the Cadre. Live identification of plants for seed. Proper drying and sorting methods. Germination tests using trays, water soaking, etc. • **Setting Up Seed Storage Structures:** Promotion of low-cost storage solutions by Cadre • **Institutionalise Practices:** Integrate seed selection and storage practices into SHG livelihood meetings by the Cadre and NIRMAAN / Implementing Agency's team for better knowledge dissemination.
Feasibility/ viability issues, if any	• Lack of standardisation and scientific understanding may lead to inconsistent practices. There may be scepticism towards improved or structured seed-saving practices. • Limited Availability of Storage Materials or Quality of Saved Seeds in Some Cases. • Sustained handholding is required to ensure the proper implementation at scale. Without strong monitoring, improper storage could lead to seed spoilage.
Key Milestones	• Selection of lead farmers and potential community resource persons. • Training of Trainers (ToTs) and lead farmers on seed selection and storage. • Conducting method demonstrations covering all the villages.
Potential Risks and Unknowns	Improper Storage Due to Humidity and Pests, Low Germination or Crop Failure, Lack of Sustained Handholding and Institutional Coordination Gaps
Ecological, Economic and Social Benefits	• **Ecological**- Conservation of local seed varieties, reduced dependency on external inputs, and agrochemical usage. • **Economic**: High-quality seeds lead to better germination, less dependence on fluctuating seed prices or unreliable supply chains, and opportunities for seed-based microenterprises. • **Social-** Knowledge transfer and preservation, Strengthens self-reliance and food security

Domains	Crops
Intervention	**Selection and Storage Practices for Seeds**
Key stakeholders involved and their roles in implementation	• Cadre, NIRMAAN / Implementing Agency's Team- Lead seed selection, drying, and storage at the household and community level. Mobilise women for training and demonstrations. • Community Resource Persons (CRPs)/ Krishi Sakhi- Conduct door-to-door awareness, handholding, and regular monitoring. • Agriculture Department (Block/District Level)- Provide technical guidance on seed selection, grading, and safe storage. Contribute to community-level trainings and demonstrations.
Additional human resources required	• Master Trainers / Subject Matter Experts (SMEs), Lead Farmers / Progressive Farmers, CRPs)/ Krishi Sakhi.
Institution required, if any	Krishi Vigyan Kendra (KVK), Dantewada- Offers scientific validation, capacity building, and demonstration support.

Capacity building for this intervention is carried out through village-level trainings, on-field demonstrations, and seasonal workshops led by CRPs, Master Trainers, and Lead Farmers. Farmers are trained in seed selection (disease-free, true-to-type, fully matured), proper drying, grading, and storage techniques, including traditional and improved methods. Germination tests and live demonstrations at the community level help farmers internalise best practices. Informal farmer-to-farmer knowledge transfer occurs naturally as trained lead farmers demonstrate improved practices in their own fields. No additional cost is required to add for informal dissemination, and spillover adoption is expected as neighbouring farmers observe better germination and reduced seed losses.

5.1.5. Improved seed treatment practices

The adoption of improved seed treatment practices is a critical step to enhance seed germination, protect seeds from pests and diseases, and ensure healthy crop establishment. In most villages, farmers traditionally sow untreated seeds, making crops vulnerable to soil-borne pathogens and early-stage pest attacks, resulting in low germination rates and uneven crop stands. This intervention promotes the use of low-cost, locally prepared bio-input solutions, such as Beejamrit and saline water, which are effective, sustainable, and environmentally friendly alternatives to chemical seed treatments. Regular seed treatment enhances seed vigour, reduces crop failure risk, minimises the dependence on chemical pesticides in the early crop stage, contributing to soil health and ecological balance.

Domains	Crops
Intervention	**Improved seed treatment practices**
When will it start functioning?	First year
What will it do?	Seed germination protects seeds from pests and diseases, and promotes healthier crop growth using low-cost inputs
Who will implement it? (stakeholders, including institutions)	NIRMAAN / Implementing Agency Community Institutions (SHG) Progressive Farmers
Key Issues and Challenges for Saturation	Difficulty in accessing ingredients for beejamrit or other bio-input solutions in remote areas. Strong dependence on age-old, untreated sowing methods.
How it will be implemented	• Awareness Generation: village-level meetings, gatherings arranged by SHGs • Capacity Development Training: Training of Jaivik Karyakarta and other CRPs facilitated by NIRMAAN implementing Agency. Organisation of training sessions by Jaivik Karyakarta on preparation and application of beejamrit and saline water.

Domains	Crops
Intervention	**Improved seed treatment practices**
	• Method Demonstrations: Conduct on-field demos during the sowing season to showcase the step-by-step seed treatment process in fields of Progressive farmers. • Peer Learning and Handholding: Form "Krishi Sakhi" groups or Progressive farmers to support others. 6. Scale-up and Saturation: Creating a village-wise implementation calendar aligned with sowing windows by Jaivik Karyakarta.
Feasibility/ viability issues, if any	• Availability of Inputs: Cow dung and cow urine (for beejamit) may not be consistently available in all households. During sowing periods, farmers may skip the treatment due to urgency. • A lack of technical understanding may hinder the proper preparation and application of beejamrit or other treatment materials.
Potential Funding Sources	Government- PKVY (Paramparagat Krishi Vikas Yojana) and National Mission on Sustainable Agriculture (NMSA). Convergence with Other Programs (NRLM – For SHG-based training and group mobilisation), NGOs or NIRMAAN
Key Milestones	• Training of Trainers (ToT) conducted for Jaivik Karyakarta/ CRPs/lead farmers. • First round of method demonstrations organised (treated vs untreated seeds)
Potential Risks and Unknowns	• Lack of easy access to cow dung and cow urine could limit practice. • Low Adoption Rate (Farmers may not adopt the practice despite training)
Ecological, Economic and Social Benefits	• **Ecological**: Use of beejamrit introduces beneficial microorganisms that naturally improve soil fertility. **Economic**: i) Low-Cost Inputs: Beejamrit and saline water can be prepared from readily available, low-cost local materials.ii) Higher Germination Rates: Better seed germination leads to more uniform crop stands and higher yields. • **Social:** Indigenous knowledge revival within villages. Develop Skills in sustainable agricultural practices
Key stakeholders involved and their roles in implementation	**Farmers (Primary Stakeholders)** - Will participate in demonstrations, training, and field days. Share learnings with peer farmers., **Community Resource Persons (CRPs) / Lead Farmers:** Will mobilise farmers for training and demonstrations. Conduct handholding support and assist in field implementation. **NIRMAAN/Implementation Partner** - Will mobilise communities and facilitate awareness campaigns. Train Jaivik Karyakarta/CRPs, and lead farmers
Additional human resources required	Community Resource Persons (CRPs), Field Coordinator, Master Trainers
Institution needed, if any	NIRMAAN/ Implementing Agencies, Institution for providing training to Jaivik Karyakarta.

To improve seed treatment practices such as Beejamrit, saline water soaking, and bio-priming, CRPs and Jaivik Karyakartas facilitate hands-on training sessions and on-field demonstrations during the sowing season. Farmers are shown step-by-step preparation and application methods, often using lead farmer fields as live demonstration sites. Informal capacity building occurs through peer learning, where early adopters share experiences and guide other households. No extra cost is incurred for this informal dissemination, and spillover adoption is expected as farmers observe better germination, healthier crops, and lower pest incidence in trained households.

5.1.6. Popularising Paddy Sowing Practices (SRI, Line Transplanting & DSR)

The intervention to popularise improved paddy sowing methods such as System of Rice Intensification (SRI), Line Transplanting, and Direct Seeded Rice (DSR) aims to enhance crop productivity, reduce input costs, and promote sustainable water management practices. In the current scenario, traditional broadcasting methods dominate in paddy cultivation, leading to high seed use, uneven plant stands, water waste, and increased susceptibility to weeds and pests. By shifting to SRI, Line Transplanting, and DSR, farmers can achieve significant water savings, lower seed use, and higher yields through improved crop spacing, root development, and weed management. These practices are particularly relevant in water-stressed regions and align with climate-resilient agriculture approaches. The intervention also reduces drudgery and optimises labour use when combined with mechanisation support through Custom Hiring Centres (CHCs). By promoting ecologically sound practices, the intervention contributes to lower greenhouse gas emissions, improved soil health, and water-use efficiency, while also strengthening farmer capacity and community-level knowledge-sharing platforms. This activity, as part of a package of practices, does not envisage any capital expenditure investment.

Domains	**Crops**
Intervention	**Popularising Paddy Sowing practices in favour of SRI, Line Transplanting & DSR from Broadcasting methods**
When will it start functioning?	First year
What will it do?	Reduce Input cost, minimise requirements, Enhance Crop Yields, Improve Water Use Efficiency, and Build Farmer Capacity in Improved Agronomic Practices
Who will implement it? (stakeholders, including institutions)	• Agriculture Department- For Technical capacity building and validation. Train CRPs and lead farmers. • NIRMAAN/ Implementing Agency- Community facilitation and handholding. Conduct household-level awareness campaigns and demonstrations. Mobilise early adopters, organise farmer groups. • CG-SRLM- Local governance and monitoring. Support local implementation. Help in beneficiary selection and resolving local challenges.
Key Issues and Challenges for Saturation	Labour Availability and Skill Gaps, Inconsistent Water Availability, Time and Labour Constraints During Peak Season, Limited Access to equipment and inputs, Preference for Traditional Broadcasting
How it will be implemented	• Site Selection- Select villages based on water availability, farmer interest, and accessibility. • Selection of CRPs/Lead Farmers- Identify progressive farmers as early adopters. • Capacity Building & Training: Conduct hands-on training sessions through Krishi Vigyan Kendra (KVK) and the Implementing Agency/ NIRMAAN to CRPs and lead farmers. • Method Demonstrations (Kharif Season)- Establish field-level demonstrations of each technique (SRI, Line Transplanting, DSR) with visible boards. Use community events and field days to show comparative results. • Input and Equipment Support from CHCs by SHGs. • Regular Monitoring and Handholding from NIRMAAN- Support farmers in resolving real-time challenges during the cropping cycle. • Exposure Visits and Peer Learning- Promote farmer-to-farmer knowledge exchange by CRPs. *In SRI and line transplanting methods, Community Resource Persons (CRPs) can facilitate the use of locally available materials, such as rope and bamboo, to help farmers maintain proper spacing and alignment.*

Domains	Crops
Intervention	**Popularising Paddy Sowing practices in favour of SRI, Line Transplanting & DSR from Broadcasting methods** *For Direct Seeded Rice (DSR) cultivation, farmers who wish to adopt the seed drill method can rent the equipment from Custom Hiring Centres (CHCs). By paying a nominal fee, they can use the seed drill to sow their fields efficiently.*
Feasibility/ viability issues, if any	• Water Availability Constraints- SRI and DSR techniques require controlled and timely irrigation • SRI and line transplanting demand more labour initially (for transplanting) • Equipment Access- Tools like line markers, DSR Seeders, and Weeders may not be locally available or affordable • Limited Technical Support- SRI and DSR require technical precision; improper spacing or seed rate can fail the method.
Key Milestones	• Selection of pilot villages and identification of lead/progressive farmers. • Establish model demonstration plots in identified villages under each method.
Potential Risks and Unknowns	• Unpredictable Rainfall or Drought: Delayed or erratic rainfall may affect nursery preparation, transplanting schedules, or seed germination in DSR. • Labour Non-Availability: Labour-intensive methods like SRI and line transplanting may be constrained by out-migration or high wage demand. • Inadequate Technical Supervision document: Lack of timely and hands-on support can lead to incorrect spacing, seed rate, or water use, especially in SRI and DSR. • Lack of Post-Harvest Linkages.
Ecological, Economic and Social Benefits	• **Ecological**-Reduced Water Usage, Improved Soil Health, Increased germination rate, Lower GHG Emissions. • **Economic-** Increased Yield Potential, Lower Input Costs, Higher Net Returns, Optimised Labour Use. • **Social-** Community Learning and Innovation, Risk Reduction
Key stakeholders involved and their roles in implementation	• Lead Farmers/CRPs- Adopt improved sowing methods on their fields. Participate in training, demonstrations, and exposure visits. • KVK (Krishi Vigyan Kendra)- Provide scientific validation, technical handholding, and design of field trials. ○ PRIs (Panchayati Raj Institutions) - Support community mobilisation. • NIRMAAN/ Implementing Agency - Facilitate awareness generation, community mobilisation, and last-mile training. Bridge between government schemes and grassroots implementation.
Additional human resources required	• Field-Level Agricultural Extension Workers- To provide hands-on support during nursery preparation at the household level, line marking, transplanting, and crop monitoring. • Master Trainers / Technical Experts (Short-Term)- Experts in SRI, DSR, and mechanised sowing methods for conducting training-of-trainers and initial demonstrations.
Institution required, if any	• Krishi Vigyan Kendra (KVK)- For providing technical training, demonstrations, and scientific validation of practices. • Custom Hiring Centres (CHCs) - For providing access to mechanised sowing methods.

Domains	Crops
Intervention	**Popularising Paddy Sowing practices in favour of SRI, Line Transplanting & DSR from Broadcasting methods**
	• NIRMAAN/ Implementing Agency- mobilisation, training delivery, and last-mile handholding support, especially in tribal and remote areas.

Capacity building under this intervention focuses on practical, hands-on training for line transplanting, rope/bamboo spacing techniques, and DSR seed drill usage. CRPs conduct on-field demonstrations, exposure visits, and farmer field days with KVK experts, while lead farmers serve as local trainers. Informal learning is enhanced as farmers observe visible differences in crop stand and yield on demonstration plots. No additional cost is needed for informal knowledge sharing, and spillover adoption is likely as nearby farmers witness water-saving labour efficiency and yield improvements.

5.1.7. Setting up of Bio Resource Centre (BC)

The Bio-input Resource Centre (BRC) intervention is designed to promote ecological and sustainable agriculture by leveraging locally available resources such as cow dung, cow urine, and organic matter. These inputs are cost-effective, enhance soil fertility, improve water retention, and boost microbial activity—contributing to healthier crops and greater resilience against pests and diseases. The intervention ensures local ownership and long-term sustainability by leveraging readily available resources. Managed at the community level, BRCs function as hubs for knowledge exchange, skill development, and peer learning. They also serve as demonstration and learning sites for nearby villages, thereby fostering collective learning, strengthening local capacities, and scaling up the adoption of regenerative practices.

Domains	Crops
Intervention	**Setting up of BRC**
When will it start functioning?	First Year
What will it do?	Production of Low-cost natural agri-inputs, Demonstration and Training Hub, Local Supply and Accessibility of Bio-inputs, Promote Organic/Natural Farming Practices
Who will implement it? (stakeholders, including institutions)	SHG/ Lead Farmers / Community Resource Persons (CRPs), NIRMAAN / Implementing Agency
Key Issues and Challenges for Saturation	• Inconsistent preparation methods may reduce the efficacy of bio-inputs. • Inadequate Technical Capacity • Limited availability of cow dung, cow urine and other resources. • Limited space or facilities (shed, water tank, compost pit, drums, etc.) to establish the BRC. • Need for clear ownership, business plan, and incentives for long-term operation.

Domains	Crops
Intervention	**Setting up of BRC**
How it will be implemented	**Awareness ➔ Setup ➔ Training ➔ Production ➔ Demos ➔ Sales ➔ Monitoring ➔ Expansion.** • **Planning and Mobilisation:** Identify SHG/ lead farmers / Community Resource Persons willing to manage the BRC. Select village/cluster location based on accessibility and farmer concentration. Conduct awareness meetings with Panchayat leaders and farmers to explain the BRC's purpose and benefits. • **Set up basic facilities:** Shed/covered space for production. Water tank and storage drums. Setting of room/space for showcasing prepared products (Service point). • **Capacity Building and Training:** Training of CRPs/Lead farmers/SHG by experts from KVKs/NGOs. Preparation methods for Beejamrit, Jeevamrut, Dashparni ark, etc. Quality standards and storage practices. Record-keeping and pricing of bio-inputs. Organise demonstration plots using BRC-produced bio-inputs in nearby villages. • 5) Simple, transparent sales process: farmers can buy small quantities directly from BRC. • 6) Maintain production and sales records at the BRC.
Feasibility/ viability issues, if any	Low quality or inconsistent products, Low demand initially, Timely availability of ingredients (cow dung, cow urine, neem leaves) may be erratic., Remote locations, villages, and connectivity difficulties.
Potential Funding Sources	• Government (Schemes): Paramparagat Krishi Vikas Yojana (PKVY), National Mission on Sustainable Agriculture (NMSA), State Rural Livelihood Mission (SRLM / CGSRLM – BIHAN). • Development Projects / NGOs, Community and Local Contributions.
Key Milestones	• Land secured and basic infrastructure constructed (shed, water tank, storage units). • CRPs/ Lead farmers/ SHG trained in bio-input production and quality control as per phased targets • CRPs/ Lead farmers/ SHG mobilised to create local demand.
Potential Risks and Unknowns	Poorly prepared or contaminated bio-inputs may result in ineffective results., Scarcity of essential raw materials (e.g., cow dung, cow urine, neem leaves, etc.), lack of management capacity to sustain operations.,
Ecological, Economic and Social Benefits	• **Ecological** - Soil Health Improvement, Reduction in Chemical Pollution, Enhanced Biodiversity, Improves soil carbon sequestration. • **Economic-** Reduced Input Costs, Increased Farm Income, Local Enterprise Development, Employment Generation. • **Social-** Strengthened Community Institutions, Social Equity, Community Knowledge Building.

Domains	Crops
Intervention	**Setting up of BRC**
Key stakeholders involved and their roles in implementation	**NIRMAAN/ Implementation Partners-** Will handhold the setup and management to the community. Conduct field demonstrations and community outreach. Support with backward (input sourcing) and forward (marketing) linkages. **Community Resource Persons (CRPs) / Krishi Sakhis-** Will act as the local interface between BRC and farmers. Lead farmer awareness campaigns and training on usage. Collect feedback and ensure proper application of inputs. **Gram Panchayat-** Will help in the identification and allocation of land or space for BRC. Mobilise community buy-in and promote BRC usage through Gram Sabhas. **Funding and Convergence Agencies (PKVY, RKVY, etc.)-** Will Provide initial capital and operational support. Support infrastructure creation and working capital for inputs. **Agriculture Department / Krishi Vigyan Kendra (KVK)-** Technical training on bio-input preparation, usage, and application. Conduct research-backed demonstrations and feedback loops. Facilitate certification support where needed.
Additional human resources required	• Centre In-charge (Overall responsible for operations, inventory management, and reporting.), • Quality Assurance Assistant (Responsible for maintaining input quality checks (like pH, microbial count, shelf life monitoring). • Sales and Marketing Assistant(Promotes BRC products to farmers, FPOs, and agri-entrepreneurs.)
Institution required, if any	Implementing Partner (NIRMAAN/ Technical Agency), Technical Institution (like Krishi Vigyan Kendra - KVK / Agriculture University), Nodal Support Agency (State Rural Livelihood Mission – CGSRLM / BIHAN)

Capacity building for BRC management involves training SHG members, lead farmers, and CRPs in bio-input production, quality control, storage, and marketing. Demonstrations by CRPs on the preparation of Beejamrit, Jeevamrut, and Dashparni Ark are held at the BRC, which also serves as a live training and learning site. Farmers visiting the BRC would benefit from peer learning and practical exposure. Informal dissemination and spillover adoption would happen as trained farmers share bio-input preparation techniques and application practices with neighbours, encouraging wider adoption of sustainable agriculture methods.

5.1.8. Establishment of NADEP Composting Unit

The establishment of NADEP composting units is a strategic intervention to promote sustainable soil management and resource efficiency in smallholder farming systems. NADEP composting utilises farm and household waste, including dry crop residues, cow dung, and soil, to produce nutrient-rich organic compost. This approach not only minimises waste but also enhances soil productivity, which is critical for maintaining long-term farm sustainability. The intervention is particularly suited for small and marginal farmers as it requires minimal external inputs and leverages locally available resources. Regular application of NADEP compost improves soil aeration, texture, and water-holding capacity, offering significant benefits for rainfed and degraded lands where soil health is often compromised. By reducing dependence on chemical fertilisers and supporting organic nutrient cycling, this intervention strengthens farm-level resilience, improves crop yields, and contributes to climate-adaptive, ecologically sustainable agriculture.

Domains	Crops
Intervention	**Establishment of composting units**
When will it start functioning?	First Year

Domains	Crops
Intervention	**Establishment of composting units**
What will it do?	Convert agricultural and household organic waste into nutrient-rich compost, improve soil fertility and structure, promote low-cost, sustainable agriculture, reduce waste and support cleanliness in villages, enhance resilience to climate stress
Who will implement it? (stakeholders, including institutions)	Farmers and Individual Households, NIRMAAN/ Implementing Agency/ Krishi Vigyan Kendra (KVK), Dantewada
Key Issues and Challenges for Saturation	Irregular Availability of Organic Waste, Lack of Waste Segregation at Source, Technical Know-How and Maintenance, Upfront Cost and Labour Requirement, Limited Market Linkages for Compost Sales, and Limited Demonstration Units.
How it will be implemented	• **Baseline Assessment and Site Identification-** Identify households with high potential for composting (access to organic waste and having livestock). Map suitable locations for individual backyard pits in their families. • **Mobilisation and Awareness-** Conduct village meetings to raise awareness about compost benefits. • **Capacity Building and Method Demonstration:** Train selected household members and lead farmers on: - Types of composting (NADEP and vermicomposting) • Material collection, layering, moisture control, and curing. • **Material Provision for composting from households:** shade nets for pit structure., earthworms (for vermicompost), water drums, etc. • **Pilot Units and Demonstration Plots:** Establish model composting units with early adopters or households. • **Monitoring, Documentation, and Support:** CRPs or Krishi Sakhi to visit regularly, track composting cycles, and troubleshoot problems (e.g., slow decomposition, pests). Maintain a register of quantity produced,e d/sold. • **Linkage with Agriculture Practices and Market:** Promote compost use in Kharif/Rabi sowing through coordinated campaigns. • **Scale-Up Through Peer Learning:** Use early adopters as CRPs/trainers for other villages.
Feasibility/ viability issues, if any	• Labour Intensive Nature (Regular turning, watering, and monitoring of compost pits can be labour-intensive.) • Competing Use of Raw Materials • Water Availability: Composting requires periodic watering, which may not be feasible in dry seasons or villages with limited water sources. • Skill and Knowledge Gaps: Incorrect composting practices (wrong layering, poor aeration) can reduce quality or lead to abandonment. • Limited Space in Some Households: For households with small yards or no land, especially in hamlets with closely packed homes, individual composting pits may not be feasible. • Coordination Across Stakeholders: Requires coordination between MGNREGA, Agriculture Dept., SHGs, and Panchayats for smooth implementation and funding convergence.
Potential Funding Sources	Agriculture and Horticulture Departments/KVKs- May support through schemes promoting organic/natural farming. Provide earthworms and technical training.
Key Milestones	• Site identification for individual households' compost units.

Domains	Crops
Intervention	**Establishment of composting units**
	• Training programs for early adopter farmers and CRPs on composting methods. • Setup of model demonstration units using NADEP/Vermi tanks at different households. • Buying composting tanks for covering households.
Potential Risks and Unknowns	• Irregular Maintenance- Compost tanks require timely turning, moisture control, and protection from pests. • Competing Use of Raw Materials- Cow dung and crop residues may be diverted for fuel, fodder, or home construction, reducing composting input. ○ Poor Quality Compost- Inadequate layering, moisture imbalance, or lack of training may lead to partially decomposed or nutrient-deficient compost. • Low Community Buy-in- • Climate Impact- Heavy rainfall or extreme temperatures may affect composting speed and quality, especially in open pits. • Uncertainty around the supply of tanks to the village households.
Ecological, Economic and Social Benefits	• **Ecological-** Improved Soil Health, Reduced Chemical Dependence, Waste Management, Carbon Sequestration. • **Economic-** Cost Savings for Farmers (providing low-cost, in-house alternatives to compost), Income Generation (Surplus compost can be sold by SHGs or farmers, creating a local micro-enterprise opportunity), Job Creation (Supports wage employment under MGNREGA for construction and maintenance work). Enhanced Crop Yields Over Time (Leads to better soil fertility, ultimately increasing productivity and profitability.) • **Social Benefits**: Local Capacity Building (Enhances knowledge of sustainable farming practices within the community.), Community Ownership & Awareness (Promotes participatory waste management and environmental stewardship.), Women's Participation (SHGs can take the lead in managing compost units, fostering collective enterprise and leadership.)
Key stakeholders involved and their roles in implementation	• Lead farmers- Daily operation and maintenance. Use or sale of compost as a livelihood activity. • Gram Panchayat (Local governance and monitoring)- Assist in local coordination. • NGOs and Development Partners (Implementation support and knowledge dissemination)- Community facilitation. • KVK (Technical handholding and training)- Organise demos and field days. Monitor compost quality and soil improvement.
Additional human resources required	Community Resource Persons (CRPs), Master Trainers / Subject Matter Specialists, Agricultural Extension Workers
Institution required, if any	KVKs, Gram Panchayats, NIRMAAN / Implementing Agency, Compost tank materials supplier, Supplier of HDPE unit

Capacity development for establishing NADEP composting units will be carried out through a combination of structured training, farmer-to-farmer knowledge sharing, and hands-on demonstrations at the household level. Community Resource Persons (CRPs), Krishi Sakhis, and lead farmers will be trained by the Implementing Agency or KVK experts on the step-by-step composting process, including material collection, layering, moisture management, and periodic turning to ensure high-quality compost. Initial demonstration units at selected households will serve as live learning sites, enabling practical exposure for nearby farmers. Informal dissemination through regular household visits, peer interaction, and community meetings will ensure that knowledge spreads without any additional cost. As early adopters achieve visible results, spillover effects will encourage other farmers

to replicate the intervention in their own households. This approach not only strengthens the technical skills of farmer households but also builds long-term community ownership of sustainable soil fertility management practices.

5.1.9. Providing Millet Mixies

The distribution of millet mixies at the hamlet level addresses the challenge of limited household-level millet processing, which currently relies on labour-intensive manual pounding or distant mills. By providing one mixie per hamlet, the intervention reduces women's drudgery, enables timely processing, and promotes regular millet consumption, contributing to dietary diversity and nutritional security. It minimises post-harvest losses, encourages the utilisation of locally grown, climate-resilient millets, and fosters community ownership through shared asset management and potential revolving-fund models.

Domains	**Crops**
Intervention	**Millet mixies**
When will it start functioning?	First Year
What will it do?	• Enable household-level millet processing. • Reduce drudgery for women - Minimise the time and labour required for manual pounding or travelling to distant mills for processing. • Promote dietary diversity and nutrition. • Enhance local value addition. • Lower dependency on external facilities • Foster community ownership • Support income generation models
Who will implement it? (stakeholders, including institutions)	• Local Households / Hamlet Committees – Responsible for the day-to-day use, care, and minor maintenance of the millet mixies. • Self-Help Groups (SHGs) / Village Organisations manage shared usage, collect small user fees (if applicable), and coordinate maintenance or repair. • Implementing NGO / Facilitating Agency – Facilitate procurement, distribution, and initial orientation on usage and care of mixies. • Community Resource Persons (CRPs) – Support awareness, train households on usage, and monitor performance at the hamlet level. • Local Vendors / Service Providers – Supply millet mixies and provide after-sales service or repair support as needed.
Key Issues and Challenges for Saturation	• Low Awareness – Limited knowledge about the benefits of processed millet products may reduce initial usage. • Maintenance Challenges – Breakdowns or lack of timely repair services can disrupt continuous use. • Shared Usage Conflicts – Disputes may arise in hamlets regarding scheduling or responsibility for cleaning and upkeep. • Power Supply Issues – Dependence on electricity in remote hamlets can affect consistent operation. • Sustainability of Revolving Fund – Timely collection and reinvestment of user charges is required to maintain the fund.
How it will be implemented	• Hamlet Mapping & Selection – Identify 500 hamlets across Dantewada block for distribution (1 mixie per hamlet). • Beneficiary Identification – Sela, etc., responsible household/SHG member for operating and maintaining the mixies.

Domains	Crops
Intervention	**Millet mixies**
	• Procurement & Distribution – Purchase and distribute 500 millet mixies (~₹4,000/unit) in two phases (50% each year). • Training & Demonstration – Train identified users on safe usage, cleaning, and minor repair/maintenance. • Revolving Fund Setup – Establish a small user fee/collection system for future repair or replacement of mixers. • Monitoring & Support – CRPs/Implementing agency to track usage, ensure community sharing, and address operational issues.
Feasibility/ viability issues, if any	• Shared Usage Challenges – One mixie per hamlet may lead to conflicts over access or uneven usage. • Maintenance & Repair – Limited local repair services could result in downtime if the mixer breaks. • Electricity Availability – A Reliable power supply is essential for operation in all hamlets. • Community Ownership – Risk of neglect if clear responsibility for upkeep is not assigned. • Seasonal utilisation – Usage may reduce during non-harvest periods, affecting sustainability. • Financial Sustainability – A Revolving fund or user fee system is required to cover repair/replacement costs.
Potential Funding Sources	NRLM / State Rural Livelihood Mission, District Mineral Fund (DMF), CSR Funds of Local Industries, Gram Panchayat / Village Development Funds, Microfinance Institutions (MFIs)
Key Milestones	• Identification of Hamlets & Beneficiaries – Map 500 hamlets and select one responsible household per hamlet for mixie management. • Formation of Community Ownership Model – Engage SHGs or village committees to manage asset use and maintenance. • Procurement of Millet Mixies – Purchase 500 mixies (₹4,000 each) as per phased plan (250 in Year 1, 250 in Year 2).
Potential Risks and Unknowns	• Utilising households may not adopt regular millet processing due to existing cooking preferences. • Maintenance Challenges – Damage or breakdown of mixies without timely repair may lead to disuse. • Ownership Conflicts – Shared usage among multiple households could lead to disputes over access or responsibility. • Electricity Dependency – Interruption in the power supply may affect regular use. • Lack of Cleaning & Hygiene – Poor maintenance can lead to unhygienic processing and reduced quality of flour. • Financial Sustainability – Without a revolving fund or small user fee, repair/replacement may not be funded. • Seasonal Availability of Millets – During the season, mixies may remain idle, affecting community interest.
Ecological, Economic and Social Benefits	**Ecological Benefits** • Promotes local consumption of climate-resilient millets and supports agro-biodiversity. • Reduces transport-related emissions by processing millets at the hamlet level. • Encourages the utilisation of locally grown crops, minimising wastage. **Economic Benefits**

Domains	Crops
Intervention	**Millet mixies**
	• Lowers household expenses by reducing dependence on market-based processed millet. • Supports local entrepreneurship if managed under a small user fee or revolving fund—Minimises post-harvest losses by enabling timely grinding and consumption. **Social Benefits** • Improves nutritional security by increasing millet consumption in daily diets. • Reduces drudgery, particularly for women, by replacing the annual pounding of millets. • Strengthens community cooperation through shared usage and collective management of mixies. • Enhances dietary diversity and health awareness in tribal households.
Key stakeholders involved and their roles in implementation	• Households / Hamlet Users • Hamlet-Level Caretaker / Operator • Self-Help Groups (SHGs) / Village Organisations (VOs) • Community Resource Persons (CRPs) • Implementing NGO / Facilitating Agency
Additional human resources required	• Implementing NGO Field Staff • Panchayati Raj Institutions / Gram Panchayat • Technician / Local Mechanic (Shared Across Hamlets)
Institution needed, if any	Self-Help Groups (SHGs) / VilOrganisationstions (VOs), Cluster Level Federations (CLFs), Local Repair & Service Network

5.1.10. Establishing the Common Processing Centre (CPC)

The establishment of Common Processing Centres (CPCs) for dal milling, oil milling, millet processing and spice processing addresses a critical gap in rural value chains by enabling local value addition and reducing farmers' dependence on external markets for post-harvest processing. Currently, the lack of decentralised facilities results in higher transportation costs, post-harvest losses, and lower returns for raw produce. CPCs, managed by FPOs, SHGs, or village institutions, will allow farmers to process pulses, oilseeds, and spices within their cluster, improving marketability and enhancing household consumption of processed products. This intervention promotes rural entrepreneurship, reduces drudgery, and strengthens local economies by retaining value within the community. Additionally, by supporting aggregation, market linkage, and local enterprise development, CPCs contribute to income enhancement, nutritional security, and the long-term sustainability of rural livelihoods.

Domains	Crops
Intervention	**Common Processing Centre (CPC) - Dal mill, Oil mill, Spice mill**
When will it start functioning?	First Year
What will it do?	• Enhances Local Value Addition- CPCs will provide small-scale processing facilities for pulses, oilseeds, millets, and spices, reducing dependency on external mills. • Reduces Post-Harvest Losses and Transportation Costs - Farmers can process their produce locally, minimising losses and reducing the cost of transporting raw produce to distant markets. • Supports Local Entrepreneurship and Livelihoods- CPCs will be managed by local entrepreneurs, SHGs, or FPOs, generating income and rural employment. • Promotes Food Security and Dietary Diversity- Access to locally processed dal, oil, and spices will improve household-level food availability and nutrition.

Domains	Crops
Intervention	**Common Processing Centre (CPC) - Dal mill, Oil mill, Spice mill**
	• Facilitates Market Linkages - By producing value-added products, farmers can access better prices and develop small local markets for processed goods. • Encourages Community Ownership - CPCs will be established at the cluster level with shared management, fostering collective responsibility and sustainability.
Who will implement it? (stakeholders, including institutions)	• Local Entrepreneurs / SHGs / FPOs - Operate and manage CPCs, handle day-to-day processing, and ensure maintenance. • Implementing NGO / Facilitating Agency - Coordinate site selection, procurement, installation, capacity building, and market linkage support. • Community Resource Persons (CRPs mobilisers support the aggregation of produce, and monitor the utilisation of CPCs. • Local Vendors / Equipment Suppliers - Supply and install processing machinery (dal mill, oil mill, spice mill) and provide after-sales service. • Government Departments / Schemes (Agriculture, Rural Livelihoods, Industries) - Provide convergence support, credit linkages, and subsidies if applicable. • Panchayati Raj Institutions / Village Organisations -Facilitate community mobilisation, local monitoring, and ensure shared ownership of CPCs.
Key Issues and Challenges for Saturation	• High Capital Requirement - Initial investment (~₹1.5 lakh/unit) may limit entrepreneur participation without subsidy or credit support. • Limited Technical Skills - Local operators may lack experience in handling multiple types of processing machinery. • Raw Material Availability - Seasonal and inconsistent supply of pulses, oilseeds, and spices may affect continuous operation. • Market Demand & Linkage - Limited awareness and underdeveloped local markets for processed products may reduce utilisation. • Maintenance & After-Sales Support - Machine breakdowns and lack of local repair services can disrupt operations. • Power & Infrastructure Constraints - Reliable electricity and adequate space are required for smooth functioning. • Community Ownership & Management - Weak governance or conflicts over revenue sharing can affect sustainability. • Transportation & Aggregation - Farmers from dispersed villages may face challenges in bringing produce to CPCs.
How it will be implemented	• Cluster & Site Identification - Select four suitable clusters with central locations and reliable power supply. • Entrepreneur / SHG / FPO Selection - Identify local entrepreneurs or SHGs/FPOs to manage the CPC units. • Business Planning & Financial Linkage - Prepare feasibility and business plans; link with banks or government credit schemes if needed. • Procurement & Installation of Machinery - Purchase and install dal mill, oil mill, and spice mill units (~₹1.5 lakh/unit). • Capacity Building & Training - Train operators and entrepreneurs on machine operation, maintenance, and hygiene standards. • Community Mobilisation & Raw Material Aggregation - Engage local farmers to ensure a regular supply of pulses, oilseeds, and spices.

Domains	Crops
Intervention	**Common Processing Centre (CPC) - Dal mill, Oil mill, Spice mill**
	• Operationalisation of CPCs - Start processing services for local farmers on a custom-hiring or fee basis. • Market Linkage & Promotion - Support the sale of processed products in local markets and link to SHGs, FPOs, and traders. • Monitoring & Support - Implementing NGO and CRPs to monitor operations, resolve issues, and support business growth.
Feasibility/ viability issues, if any	• High Initial Capital Requirement • Raw Material Availability • Market Demand & Competition • Entrepreneur Capacity • Maintenance & Downtime • Power Supply & Infrastructure • Community Mobilization
Potential Funding Sources	NRLM / State Rural Livelihood Mission (SRLM), PMEGP (Prime Minister's Employment Generation Programme), NABARD / NABCONS, Microfinance Institutions (MFIs) / Bank Credit, District Mineral Fund (DMF), CSR Funds from Local Industries, Convergence with State Agriculture & Horticulture Departments
Key Milestones	• Cluster Identification & Feasibility Study • Entrepreneur / SHG / FPO Selection • Business Plan & Financial Linkages • Site Selection & Infrastructure Setup • Procurement & Installation of Machinery • Capacity Building & Training • Operationalisation of CPC • Market Linkage & Product Promotion
Potential Risks and Unknowns	• Raw Material Supply Fluctuation: Seasonal or inconsistent availability of pulses, oilseeds, and spices may lead to underutilization. • Market Volatility: Price fluctuations or low local demand for processed products can affect profitability. • Machine Breakdown & Downtime: Limited access to local repair services may cause operational delays. • Entrepreneurial & Management Risks: Weak business management or record-keeping can impact financial sustainability. • Quality & Hygiene Issues: Poor handling or lack of quality control can reduce product acceptability in markets. • Financial Sustainability: High CAPEX and low initial utilisation may delay break-even. • Community Adoption Challenges: Farmers may prefer selling raw rather than bringing it to local processing facilities. • Policy or Subsidy Delays: Delays in approving credit or subsidies can delay installation and operation. • External Shocks: Natural disasters, pest infestations, or transportation disruptions can affect both input supply and market access.
Ecological, Economic and Social Benefits	**Ecological Benefits:** • Promotes local value addition, reducing transport-related emissions. • Encourages full utilisation of farm produce, minimising wastage. • Processing by-products (husks, oil cakes) can be reused as animal feed or compost, supporting circular resource use. **Economic Benefits:**

Domains	Crops
Intervention	**Common Processing Centre (CPC) - Dal mill, Oil mill, Spice mill**
	• Generates local entrepreneurship and employment opportunities. • Increases farmers' income through value addition and better price realisation. • Reduces dependency on distant markets and third-party processors. • Creates opportunities to develop short, localised agri-value chains. **Social Benefits:** • Enhances local food security and availability of fresh, quality products. • Reduces drudgery and dependence on external processing facilities. • Strengthens SHGs, FPOs, and local institutions through enterprise ownership. • Promotes community cooperation and collective decision-making in rural clusters.
Key stakeholders involved and their roles in implementation	• Local Entrepreneurs / SHGs / FPOs • Farmers / Producer Households • Implementing NGO / Facilitating Agency • Technology Suppliers / Equipment Vendors • Community Resource Persons (CRPs)
Additional human resources required	CPC Manager / Entrepreneur, Machine Operator / Technician, Implementing NGO Field Staff, Helper / Labourer, Local Mechanic.
Institution required, if any	Gram Panchayat / Village Institutions, Cluster Level Federations (CLFs)

5.1.11. Establishing Warehouse

The establishment of a centralised warehouse in Dantewada addresses the critical gap in safe, moisture-free, and rat-proof storage for agricultural produce, especially organic commodities destined for external markets. Farmers currently face significant post-harvest losses and distress sales due to the absence of suitable storage facilities and limited access to working capital. A 500 MT warehouse at the block level will enable bulk aggregation from village and cluster-level collection points, improve quality preservation, and facilitate market linkages, thereby enhancing farmers' price realisation. This intervention also supports the institutional strengthening of farmer cooperatives and federations like Bhoomgaadi, promotes collective ownership, and opens avenues to leverage electronic warehouse receipts (e-WRs) to address working capital needs. By reducing wastage, supporting structured procurement, and enhancing community income security, the warehouse serves as a critical enabler for sustainable and market-oriented agriculture in the region.

Domains	Crops
Intervention	**Establishing Warehouse**
When will it start functioning?	First Year
What will it do?	• Establishment of a centralised warehouse (500 MT capacity) at the block level to provide safe, moisture-free, and rat-proof storage for agricultural produce, particularly organic commodities. • Supports aggregation and long-term storage of market-linked produce from village and cluster-level collection points, reducing post-harvest losses. • Facilitates market linkage by providing space for bulk storage and dispatch to external markets.

Domains	Crops
Intervention	**Establishing Warehouse**
	• Promotes institutional strengthening of local cooperatives by supporting structured procurement, storage, and market operations. • Enhances economic returns for farmers through better-quality preservation, reduced waste, and improved price realisation.
Who will implement it? (stakeholders, including institutions)	Anchor organisation (NIRMAAN), Local Cooperatives / Farmer Producer Groups (e.g., Bhoomgaadi or similar), Government Departments (Agriculture and Rural Development)
Key Issues and Challenges for Saturation	• High Capital Requirement – Construction of a 500 MT warehouse requires an investment of ~₹37 lakh. • Working Capital Gaps – Farmer cooperatives may face delays in availing credit against stored produce. • Operational Management – Requires skilled staff for stock management, quality maintenance, and record-keeping. • Seasonal Utilisation – Warehouse usage may fluctuate based on cropping and marketing cycles. • Transportation & Aggregation – Moving produce from scattered villages to the central warehouse can be logistically challenging. • Risk of Pest/Weather Damage – Improper handling may still lead to quality losses without strict protocols. • Institutional Coordination – Success depends on effective coordination between cooperatives, federations, and market linkages.
How it will be implemented	• Site Selection & Planning – Identify a centrally located site with road access, electricity, and security for the 500 MT warehouse. • Institutional Setup – Form/strengthen farmer cooperatives (ICS-certified groups) and federate them under a central entity (e.g., Bhoomgaadi). • Construction & Infrastructure – Build a moisture-free, rat-proof warehouse with basic handling facilities (loading/unloading, pallets, ventilation). • Village-Level Aggregation – Collect produce at village or cluster godowns before transporting to the central warehouse. • Capacity Building & Training – Train cooperative members and warehouse staff on stock handling, quality control, and record-keeping. • Certification & e-WR Linkage – Explore certification to issue electronic warehouse receipts and enable access to credit and working capital. • Operationalisation – Begin storage operations, maintain quality protocols, and facilitate timely market linkage for stored produce. • Monitoring & Support – The Implementing agency provides oversight, ensures cooperative compliance, and resolves operational issues.
Feasibility/ viability issues, if any	• High Capital Investment – ₹37 lakh required for a 500 MT warehouse; viability depends on utilisation and credit support. • Seasonal Utilisation – Storage demand may fluctuate, leading to underutilization in lean months. • Working Capital Requirement – Cooperatives may face cash flow issues without timely access to loans. • Institutional Capacity – Local cooperatives need strong governance and record-keeping to manage operations.

Domains	Crops
Intervention	**Establishing Warehouse**
	• Market Linkage Dependency – Profitability relies on timely aggregation and linkage to external markets. • Maintenance & Operational Costs – Regular upkeep (pest control, cleaning, security) required for long-term viability.
Potential Funding Sources	NABARD / Rural Infrastructure Development Fund (RIDF), Ministry of Food Processing Industries (MoFPI), State Agriculture / Horticulture Departments, National Cooperative Development Corporation (NCDC), PM Formalisation of Micro Food Processing Enterprises (PM-FME) Scheme, CSR Funds from Local Industries, Convergence with Organic Mission / Millet Mission
Key Milestones	• Site Selection & Land Finalisation – Identify and secure suitable land with road connectivity and basic utilities. • Institutional Formation/Strengthening – Register or strengthen farmer cooperatives/SHGs/cluster federations for ownership and management. • Design & Approval – Prepare the technical design for a 500 MT moisture-free, rat-proof warehouse and obtain the necessary approvals. • Financial Closure & Fund Mobilisation – Secure funds through bank loans, subsidies, or CSR/ government schemes. • Construction & Infrastructure Setup – Build a warehouse with proper ventilation, pest-proofing, and basic handling equipment. • Training & Capacity Building – Train cooperative/federation staff on warehouse management and e-WR processes. • Operationalisation – Begin storage operations for aggregated organic and market-linked commodities. • Market Linkage & e-WR Initiation – Start issuance of electronic warehouse receipts to support working capital and market sales. • Monitoring & Performance Review – Track storage utilisation, operational efficiency, and financial performance.
Potential Risks and Unknowns	• Low Utilisation Risk – Farmers may continue selling produce immediately after harvest instead of storing it. • Delayed Market Linkages – Inability to secure buyers or delayed procurement may lead to storage bottlenecks. • Quality Deterioration – Improper maintenance, moisture, or pest infestation can cause stored produce to deteriorate. • Institutional Weakness – Weak cooperative management or poor record-keeping may disrupt warehouse operations. • Financial Risk – Dependence on credit without timely repayment may create financial stress. • External Shocks – Natural calamities or market price fluctuations may impact storage and profitability.
Ecological, Economic and Social Benefits	**Ecological Benefits** • Reduces post-harvest losses, minimising wastage of agricultural produce. • Promotes better storage of organic commodities, supporting agro-ecological production systems. • Enables the reuse of crop residues and by-products in a sustainable manner. **Economic Benefits**

Domains	Crops
Intervention	**Establishing Warehouse**
	• Improves marketability and price realisation by allowing farmers to store produce and sell when prices are favourable. • Strengthens local farmer cooperatives and federations by enabling bulk aggregation and market linkages. • Reduces distress selling and dependency on intermediaries. **Social Benefits** • Enhances farmers' livelihood security by reducing income fluctuations. • Promotes collective action and community ownership through cooperative- or federation-led management. • Builds local capacity in storage, quality management, and market handling. • Encourages participation of SHGs and smallholder farmers in formal market systems.
Key stakeholders involved and their roles in implementation	• Farmer Cooperatives (e.g., Bhoomgaadi) • Implementing NGO / Facilitating Agency (NIRMAAN) • Panchayati Raj Institutions (PRIs) / Village Organisations • Banks / Financial Institutions
Additional human resources required	Warehouse Manager, Quality Inspector / Grader, Technical Support Staff / Maintenance Worker, CRPs (Community Resource Persons).
Institution required, if any	Cluster Level Federations (CLFs) / Village Organisations (VOs), Panchayati Raj Institutions / Gram Panchayats.

5.1.12. Setting up the Custom Hiring Centre (CHC) along with the Common Collection Centre

The establishment of Custom Hiring Centres (CHCs) and Collection Centres (CCCs) provides an integrated solution to address both production and post-harvest-related challenges faced by small and marginal farmers, especially women. CHCs bridge the access gap to costly farm machinery and gender-sensitive tools, reducing drudgery in labour-intensive tasks like sowing, weeding, and harvesting, while enabling timely mechanisation that enhances crop productivity and soil health. CCCs complement this by providing infrastructure for aggregation, grading, weighing, moisture testing, winnowing, and storage, reducing post-harvest losses, enhancing market readiness, and improving farmers' bargaining power. By involving women-led SHGs in managing both centres, the intervention promotes women's empowerment, local entrepreneurship, social cohesion, and collective ownership."

Domains	Crops
Intervention	**Setting up the Custom Hiring Centre (CHC) along with the Common Collection Centre**
When will it start functioning?	First Year
What will it do?	• Provide affordable access to farm machinery and implements (CHC) • Reduce drudgery and dependency on manual labour (CHC) • Facilitate timely sowing, weeding, seed treatment, and harvesting (CHC) • Enable collective grading, weighing, moisture testing, and safe storage (CCC) • Introduce digital systems (billing machine, Bluetooth printer) for transparency (CCC) • Reduce post-harvest losses and improve price realisation (CCC)

Domains	Crops
Intervention	**Setting up the Custom Hiring Centre (CHC) along with the Common Collection Centre**
	• Generate local employment through SHG operators and CCC managers • Strengthen farmer linkages with markets and institutions
Who will implement it? (stakeholders, including institutions)	Self Help Group (SHG), Gram Panchayat, Government, Implementing agency/NIRMAAN, Government Departments (Agriculture, Rural Development, MGNREGS, NRLM)
Key Issues and Challenges for Saturation	• High upfront investment in machinery and equipment • Maintenance and repair challenges of machinery and digital systems • Seasonal and uneven demand for farm implements • Limited technical capacity in SHGs for managing business operations • Market linkage constraints despite aggregation facilities • Risk of underutilization if awareness and adoption remain low
How it will be implemented	• **Year-wise Phasing**: Cover 60 SHGs in 4 years (15 SHGs/year, i.e., 25% per year) • **Community Mobilisation**: Identify and prepare SHGs for ownership and operation • **Infrastructure Setup**: Procure equipment (transplanter, tiller, seed drill, sprayers, grader, scales, moisture meter, winnowing fan, tarpaulins, billing machine, etc.) as per requirement • **Capacity Building**: Train SHG members in machine handling, repair, record keeping, grading, marketing, and digital literacy • **Convergence & Funding**: Mobilise resources from NRLM, NABARD, MGNREGS (for sheds/collection points), CSR, and State government schemes • **Operationalisation**: Deploy SHG operators, introduce rental and service charges, and maintain transparency through billing software • **Monitoring**: Utilisation rate, number of SHGs served, recovery of rental/service fees, market linkages created.
Feasibility/ viability issues, if any	• Limited Technical Know-How, • Inconsistent Cash Flow, • High Maintenance Costs, • Low Rental Recovery, • Gender Barriers, • Transportation and Access Issues
Key Milestones	Year 1: Mobilisation, training, 15 SHGs operational, first CHC & CCC established Year 2-4: Scale-up to 15 SHGs/year, procurement of additional equipment, and market linkages built Year 4: 60 SHGs fully covered, centres operational with independent revenue streams Post Year 4: Monitoring, scaling to additional clusters, strengthening SHG federations
Potential Risks and Unknowns	• Machinery underutilization due to traditional farming practices • Equipment breakdowns and repair delays • Conflict within SHG/Federation on revenue sharing • Market demand fluctuation despite the collection centre setup • Gender bias is restricting women's access to machines and benefits

Domains	Crops
Intervention	**Setting up the Custom Hiring Centre (CHC) along with the Common Collection Centre**
Ecological, Economic and Social Benefits	**Ecological Benefits** • **Biodiversity Conservation**: Small implements reduce ecological disturbance during land preparation, weeding, and harvesting. • **Soil Health Improvement**: Mechanisation, such as line sowing and zero tillage, reduces soil disturbance and erosion. **Economic Benefits** • **Cost Reduction**: The pay-per-use model eliminates the need for upfront investment in costly machinery. • **Increased Productivity**: Timely operations (land prep, sowing, harvesting) enhance yields and reduce losses. • **Employment Generation**: Creates jobs for operators, mechanics, and managers. • **Entrepreneurial Opportunities**: SHGs, FPOs, or rural youth can manage CHCs as viable enterprises. **Social Benefits** • **Women's Empowerment**: Gender-sensitive tools and training enable greater women's participation in farming. • **Reduced Drudgery**: Mechanisation reduces heavy physical workload, especially for women and elderly farmers. • **Equity & Access**: Marginal and smallholders gain affordable access to otherwise costly machines. • **Community Cohesion**: Shared assets strengthen cooperation and trust within farming communities.
Key stakeholders involved and their roles in implementation	• **District Administration**: Convergence, monitoring, and fund facilitation • **Agriculture Department**: Training, technical guidance • **SHGs/Federations**: Day-to-day management, service delivery • **NIRMAAN**: Handholding, monitoring, institution building • **Banks/NABARD**: Financing and credit linkage • **PRI**: Land, governance, accountability
Additional human resources required	• **CHC:** Machine operator, record keeper, support staff • **CCC:** Manager, grader, sorter, transport coordinator, bookkeeper
Institution needed, if any	• SHG Federation – for ownership and business sustainability • PRI/Gram Panchayat – for land support and governance • Agri Dept. – for capacity building and continuous technical handholding • NABARD/Banks – for financing support • Implementing Agency (NIRMAAN) – for mobilisation, business planning, and monitoring

5.1.13. Extensive Area Certification (LAC)

'The Large Area Certification (LAC) intervention in Dantewada aims to expand organic farming by certifying 22,230 hectares under a cost-effective, community-driven certification system. Adopting a cluster-based approach reduces the individual certification burden on farmers. LAC primarily serves to maintain institutional and community control over chemical-free cultivation and regional organic integrity, rather than immediate market linkage.'

Extensive area certification (LAC) is a large, contiguous traditional / default organic area(s) consisting of a few villages; it may include an entire Block/Taluk/District that is covered under the PGS-India certification system. It does not include wild forest areas, but if the villages covered under this certification process have a village-level small forest area, it can be included in LAC.

The Department of Agriculture and Farmers Welfare, under its flagship scheme **Paramparagat Krishi Vikas Yojana (PKVY),** has launched this unique quick certification programme to harness these potential areas. Under LAC, each village in the area is considered as one cluster/group. All farmers with their farmland and livestock need to meet the standard requirements and, upon verification, be certified en masse (all together and at the same time, in large numbers) without a conversion period. Certification is renewed annually through peer appraisal, in accordance with the PGS-India process.

Strategy for Declaring an area (District) through Large Area Certification

Grade	Standard
Green village (Fully organic villages)	Agri-chemicals have not been used in the town for the last 5 years
Yellow village	Less than 10 farmers are using agrochemicals in a village
Red village	More than 10 farmers are using Agrochemicals in a village

Procedure followed for Large Area Certification

No.	Action
1	Large area selection and map preparation
2	To collect basic information related to agriculture
3	Group formation
4	Individual farmers' declaration and Resolution at the GP level
5	Evaluation by the Monitoring/Expert committee
7	Field visit by the Expert Committee
8	Authentication by the Department of Agriculture that the entire area is free from the use of chemical input material for the last 3 years
9	Restrictions of use and granting licenses
10	Online Data Entry at PGS India Portal

Status of LAC in Dantewada block

- **Villages & Areas already certified under LAC**
  - Total Villages – 25
  - Total area – 16509.6 Ha
  - Farmers under LAC – 2512
- **Villages & Area and remaining to be brought under LAC**
  - Remaining villages: 35
  - Remaining area: 22230 Ha.
  - Total Farmers: 7641-Farmers already certified under LAC: 2512

Certification process by the Regional Council

- RC receives applications from all the Gram Panchayats/villages.
- Verifies the authenticity and completeness of the documents
- Participate in some villages' peer appraisal (at least 20% of one particular area)
- Participate in the PGS-NEC committee verification programme and be part of the decision-making process.
- On receipt of the recommendation of the committee and on completion of the first peer appraisal, decide on the certification status of the area and recommend for the approval of PGS-NEC.
- On receipt of PGS-NEC approval, grant certification to the entire area, including a list of villages, their places, livestock, and the number of farmers/producers.
- Subsequent renewal of certification is granted on receipt of an annual peer appraisal and random physical verification by RC. RC need to ensure that every village is physically inspected at least once every two years for standard compliance assessment.

5.1.14. Third-Party Organic Certification

The Third-Party Organic Certification intervention is crucial to establish credibility and market access for organic produce from the project area by forming 8 Internal Control System (ICS) groups covering approximately 4,000 farmers. By ensuring traceability, quality compliance, and recognised third-party certification, the intervention enables farmers to access premium organic markets and secure better price realisation. It strengthens community-based institutions such as FPOs, CLFs, and ICS groups by building capacity in documentation, internal inspections, and compliance with organic standards. Additionally, it reduces reliance on chemical inputs, promotes sustainable and environmentally friendly agriculture, and enhances farmer incomes through collective marketing and linkage to high-value buyers, creating a foundation for long-term self-sufficiency in organic certification and market participation.

Domains	**Crops**
Intervention	**Third Party Organic Certification**
When will it start functioning?	First Year
What will it do?	• Establish 8 Internal Control System (ICS) groups, each comprising ~500 farmers, covering approximately 4,000 farmers (~30% of total households) for third-party organic certification. • Facilitate certification of organic produce through recognised third-party agencies, enabling market access to premium organic markets requiring credible accreditation. • Ensure traceability, quality compliance, and credibility of produce in external markets by maintaining ICS documentation and internal inspection systems. • Build technical and institutional capacity through training programs for Jaivik Karyakartas, Internal Inspectors, and ICS cooperative leaders, focusing on certification processes, record-keeping, and organic standards. • Support collective marketing and better price realisation by linking certified produce to niche buyers, reducing dependence on local traders. • Prepare ICS groups for self-sufficiency in certification over five years, with initial financial and technical support for certification and capacity building. • Promote community-driven, sustainable organic agriculture aligned with market requirements and state organic farming initiatives.
Who will implement it? (stakeholders, including institutions)	Farmer-Producer Organisations (FPOs) / Cooperatives will- • Mobilise farmers into ICS groups. • Maintain records and coordinate certification processes. • Facilitate aggregation and marketing of certified produce. Cluster Level Federations (CLFs) / Village Organisations (VOs) will- • Support farmer coordination at the village/cluster level. • Assist in Internal Control System (ICS) documentation and compliance. • Act as local nodes for certification and market linkage activities. Implementing NGO / Facilitating Agency (e.g., NIRMAAN) will- • Provide technical support and capacity building for ICS formation and management. • Conduct training for Jaivik Karyakartas, Internal Inspectors, and Cooperative Leaders. • Liaise with third-party certification bodies and government departments. Accredited Third-Party Certification Agencies will- • Conduct external inspections, audits, and compliance verification. • Issue third-party organic certificates to ICS groups.

Domains	Crops
Intervention	**Third Party Organic Certification**
	Department of Agriculture / State Organic Mission will- • Provide technical guidance and scheme-based support for certification. • Facilitate convergence with state and national organic programs. Community Resource Persons (CRPs) / Internal Inspectors will- • Conduct field-level monitoring and internal inspections. • Maintain farmer-level compliance and traceability records.
Key Issues and Challenges for Saturation	• High Certification Cost – ₹2,00,000 per ICS per year may be a barrier without initial external financial support. • Farmer Compliance – Continuous adherence to organic practices and proper record-keeping can be challenging. • Documentation Burden – Maintaining Internal Control System (ICS) records for ~500 farmers per group requires trained staff. • Capacity Gaps – FPOs, CLFs, and CRPs need strong technical knowledge for managing certification processes. • Farmer Retention – Risk of dropout if market benefits or premium pricing are delayed. • Inspection & Renewal Delays – Certification may lapse if external audits are delayed. • Market Linkage Dependency – Profitability depends on assured buyers for certified produce. • Sustainability Risk – Long-term self-sufficiency of ICS groups may be affected without strong institutional and market support.
How it will be implemented	• Formation of ICS Groups – Establish 8 Internal Control System (ICS) groups (2 per CLF), each covering ~500 farmers. • Farmer Mobilisation & Enrolment – Identify and enrol ~4,000 farmers (~30% of total HH) for third-party organic certification. • Support to be provided to farmers for 5 years (3 years for initial certification, followed by 2 years of additional support. • Capacity Building & Training – Conduct 2-day training programs for Jaivik Karyakartas, Internal Inspectors, and ICS cooperative leaders on certification, documentation, and compliance. • Baseline Data & Documentation – Collect farmer details, land records, crop plans, and input usage for each ICS group. • Application to Certification Body – Submit documentation to accredited third-party certification agencies. • Field Inspection & Audit – Support certification body during inspections and audits of farmer fields and records. • Certification Issuance – Obtain third-party certification for ICS groups to access premium organic markets. • Annual Monitoring & Renewal – Maintain compliance, conduct internal inspections, and renew certification annually until ICS groups achieve self-sufficiency. • Market Linkage & Value Addition – Link certified produce to niche organic buyers and explore premium pricing opportunities.
Feasibility/ viability issues, if any	• High Certification Cost – ₹2,00,000 per ICS per year may be challenging to sustain in the initial phase without external support. • Farmer Compliance – Continuous adherence to organic standards and record-keeping is challenging.

Domains	Crops
Intervention	**Third Party Organic Certification**
	• Documentation Burden – Maintaining Internal Control System (ICS) records for 4,000 farmers is complex. • Inspection & Renewal Delays – Dependence on third-party agencies may delay scheduling and renewals. • Market Dependence – Economic viability relies on assured premium market linkage for certified produce. • Sustainability Risk – ICS groups need to become self-sufficient in 5 years to reduce dependence on project funds.
Potential Funding Sources	Paramparagat Krishi Vikas Yojana (PKVY), Rashtriya Krishi Vikas Yojana (RKVY), CSR Funds / NGO Contributions.
Key Milestones	• Formation of ICS Groups – Create 8 Internal Control System (ICS) groups (2 per CLF) covering ~4,000 farmers. • Farmer Mobilisation & Registration – Identify and register farmers willing to adopt organic standards under ICS. • Training & Capacity Building – Conduct 2-day trainings for Jaivik Karyakartas, Internal Inspectors, and ICS leaders. • Documentation & Record Setup – Establish field-level records, farm maps, and ICS compliance documentation. • First-Year Certification – Submit applications to third-party certification agencies and complete initial audits. • Market Linkage Preparation – Align certified produce with organic buyers and premium market opportunities. • Annual Surveillance & Renewal – Conduct yearly inspections and maintain compliance to ensure certification continuity. • Gradual Self-Sufficiency – Move ICS groups towards independent certification management after 5 years.
Potential Risks and Unknowns	• Farmer Non-Compliance – Farmers may fail to follow organic practices, risking certification consistently. • Documentation Gaps – Missing or incomplete ICS records can lead to audit rejections. • High Certification Costs – Annual certification fees may strain cooperatives without assured market returns. • Market Linkage Uncertainty – Limited or delayed access to premium organic buyers may reduce economic benefits. • Knowledge & Capacity Gaps – Continuous training and monitoring are needed to sustain compliance. • External Dependency – Reliance on external agencies for certification may affect long-term sustainability. • Pest/Disease Incidence – Crop failures due to pest attacks may discourage farmer participation.
Ecological, Economic and Social Benefits	**Ecological Benefits:** • Promotes chemical-free and sustainable farming practices. • Improves soil health, biodiversity, and reduces water and soil contamination. • Encourages climate-resilient and environmentally friendly agriculture. **Economic Benefits:** • Provides access to premium organic markets, increasing farmers' income. • Reduces dependency on costly chemical inputs, lowering production costs. • Enables collective marketing and better price realisation for surplus produce. **Social Benefits:** • Strengthens farmer groups, cooperatives, and community-based institutions.

Domains	Crops
Intervention	**Third Party Organic Certification**
	• Builds farmer confidence and knowledge in organic production and compliance. • Enhances community recognition and trust through certified organic produce.
Key stakeholders involved and their roles in implementation	• Farmers / Farmer Groups: Adopt organic practices, maintain records, and comply with certification requirements. • Internal Control System (ICS) Groups: Conduct internal inspections, manage documentation, and ensure compliance with certification requirements. • Cooperatives / Cluster Level Federations (CLFs): Coordinate farmer groups, facilitate certification, and support aggregation of produce. • Implementing NGO / Facilitating Agency (e.g., NIRMAAN): Provide technical guidance, capacity building, and liaison with certification bodies. • Accredited Certification Agency: Conduct external audits and issue organic certification. • Agriculture/Horticulture Departments: Provide technical support, align with government schemes, and facilitate policy. • Community Resource Persons (CRPs): Assist with farmer training, field verification, and documentation support.
Additional human resources required	Internal Inspectors / Field Coordinators, Training & Capacity Building Experts, Documentation & Data Management Staff, Marketing & Value Chain Personnel, Technical Support Staff
Institution required, if any	Cluster Level Federations (CLFs) / Village Organisations (VOs), Internal Control System (ICS) Groups, Accredited Third-Party Certification Agency

5.1.15. Lift Irrigation

The Lift Irrigation intervention is designed to transform rainfed, water-scarce farmland into productive, irrigated areas, thereby enhancing agricultural resilience and farmer livelihoods. By bringing 1,500 acres under assured irrigation, the initiative will enable multiple cropping, crop diversification, and improved productivity, reducing the risks of crop failure due to erratic rainfall. Collective management through water user groups and Panchayati Raj Institutions ensures sustainable water use, community ownership, and equitable distribution. This intervention aligns with climate-resilient and sustainable farming practices, reduces migration by enhancing local livelihood opportunities, and contributes to long-term economic and social upliftment of small and marginal farmers.

Domains	Crops
Intervention	**Lift Irrigation**
When will it start functioning?	First Year
What will it do?	• Bring 1,500 acres of farmland under assured irrigation through lift irrigation systems. • Enhance water availability for crops in rainfed or water-scarce areas. • Increase crop productivity and allow diversification into high-value crops. • Reduce the risk of crop failure caused by erratic rainfall. • Enable multiple cropping and year-round cultivation for farmers. • Improve farm incomes and livelihood security for small and marginal farmers.

Domains	Crops
Intervention	**Lift Irrigation**
	• Promote climate-resilient and sustainable water management practices.
Who will implement it? (stakeholders, including institutions)	• Farmers / Farmer Groups – Contribute labour (Shramdan), operate, and maintain lift irrigation systems. • Village Organisations (VOs) / Water User Groups – Coordinate collective use, scheduling, and local management. • Implementing NGO / Facilitating Agency – Provide technical support, mobilise farmers, and assist in system installation. • Department of Agriculture / Irrigation Department – Provide technical guidance, approve designs, and facilitate convergence with government schemes. • Panchayati Raj Institutions (PRIs) – Support local coordination, community mobilisation, and minor maintenance activities. • Community Resource Persons (CRPs) – Assist in awareness, training, and monitoring of water use and maintenance.
Key Issues and Challenges for Saturation	• High initial investment cost for lift irrigation infrastructure. • Dependence on continuous water source availability (river/canal/stream). • Regular maintenance is required to prevent breakdowns. • Risk of unequal water distribution among farmers. • Limited technical capacity for operation and repair in villages. • Possible conflicts over water use and scheduling during peak demand. • Sustainability is dependent on collective participation and timely cost-sharing.
How it will be implemented	• Identify 1,500 acres suitable for lift irrigation and prepare baseline mapping. • MoMobilisend organise farmers into water-user groups for collective management. • Construct lift irrigation structures and install required pipelines/pumps. • Facilitate Shramdan (community manual work) for initial setup and minor works. • Train farmers on system operation, maintenance, and water-use efficiency. • Ensure phased implementation with 300 acres covered each year for 5 years. • Establish a monitoring and maintenance schedule for sustainable operation.
Feasibility/ viability issues, if any	• High Capital Cost – ₹55,000 per acre may require external funding support. • Power/Water Availability – Continuous water and electricity supply needed for operation. • Operation & Maintenance – Requires regular maintenance and skilled management. • Farmer Participation – Success depends on collective action and timely Shramdan. • Seasonal Dependence – Water source adequacy during dry months may affect viability. • Sustainability Risk – Risk of system damage or disuse without strong community ownership.
Potential Funding Sources	Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), District Mineral Fund (DMF), NABARD / Rural Infrastructure Development

Domains	Crops
Intervention	**Lift Irrigation**
	Fund (RIDF), Convergence with Watershed / Natural Resource Management Programs
Key Milestones	• Site Selection & Feasibility Survey – Identify 1,500 acres suitable for lift irrigation. • Farmer Mobilisation & Consent – Organise farmers into user groups for collective management. • Design & Technical Planning – Prepare technical layout and cost estimates for lift irrigation systems. • Installation of Lift Irrigation Infrastructure – Pumps, pipelines, and distribution network set up. • Community Training & Operation Handover – Train water user groups on operation and maintenance. • First Irrigation Cycle – Begin irrigation of initial 300 acres in Year 1. • Phased Expansion – Bring an additional 300 acres under irrigation each subsequent year up to 1,500 acres. • Monitoring & Maintenance – Regular checks on functionality and water distribution efficiency. • Full Operationalisation – Achieve 100% coverage and sustainable functioning by Year 5.
Potential Risks and Unknowns	• Water Source Reliability – Seasonal water shortage may affect irrigation continuity. • Power Supply Issues – Irregular electricity can disrupt pump operation. • High Maintenance Needs – Pump breakdowns or pipeline leakages may increase costs. • Farmer Participation Risk – Limited adoption if operational costs are perceived as high. • Equity in Water Distribution – Conflict may arise if water is not distributed fairly among farmers. • Environmental Concerns – Over-extraction of water may impact local ecology. • Financial Sustainability – Dependence on external funding for installation and initial maintenance.
Ecological, Economic and Social Benefits	**Ecological Benefits:** • Promotes efficient water use and reduces dependence on rainfed farming. • Encourages crop diversification with sustainable water management. • Helps reduce soil erosion by maintaining soil moisture. **Economic Benefits:** • Increases crop yield and enables multiple cropping, improving farmer income. • Reduces the risk of crop loss due to drought or delayed rainfall. • Enhances the productivity of previously uncultivable or low-yield land. **Social Benefits:** • Improves water access for community farming and collective benefit. • Reduces migration by creating better livelihood opportunities locally. • Strengthens farmer groups through shared management of irrigation resources.
Key stakeholders involved and their roles in implementation	• Farmers / Farmer Groups – Contribute to Shramdan, operate and maintain lift irrigation systems, and adopt water-efficient practices.

Domains	Crops
Intervention	**Lift Irrigation**
	• Village Organisations (VOs) / Water User Groups – Manage community-level water distribution and system maintenance. • Cluster Level Federations (CLFs) / FPOs – Coordinate among villages, mobilise farmers, and facilitate collective decision-making. • Implementing NGO / Facilitating Agency – Provide technical guidance, oversee construction, capacity building, and system handover. • Department of Agriculture / Irrigation Department – Offer technical support, design approval, and scheme convergence. • Local Panchayati Raj Institutions (PRIs) – Support land and water resource management, community mobilisation, and conflict resolution.
Additional human resources required	Technical Engineers / Irrigation Experts, Field Supervisors / Site Coordinators Machine Operators / Skilled Labour Maintenance Staff / Technicians Community Mobilizers / Water User Facilitators
Institution needed, if any	Panchayati Raj Institutions (PRIs), Irrigation / Water Resource Department, Implementing NGO / Facilitating Agency

5.1.16. Portable Sprinkler

Sprinkler Irrigation intervention in Dantewada aims to optimise the use of water lifted through the proposed lift irrigation systems by ensuring efficient, equitable, and sustainable on-farm distribution across the land area. Sprinklers will reduce water losses from conveyance and over-irrigation, improve soil moisture retention, and enhance the productivity of cereals, pulses, and horticultural crops, thereby enabling crop diversification. The intervention will be implemented through a convergence of Gram Sabhas, Water User Associations (WUAs), PRIs, and line departments (particularly Agriculture and Horticulture), supported by NGOs for community mobilisation, demand generation, and training. Farmers will be direct adopters and beneficiaries, contributing a share of the capital cost, with the per-acre cost of portable sprinkler sets at ₹13,211 (as per PDMC guidelines), to be financed through PMKSY-PDMC subsidy support and farmer contributions, supplemented where necessary by tribal development funds or funds mobilised from DMF.

Key issues for saturation include low awareness and demand for sprinklers in Dantewada, the need for farmer sensitisation, and capacity building for system operation and maintenance. Implementation will consist of awareness drives, exposure visits, group training, and demonstration plots, followed by procurement, installation, and capacity building at the farmer group level. The approach is technically feasible given PDMC's subsidy model, though viability depends on timely subsidy disbursal, farmer willingness to contribute, and institutional support for after-sales service and repair. Key milestones include community mobilisation and demand aggregation (Year 1), training and demonstrations (Year 1–2), phased installation linked with lift irrigation rollout (Years 2–4), and full coverage of 1,500 acres by Year 5. Risks include system damage, inadequate after-sales service, farmer reluctance to maintain equipment, and delays in subsidy payments. Ecologically, the intervention will conserve water, reduce soil erosion, and maintain groundwater recharge; economically, it will enhance water-use efficiency, crop yields, and incomes while reducing irrigation costs; socially, it will promote collective management, reduce drudgery, and build farmer resilience to climate variability. Key stakeholders include Gram Sabhas/WUAs (mobilisation and oversight), PRIs and Agriculture Department (technical sanction, subsidy facilitation), NGOs (awareness, training, and demand creation), and farmers

(adoption, cost-sharing, and usage). Additional human resources, such as agriculture extension workers, community mobilizers, and irrigation technicians, will be needed. Institutionally, a Sprinkler User Group under each WUA or Gram Sabha sub-committee may be required to ensure proper governance, equitable access, transparent cost-sharing, and long-term sustainability. The role of the Anchor Organisation in implementing the intervention is evident in its being a farmer household's farm-level intervention.

5.1.17. Drip Irrigation

Installing drip irrigation as a micro-irrigation system in Dantewada aims to ensure efficient water use by delivering water directly to the root zone of crops, thereby saving water, reducing input costs, and enhancing crop productivity under water-scarce conditions. The intervention will be implemented in phases, targeting approximately 560 acres. About 560 (70%) of existing borewells, among the small/marginal (55% subsidy) and big farmers (45% subsidy) under the "Per Drop More Crop" (PDMC) scheme, are planned to be covered under drip. The implementation will be led by farmers' institutions (FPOs, SHGs), local Panchayati Raj Institutions, and the Department of Agriculture, with Anchor/ Implementing Agency playing a catalytic role in mobilisation, demand generation, and convergence with government schemes.

Key issues may include low initial demand due to high upfront costs and limited awareness among farmers. The feasibility is high given the district's water challenges and the existing borewell base. However, risks remain regarding the maintenance of drip systems, farmers' willingness to contribute, and the timely release of subsidy funds. Potential funding sources include PDMC, CAT, and farmer contributions, with possible convergence from MGNREGS for Shramdan and land preparation. Milestones include: farmer mobilisation and IEC in Year 1, installation of 112 acres annually for five years, and full coverage of 560 acres by Year 5. The ecological benefits include water-use efficiency, reduced soil erosion, and promotion of climate-resilient agriculture; economic benefits include lower irrigation costs and higher productivity; and social benefits include equitable water use, higher farmer incomes, and reduced drudgery. Key stakeholders will consist of the Department of Agriculture (technical approvals), PDMC (subsidy), CAT (funding and facilitation), farmers/FPOs (implementation and maintenance), and private vendors (supply and installation). Additional human resources, such as field facilitators/irrigation technicians, will be required for installation, maintenance, and farmer training. At the institutional level, a district-level coordination and monitoring cell involving CAT, PDMC, PRI representatives, and FPOs will be necessary to ensure smooth implementation, timely subsidy flow, and effective monitoring for sustainability.

5.1.18. Ring Wells

The proposed ring well intervention aims to provide an efficient, cost-effective, and time-bound solution for securing irrigation water in lowland areas of Dantewada, where natural soil moisture persists until February–March. Unlike borewells, which compete with drinking water needs and accelerate groundwater depletion, ring wells utilise shallow water tables and local hydrology, thereby ensuring sustainable irrigation support for distress irrigation in kharif and enabling second- and third-cropping.

While ring wells are currently being constructed by contractors (primarily from Andhra Pradesh, which has expertise in ring-well construction), with support from local farmers and community institutions, the same approach will be adopted for the proposed ring-well construction. Key stakeholders include farmers (beneficiaries and labour contributors), village-level institutions, and Gram Panchayats. Implementation will involve establishing five ring wells per village as demonstration units, requiring approximately 20–22 days for ring preparation and 7 days for digging, with community labour contributions. The cost per unit is Rs. 52,500 for a 15 ft-deep, three m-diameter ring well, making it

highly feasible compared to conventional dug wells. Issues for scaling include ensuring contractor availability, generating community demand, and selecting sites in water-retentive lowlands. Potential funding sources include direct project funds, limited MGNREGA support (labour component), and possible CSR resources.

Key milestones include the successful completion of 60 ring wells annually for 5 years (300 in total), the establishment of demonstration wells in all villages, and the adoption of multiple cropping by farmers. Risks include poor site selection, structural quality issues by contractors, and limited willingness of farmers to co-invest in labour. Ecological benefits include sustainable water use and reduced stress on groundwater; economic benefits include enabling multiple cropping and increased farm incomes; while social benefits include equitable access to irrigation and reduced migration. Additional human resources, such as technical supervisors and monitoring staff, will be required. At the same time, institutional anchoring through Gram Panchayats and local water user groups will be essential for long-term sustainability.

5.1.19. Digital Weather-Based Crop Advisory Services

'To support farmers with timely weather information and crop-specific advisories on sustainable agriculture, a Weather-Based Crop Advisory System can be introduced through digital dissemination methods. This intervention aims to provide localised, timely, and actionable information on weather patterns, crop and livestock management, and pest/disease outbreaks—enabling farmers to make informed decisions and build climate resilience.'

A dedicated expert agency, such as a technology-based start-up or a specialised service provider with experience in agri-tech, can deliver the advisory services. The agency will be responsible for: setting up the necessary infrastructure, such as weather monitoring systems and digital platforms, and generating localised, scientifically validated advisories aligned with cropping cycles and weather forecasts.

These advisories need to be disseminated in local languages using multiple digital channels, including Mobile applications, WhatsApp messages, SMS/text messages, voice alerts, and any other regionally suitable digital formats. To strengthen last-mile delivery and ensure better adoption, local CRPs such as Krishi Sakhis and Pashu Sakhis can be trained and involved in this intervention

Farmer Coverage and Phasing

The intervention might be implemented in phases, aiming to cover approximately 25% of farmers across the landscape over 10 years. Key factors influencing this rollout include:

- Smartphone ownership and digital readiness among rural farmers
- Willingness to pay for services on a subscription basis
- Geographical prioritisation based on cropping intensity and vulnerability to climate risks

Convergence Opportunities

- The service can operate on a subscription-based model,
- Convergence opportunity can be explored through CSR funding—particularly from companies and foundations focused on technology-led agricultural development.

5.1.20. Green Manuring

The proposed intervention on Green Manuring aims to enhance soil fertility, improve organic matter content, and strengthen long-term productivity across acres. Local farmers will primarily implement this intervention with technical support from agriculture extension workers, Gram Panchayats, and

institutions such as the Department of Agriculture and KVKs. Community-based organisations (CBOs), SHGs, and Farmer Producer Organisations (FPOs) will support farmer mobilisation and capacity building.

The key issues and challenges in achieving full saturation include farmer awareness of the benefits of green manuring, upfront operational costs, timely seed availability, and ensuring that farmers allocate land to a non-cash crop activity. Implementation will involve supplying green manure seeds, farmer training, monitoring crop incorporation, and leveraging convergence with existing government schemes. The cost viability is moderate, as the intervention requires about ₹7,500 per acre, but potential benefits in reducing fertiliser dependence and improving yields make it feasible in the long run. Possible funding sources include state agriculture schemes, MGNREGS (for land preparation), and CSR funds. Key milestones include completing farmer training in Year 1, distributing seed each season, incorporating green manure crops before kharif sowing, and achieving 100% household coverage by Year 5. Risks include low adoption due to delayed visible benefits, poor rainfall affecting biomass generation, and disruptions to the seed supply chain. Ecologically, the intervention will enrich soil health, reduce chemical fertiliser dependency, and promote regenerative farming; economically, it lowers input costs and enhances productivity; socially, it strengthens collective farmer practices and resilience. Key stakeholders include farmers (adopters and implementers), Gram Panchayats (local coordination), Agriculture Department (technical support), SHGs/FPOs (mobilisation and monitoring), and NGOs/CSR partners (co-funding and training). Additional human resources required include field facilitators or agriculture resource persons for farmer handholding.

5.1.21. Initiating Second and Third Cropping Cycles

- In the Dantewada landscape, there is potential to introduce second and third-cropping cycles. This aligns with a broader landscape-level cropping strategy, potentially complemented by initiatives such as improved cattle housing for manure and land preparation.
- Crops suitable for Second Cropping are Pulses (Chana, Matar, Tiwra/ Lakhadi (Grass Pea)), Oilseed (Mustard), and Vegetables, while crops suitable for the Third Cropping could be Pulses (Moong), and Vegetables.
- The overall premise behind increasing the area under second cropping is to tap the moisture already present in paddy fields, while controlling open grazing.
    - Of the total agriculture cultivable land (34866 Ha), around 40% (13946.4 Ha) is upland, followed by 30% (10459.8 Ha) midland and 30% (10459.8 Ha) lowland. Cultivation of the second crop will occur in the midlands and lowlands, as these areas receive moisture during the second season.
    - We assume that around 30% (6275.8 ha) of such land will be covered under the second crop.

- Third cropping is primarily linked to increased area under irrigation by tapping into existing unutilized irrigation schemes.
    - Current area under irrigation is ~1636 Ha.
    - It is assumed that interventions on lift irrigation will add ~600 Ha. In comparison, SWC works will add ~1000 Ha to irrigation (10% of the total area under treatment, as a rough, realistic estimate).
    - Total Area brought under irrigation is 3236 Ha. We further assume that 20% of this area, i.e. 650 Ha. It will be brought under the third crop.

5.2. Agroforestry, Forestry and Non-Timber Forest Produce

5.2.1. Plantation of Mahua Trees and Provision of Nets for Mahua Trees

The Mahua plantation intervention is designed to strengthen household livelihoods by leveraging an existing, culturally and economically significant Non-Timber Forest Produce (NTFP). Establishing plantations now creates a sustainable, long-term income stream for families through the sale of flowers (used in liquor and food), seeds (for oil extraction), and other value-added products. Beyond economic benefits, the intervention promotes environmental sustainability by integrating trees into farmland, supporting agroforestry practices and enhancing ecosystem services. This strategic approach secures future household incomes while preserving a vital component of local cultural and livelihood systems, thereby supporting both economic resilience and ecological sustainability.

Domains	**NTFP**
Intervention	**Plantation of Mahua Trees and provision of nets for Mahua Trees**
When will it start functioning?	First year
What will it do?	Individual and group/community level for seedling plantation and management,
Who will implement it? (stakeholders, including institutions)	Farmer Households with the support of the Community Cadre
Key Issues and Challenges for Saturation	**Technical challenge-** • Land made available for mahua may not be suitable, resulting in less than desired overage. • Poor soil fertility or water retention capacity can limit seedling establishment in specific plots. • Unavailability of quality seedlings at scale may delay or reduce plantation targets. • Limited knowledge among farmers on plantation techniques, pest/disease management, and maintenance requirements. • Lack of site-specific plantation planning, including spacing, species selection, and seasonal alignment. • Insufficient technical workforce to provide timely on-ground guidance and post-plantation **Challenges in Village & Household Coverage-** The remoteness of villages may pose logistical challenges for transporting seedlings and providing follow-up support. Scattered and fragmented landholdings make it difficult to implement at scale in a coordinated manner. **Associated Challenges-** Limited institutional capacity at the village level to mobilise and monitor saturation effectively. • Risk of exclusion of vulnerable households • Delayed or fragmented fund flows may lead to uneven implementation across villages and phases. • Seasonal migration of households may impact continuity of care and monitoring in plantation years
How it will be implemented	• Nursery Development by the farmers & Sapling Procurement (Sapling nurseries at household level, Ensure saplings meet quality standards by CRPs (age, height, disease-free), Procurement aligned with phasing schedule. • Site Preparation & Plantation (Preparation of planting pits, Community mobilizers or agri-extension workers to guide plantation). Capacity Building & Awareness (Training on Plantation techniques, Maintenance and pest management, conducted through village-level training sessions). • Monitoring & Support System (Dedicated field staff/community resource persons (CRPs) for regular field visits and survival

Domains	NTFP
Intervention	**Plantation of Mahua Trees and provision of nets for Mahua Trees**
	rate checks, and a monitoring system to track progress village-wise and year-wise) 5. Protection & Maintenance (Years 1–5): Year 1: One-time fencing and protection cost, Years 2–5: Recurring care costs (watering, weeding, pest/nutrient application) • Purchase of high-quality nets for Mahua trees to prevent contamination of the mahua flower, which otherwise drops on the ground. This food-grade mahua has takers with whom market tie-ups can be explored. Also, under the envisaged Common Processing Centre interventions, value-added products from mahua flowers can be developed. • Institutional Involvement: Village committees or SHGs may assist in Beneficiary selection, Distribution of plants and inputs, and Post-plantation monitoring. 8. Documentation & Reporting: Regular reports to track phase-wise implementation and outcomes.
Feasibility/ viability issues, if any	• Uncertain survival rate of saplings due to grazing, pests, lack of care, or climatic stress, particularly in rainfed areas. • Lack of immediate livelihood returns, which may reduce interest among households prioritising short-term income sources. • Capacity constraints at the local level (e.g., in nursery management, technical training, or monitoring) can affect implementation quality.
Potential Funding Sources	Community Contribution, CAT Funds and Government (MGNREGS Support)
Key Milestones	• All participating households have planted healthy Mahua saplings with appropriate spacing and care. • Household nurseries developed with farmers, facilitated by CRPs to ensure timely and quality sapling availability. • Households trained in plantation, care, pest management, and long-term nurturing of Mahua trees. • The majority of planted trees survive and record satisfactory growth due to effective maintenance and protection. • Increase in tree cover and improved microclimatic conditions observed in and around plantation sites. • Households begin to see the Mahua plantation as a long-term asset for income through flower collection, seed use, or oil extraction (expected after fruiting begins). • Mechanisms developed for long-term maintenance, protection, and potential linkages to forest rights, processing, or marketing.
Potential Risks and Unknowns	• Environmental and Climatic Risks • Less than desired community participation • Delays in plantation activities • Access issues to high-quality saplings • Inadequate planning for long-term maintenance and protection • Low germination or flowering rate
Ecological, Economic and Social Benefits	**Ecological-** • Improved microclimate around plantation zones, potentially benefiting surrounding crops and communities. • Habitat support for birds, bees, and other pollinators through flowering Mahua trees. • Soil conservation and moisture retention, especially in degraded or fallow agricultural lands. • Increased green cover and biodiversity in the region, contributing to climate resilience and ecosystem restoration. **Economic**-

Domains	NTFP
Intervention	**Plantation of Mahua Trees and provision of nets for Mahua Trees**
	• Long-term livelihood source from Mahua flowers (used for liquor, food), seeds (oil extraction)- evidence of the mahua tree providing incomes for 25 years • Local (Community level) enterprise potential through processing of Mahua seeds into oil, Mahua flowers into creating value-added products, including sweets and traditional medicine **Social:** • Women as custodians of Mahua plants would be a leveller of power equations at the village level • Stronger community cohesion through collective plantation drives and resource management. • Intergenerational asset creation—benefits realised over time can support future generations.
Key stakeholders involved and their roles in implementation	• Target Households (HHs), • Self-Help Groups (SHGs)/Women's Groups), • Village Institutions (Gram Sabha/Panchayats), • FPOs / Agri-Entrepreneurs
Additional human resources required	**Cadre-Based Model (Train-the-Trainer Approach)** A skilled cadre trains villagers, and they, in turn, carry out the plantation. • Master Trainers train village-level cadres in plantation, protection, and monitoring techniques. • Community Cadres selected from within the village are responsible for local coordination, planting support, and regular follow-ups. • Monitoring & Reporting Assistants: For field data collection, plantation tracking, and MIS entry. • Technical Experts (Short-term or Roving): Provide periodic support on pest/disease management, soil suitability, and ecological practices
Institution required if any	SHG, Cluster-Level Institutions, Farmer-Producer Organisations (FPOs), Capacity Building and Training Institutions, Coordination Committee

Capacity development for the Mahua plantation intervention, along with netting of mahua trees, will focus on equipping farmer households not only with the necessary skills and knowledge for a thriving mahua plantation, care, and long-term management of mahua trees, but also with the wherewithal to produce food-grade mahua. Community Resource Persons (CRPs)/Lead farmers will orient farmers on various aspects of plantation and collection, and will periodically monitor the growth of the planted trees. Informal dissemination will take place through regular household visits, community meetings, and plantation drives, while exposure to prosperous plantations will lead to spillover adoption by neighbouring farmers. This approach ensures that farmer households gain the technical capacity to independently manage Mahua plantations as a long-term livelihood and ecological asset.

The intervention to provide nets for Mahua trees aims to support 3,249 households (25% of those owning Mahua trees in the block) through the phased supply of collection nets, thereby reducing post-harvest losses, improving quality, and enhancing income from Mahua flowers. The activity will be implemented jointly by Forest Rights Committees (FRCs), Gram Sabhas, and community-based organisations with facilitation from NGOs, the Forest Department, and technical resource agencies. While the key challenge to saturation lies in ensuring equitable access across all eligible households and in managing collective storage and market linkages, the phased coverage (812 HHs per year over four years) is designed for feasibility and smoother adoption. Implementation will involve procuring quality nets at a cost of ₹10,000 per tree (1 per household), distributing them through Gram Sabha-led mechanisms, and providing training on use and maintenance.

The intervention's viability is high given household ownership of Mahua trees and cultural familiarity with Mahua collection. However, risks include improper use of nets, delayed disbursement, and potential conflicts over prioritisation. Funding may be mobilised from government schemes like MGNREGS (for partial support), CAMPA funds, Tribal Development Department budgets, CSR

initiatives, or convergence with Forest Department and NRLM resources. Key milestones include household mobilisation (Year 1), phased net distribution (Years 1–4), and monitoring of income and ecological outcomes (Years 2–5). Ecologically, nets will reduce ground-level contamination and wastage. In contrast, socially, they will minimise drudgery (especially for women collectors), and economically, they will enhance household incomes through higher flower recovery and quality. Additional human resources required include 1–2 trained community mobilizers per cluster and a technical support person for procurement and training, while institutional support will be needed from Gram Sabha/FRC for beneficiary identification and monitoring, with NGOs providing handholding and the Forest Department enabling convergence, if any.

5.2.2. Good Collection Practices (GCP) for NTFPs

The Good Collection Practices (GCP) for Non-Timber Forest Products (NTFPs) intervention is designed to enhance the quality, sustainability, and market value of forest produce such as Mahua, Mango, Char, and Tamarind, which are critical livelihood sources for forest-fringe households. Currently, traditional collection methods often involve premature harvesting, contamination with foreign matter, and poor post-harvest handling, which leads to lower quality, reduced shelf life, and lower market price realisation. By introducing standardised GCP and Good Handling Practices (GHP), this intervention will train primary collectors — especially women — through Jaivik Karyakarta/Krishi Sakhis to adopt hygienic, sustainable, and market-driven collection methods. Improved practices will enhance ecological sustainability by preventing overharvesting, allowing forest regeneration, and maintaining biodiversity. At the economic level, better quality NTFPs will fetch higher prices, enabling income enhancement and seasonal livelihood security.

This activity, as part of a package of practices, does not envisage any capex investment.

Domains	**NTFP**
Intervention	**GCP for NTFPs (Mahua/ Mango/ Char/ Tamarind)**
When will it start functioning?	First Year
What will it do?	Introduce GCP & GHP for Mahua by building the capacity of Jaivik Karyakarta / Krishi Sakhi
Who will implement it? (stakeholders, including institutions)	Households (beneficiaries), Jaivik Karyakarta/ Krishi Sakhi (cadre), Implementing NGO/Facilitating Agency (NIRMAN), Training Institutions / Resource Agencies (capacity-building of Jaivik Karyakarta / Krishi Sakhi)
Key Issues and Challenges for Saturation	• Households' priorities may not be in sync with the GCP drive • Desired change in behaviour to adopt GCP may take longer than anticipated
How it will be implemented	• Development of a Good Collection Practices Module • Dissemination of the module to NIRMAAN/ Implementing Agency's staff and cadre earmarked for this intervention • Dissemination of Training to Primary Collectors by Cadre
Feasibility/ viability issues, if any	The cost of building capacities of cadre and households is not prohibitive, but the lack of timely availability of funds may derail the feasibility
Key Milestones	Phased targets achieved in terms of % willing Primary collectors trained on GCP of Mahua/ Mango/ Char/ Tamarind
Potential Risks and Unknowns	• Less than desired community participation • Inadequate planning for capacity building activities • Change in priorities of primary collectors in the wake of a challenging year • Desired funds not available
Ecological, Economic and Social Benefits	**Ecologically and sustainably collected** practices would aid regeneration and ensure the long-term availability of the resource. It would help in restoring ecological balance as well.

Domains	NTFP
Intervention	**GCP for NTFPs (Mahua/ Mango/ Char/ Tamarind)**
	Economic- Better Quality of produce, together with availability over a long period, will fetch better prices and hence win better incomes **Social Benefits-** Capacity building of the local community and cadre contributes to long-term livelihood knowledge.
Key stakeholders involved and their roles in implementation	• Target Households (HHs) • Self-Help Groups (SHGs)/Women's Groups, • JFM Bodies- Village Forest Committees, Forest Protection Committees, Eco Development Committees • Gram Panchayats
Additional human resources required	Cadre in the form of Jaivik Karyakarta and/or Krishi Sakhi would be required to facilitate the implementation of GCP among the households living in the forest fringes
Institution needed, if any	Gram Panchayat, JFM Bodies

Jaivik Karyakarta and Krishi Sakhis will train beneficiaries through modules and practical demonstrations on hygienic collection, sorting, drying, and storage of Mahua, Mango, Char, and Tamarind to meet market quality standards and reduce post-harvest losses. On-field demonstrations and peer learning sessions will be conducted during active collection seasons to ensure hands-on learning. Informal dissemination will occur through regular household visits, SHG meetings, and interactions with forest-fringe communities, ensuring that knowledge spreads without additional cost. Early adopters and lead collectors will serve as local champions, and exposure to successful examples will encourage spillover adoption among neighbouring households.

5.2.3. Improved tools for the value addition of Mango

The intervention aims to enhance the efficiency, hygiene, and marketability of household-level Aamchur (dried mango) production by introducing improved tools such as fruit skin peelers, stainless steel knives, and bamboo mats. Traditional Aamchur production often suffers from low productivity and poor hygiene, which degrade product quality and reduce market value. By providing modern, low-cost tools, the intervention ensures cleaner, safer, and faster processing, leading to higher-quality outputs with better price realisation in local markets. The intervention also promotes alternative seasonal income generation through mango value addition, creating livelihood diversification opportunities for households. As women predominantly carry out Aamchur processing, the provision of improved tools significantly reduces drudgery, enhances productivity, and empowers women by strengthening their role in household income generation. This approach supports local economic resilience while preserving traditional food practices and improving household-level financial stability.

Domains	Crops
Intervention	**Improved tools for the value addition of Mango into Aamchur**
When will it start functioning?	First Year
What will it do?	• Provide **simple, efficient, and hygienic tools** (fruit peelers, stainless steel knives, bamboo mats) to households engaged in Aamchur (dried mango) making. • **Enhance productivity and reduce drudgery**, especially for women who traditionally perform this activity manually with unsafe or inefficient tools. • Improve the **quality, cleanliness, and uniformity** of the dried mango product to make it more appealing and marketable. • Strengthen **seasonal household incomes** by increasing the volume and value of processed mango products. • Promote **household-level agri-processing**, contributing to food preservation, reducing wastage, and local value addition.

Domains	Crops
Intervention	**Improved tools for the value addition of Mango into Aamchur**
Who will implement it? (stakeholders, including institutions)	• **Households (especially women):** Direct users of the improved tools for mango peeling, slicing, and drying. Responsible for the day-to-day operations and maintenance of the tools. • **Facilitating NGO / Implementing Agency:** Lead coordination, procurement, and distribution of tools. Provide orientation and handholding to ensure practical tool usage. • **Tool Suppliers / Vendors:** Provide standardised, quality-certified tools (peelers, knives, mats). May offer demonstrations or guidance on usage.
Key Issues and Challenges for Saturation	1. **Technical Challenges:** a. **Hygiene and maintenance:** Without proper training, tools may not be cleaned or stored well, affecting hygiene and product quality. b. **Drying space limitations:** Even with bamboo mats, households may lack proper open space to dry mango slices hygienically and efficiently. 2. **Challenges in Coverage of Villages & Households:** a. **Tool procurement and timely delivery:** Delays in bulk procurement or mismatches in tool specifications could slow down saturation coverage. b. **Scattered and remote households:** In villages with scattered populations, distributing tools to every eligible household may be logistically challenging. 3. **Associated Implementation Challenges:** a. **Need for capacity building:** Households may require handholding on tool use, hygiene practices, and improved drying techniques. b. **Equity in distribution:** Ensuring fair distribution among all eligible households may require careful facilitation. c. **Integration with market/value chain:** If there is no market or price premium for better-quality Aamchur, the incentive for sustained tool use may be weak.
How it will be implemented	1. **Identification and Targeting of Households:** • Households with mango trees and involved in traditional Aamchur-making will be identified through community resource persons. • Priority will be given to women-led households or those already producing Aamchur seasonally. 2. **Procurement and Distribution of Tools** • Tools will be procured centrally or through certified vendors. • Tools will be distributed at the village level through local events or delivery drives. 3. **Capacity Building** • Hands-on demonstrations will be conducted during tool distribution. • Training will include: ○ Safe handling of knives and peelers ○ Hygienic drying and storage practices ○ Maintenance of tools 4. **Community Engagement and Handholding** • Trained local cadres (e.g., CRPs) will support adoption and monitor tool usage. • Feedback loops will be established to address grievances or tool-related challenges.

Domains	Crops
Intervention	**Improved tools for the value addition of Mango into Aamchur**
	5. Monitoring and Documentation • CRPs will maintain village-level records of tool use and feedback. • Annual reviews will assess reach, usage rates, and changes in Aamchur quality/output.
Feasibility/ viability issues, if any	1. **Tool Use and Maintenance:** • Improper handling or storage of stainless-steel knives and peelers may reduce their lifespan. • Households may not maintain regular cleaning and hygiene practices, which can affect the quality of the dried product. • Breakage or wear of tools without provision for replacement could affect sustained use. 2. **Procurement and Distribution:** • Ensuring the quality and uniformity of tools from vendors across the landscape may be difficult. • Delays in procurement could affect the timely implementation during the mango season. 3. **Space and Drying Conditions:** • Households may lack clean or open spaces for effective drying, even with bamboo mats. • Drying activity may be affected by unfavourable weather during peak mango seasons (e.g., rains). 4. **Limited Market Integration:** • In the absence of assured markets or price premiums, the economic viability of improved Aamchur may not be fully realised. • The volume of production per household may be low, limiting the incentive to adopt tools for commercial use.
Potential Funding Sources	• National Rural Livelihoods Mission (NRLM) • State Horticulture or Agriculture Department Schemes • CSR Funds • NABARD / NABCONS • Microfinance Institutions (MFIs)
Key Milestones	1. **Baseline Identification Completed**: Households involved in mango cultivation and traditional Aamchur-making identified through SHGs and local facilitators. 2. **Standardised Tools Finalised:** Finalisation of quality specifications for fruit peelers, stainless steel knives, and bamboo mats. 3. **Tool Procurement and Distribution Initiated:** Bulk procurement completed, and tools distributed to the first phase of households. 4. **First Production Cycle Using Improved Tools Completed:** Households begin processing mangoes using new tools during the peak season. 5. **Product Quality and Marketability Improved:** Cleaner, more uniform Aamchur fetches better prices in local or regional markets.
Potential Risks and Unknowns	• Adoption and Usage Risks • Tool Maintenance and Longevity • Quality Control and Hygiene Risks • Market and Economic Uncertainty • Operational Risks (Delays in procurement or distribution)
Ecological, Economic and Social Benefits	**Ecological**: • **Reduces fruit wastage:** Timely, efficient processing ensures more mangoes are preserved as Aamchur rather than rotting.

Domains	Crops
Intervention	**Improved tools for the value addition of Mango into Aamchur**
	• **Supports sustainable use of local resources:** Encourages the value addition of locally available mangoes, reducing dependency on imported produce. • **Minimises environmental footprint:** Use of simple, manual tools (no electricity or fuel required) aligns with low-carbon, low-waste agroecological principles. **Economic:** • **Increases household income:** Better-quality Aamchur fetches higher prices, enhancing seasonal earnings for women and families. • **Improves efficiency and productivity:** Reduces time and effort per batch of Aamchur, allowing more volume to be processed in the same timeframe. • **Opens up micro-enterprise opportunities:** SHGs or women may scale up to collective production, packaging, and local-market sales of Aamchur and similar products. • **Reduces dependence on intermediaries:** Empowered producers can directly access local or niche markets with improved products. **Social:** • **Empowers rural women:** Enhances their role in household income generation through skill-based value addition. • **Preserves cultural food practices:** Strengthens traditional Aamchur-making, while upgrading it with better hygiene and tools. • **Reduces drudgery and health risks:** Replaces crude or unsafe tools with ergonomically safer options, reducing strain and risk of injury. • **Fosters dignity and recognition:** Improved product quality brings pride and social validation to women's traditional work.
Key stakeholders involved and their roles in implementation	• **Households (Primarily Women Producers):** Direct beneficiaries and users of the improved tools. Responsible for processing mangoes into Aamchur, maintaining tools, and following hygiene practices. • **Community Resource Persons (CRPs) / Village Facilitators:** Provide door-to-door orientation and handholding on tool usage, hygiene, and maintenance, and act as a communication link between households and implementing agencies. • **Tool Vendors/Suppliers:** Supply standardised, quality-tested tools (peelers, knives, bamboo mats). May assist in initial orientation or troubleshooting related to tool use. • **Implementing NGO:** Oversee the entire implementation process, including procurement, training, monitoring, and reporting. Ensure community mobilisation and integration of the intervention into larger agroecology/livelihood strategies.
Additional human resources required	• Community Resource Persons (CRPs)/Cadre: Identify target households. Train individuals on proper tool use, hygiene, and safety. Monitor usage and collect feedback. • Technical Liaison with Vendors: Ensure tool quality, manage delivery schedules, and address post-distribution concerns (e.g., defects).
Institution required, if any	Implementing Agency/ NIRMAAN/ Tools Supplier / Technical Vendor/ Panchayati Raj Institutions (PRIs)

Capacity development for the Improved Tools for Value Addition of Mango into Aamchur intervention will focus on equipping household members, particularly women, with the practical skills to use the new tools efficiently and maintain hygiene standards during Aamchur preparation. Community Resource Persons (CRPs) will conduct hands-on demonstrations during tool distribution, covering safe handling of peelers and stainless-steel knives, hygienic slicing and drying techniques using bamboo mats, and proper cleaning and storage of tools to ensure durability and product quality. Informal dissemination of knowledge will take place through household visits, SHG meetings, and peer-to-peer learning, without incurring additional costs for routine training. Early adopter households, who demonstrate improved processing techniques and achieve higher-quality outputs, will act as exposure sites for neighbouring farmers, creating a natural spillover effect that encourages wider adoption.

5.2.4. Construction of Drying Platform

The proposed intervention addresses a critical gap in post-harvest handling of Non-Timber Forest Products (NTFPs) such as mahua, tamarind, and mango, which are vital sources of seasonal income for rural and tribal households. Currently, the lack of dedicated drying spaces forces households to dry these products in unhygienic, scattered areas, often on the ground or along roadsides, resulting in contamination, poor-quality produce, and reduced market value.

The construction of community-level drying platforms provides a clean, safe, and efficient solution for sun-drying NTFPs. These platforms will enhance product quality, extend shelf life, and enable households to fetch better prices in local and regional markets. Implementing the intervention at the village level ensures collective benefits for all households engaged in seasonal NTFP collection and value addition, while fostering shared ownership and community management. Additionally, the intervention strengthens local livelihoods, promotes safe food processing practices, and contributes to sustainable income generation by reducing post-harvest losses and improving market readiness of NTFPs.

Domains	**Crops**
Intervention	**Drying Platform for Drying of NTFPs (Mahua, Tamarind (Imli), Mango (Aam), etc.)**
When will it start functioning?	First Year
What will it do?	Improve Product Quality and Shelf Life, Enhance Income through Better Marketability, Strengthen Community Infrastructure, Reduce Drudgery and Workload for Women
Who will implement it? (stakeholders, including institutions)	SHG/ Village NTFP Collectors/ Local Construction Contractors/ Community Resource Persons (CRPs)/NIRMAAN / Implementing Agency/ NGO/ Gram Panchayats / Village Councils (PRI Institutions)/ Forest Department (for convergence)
Key Issues and Challenges for Saturation	1. Technical Challenges: • Site Unsuitability or Land Constraints • Construction Delays • Maintenance Neglect 2. Challenges in Village Coverage • Inaccessibility of Remote Villages • Phasing Fatigue and Demand Mismatch 3. Challenges in Household-Level Access and Use • Inequitable Access • Low Awareness of Proper Drying Practices 4. Operational and Institutional Challenges • Weak Convergence and Coordination • Ownership and Usage Clarity 5. Cultural and Behavioural Resistance: Traditional Drying Habits
How it will be implemented	1. Planning & Site Identification • Conduct baseline mapping of villages engaged in seasonal NTFP collection.

Domains	Crops
Intervention	**Drying Platform for Drying of NTFPs (Mahua, Tamarind (Imli), Mango (Aam), etc.)**
	• Each town is to identify a suitable, accessible, and commonly agreed community land parcel (approx. 50 ft × 50 ft). • Panchayats to formally earmark land through Gram Sabha resolution. 2. Community Mobilisation & Sensitisation • Mobilise SHGs and NTFP-collecting households through awareness meetings on: Purpose and benefits of the drying platform, Collective use and maintenance norms, and the Role of women in managing and using the platform. 3. Technical Design & Procurement • Finalise simple, durable design using local materials (e.g., Kadapa stone). • Prepare technical estimates by the implementing agency or technical partner. • Ensure timely procurement and transport of materials. 4. Construction and Quality Assurance • Engage local contractors or skilled masons to construct the platform. • Supervision by implementing agency staff or a local engineer to ensure: Proper levelling, slope for drainage, and smooth surface, Timely completion before peak NTFP harvesting season. 5. Convergence for Financing • Leverage funds from MGNREGS (labour), Forest Department (NTFP value chain), or Tribal Sub Plan (livelihood infrastructure). • Community contribution in the form of labour, land levelling, or oversight, if feasible. 6. Post-Construction Usage Protocols • Develop a simple "User and Maintenance Protocol" through SHG or village committee. • Allocate responsibility for: Daily cleaning and scheduling, Minor repairs and grievance handling.
Feasibility/ viability issues, if any	1. Land Availability and Suitability • In some villages, community or Panchayat land of 50 ft × 50 ft may not be available, level, or accessible. • Land disputes or a lack of clarity on land ownership can delay or stall implementation. 2. Construction Cost and Material Logistics • High transportation cost for Kadapa stones or construction materials to remote/hilly villages. • Overruns in cost or delays due to limited skilled labour or adverse weather conditions. 3. Maintenance and Upkeep • Without a designated institution or group for regular cleaning and repair, platforms may deteriorate. • Poor maintenance can discourage use and reduce effectiveness over time. 4. Seasonal Use Limitation • The platform may be intensively used only during 2–3 months of NTFP harvesting. • Under-utilisation during off-seasons may raise concerns about investment efficiency unless alternate uses (e.g., drying vegetables, grains) are planned. 5. User Coordination and Access

Domains	Crops
Intervention	**Drying Platform for Drying of NTFPs (Mahua, Tamarind (Imli), Mango (Aam), etc.)**
	• A lack of explicit norms for shared use may lead to conflicts or unequal access among households. • If not socially inclusive, some groups (especially marginalised women) may be excluded from use. 6. Dependency on External Convergence Funds • Timely convergence with schemes like MGNREGS or the Forest Department is essential, but may be uncertain or delayed. • Lack of secured financing may restrict scale or disrupt phased implementation.
Potential Funding Sources	MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme), Forest Department (Under NTFP Promotion and JFMC Schemes), Tribal Sub Plan (TSP), National Rural Livelihoods Mission (NRLM) / SRLM Convergence with Agri/Horticulture Department Schemes, Development Projects / NGOs, Community and Local Contributions
Key Milestones	1. Community Mobilisation and Site Identification: • All 60 target villages conduct Gram Sabha meetings to confirm community needs and land availability. • Suitable, accessible land parcels (approx. 50 ft × 50 ft) have been finalised in each selected village. 2. Construction of Drying Platforms (Phase-Wise) • Platforms constructed in a **phased manner** over 5 years, beginning with 10% of villages in Year 1 and reaching full saturation by Year 5. • Each platform is built to a standard design, ensuring durability, drainage, and ease of access. 3. Formation of Local User Committees or SHG-Led Custodian Groups • Operational committees formed for each platform to manage scheduling, upkeep, and equitable use. • Roles and responsibilities are clearly assigned to avoid misuse or conflict. 4. Institutionalisation of Use & Maintenance Protocols • Usage norms and cleaning/maintenance schedules are documented and followed. • Minor repairs need to be tracked and addressed through the community fund or convergence support. 5. Demonstrated Improvement in Drying Practices: Observable shift from ground-based or unhygienic drying to platform-based drying among NTFP-collecting households. 6. Convergence and Sustainability Achieved: Effective convergence with MGNREGS, Forest Department, and Tribal Sub Plan for continued support, repair, or scaling to additional villages.
Potential Risks and Unknowns	Land-Related Risks • **Unavailability of Suitable Land:** Some villages may lack centrally located, flat, or undisputed land parcels large enough (50×50 ft). • **Ownership or Legal Disputes:** Delays may occur due to unclear land titles or resistance from specific community members. Construction and Technical Risks • **Poor Quality Construction:** Risk of substandard platforms due to lack of supervision or contractor negligence.

Domains	Crops
Intervention	**Drying Platform for Drying of NTFPs (Mahua, Tamarind (Imli), Mango (Aam), etc.)**
	• **Material Transportation Delays:** Particularly in remote or forested areas, the transport of stones or materials may be logistically challenging. Underutilization • **Low Adoption by Households:** Some households may continue using traditional drying practices despite availability. • **Seasonal Use Limitation:** Platforms may remain idle for most of the year if not promoted for multi-purpose use (e.g., drying vegetables, cereals). Maintenance Challenges • **No Clear Custodian:** Without designated user groups or SHG oversight, cleanliness and upkeep may suffer. • **Lack of Funds for Repair:** Small damages may go unrepaired due to the absence of a repair fund or community contribution mechanism. Social or Equity Risks • **Inequitable Access:** Dominant groups or early users may monopolise use, sidelining more minor or vulnerable NTFP collectors. • **Gender Barriers:** Women, who mainly manage drying, may face cultural or mobility restrictions in accessing the platform. Institutional & Convergence Risks • **Delays in Sanction or Fund Release:** Convergence with schemes such as MGNREGS or the Forest Dept. may not materialise in time. • **Lack of Inter-Departmental Coordination:** Poor alignment across departments may stall implementation or scaling.
Ecological, Economic and Social Benefits	**Ecological** – • **Reduction in Post-Harvest Losses:** Proper drying prevents microbial spoilage, preserving more of the naturally collected produce. • **Minimised Ground Contamination:** Use of clean platforms avoids mixing of soil, dust, and animal waste with NTFPs. • **Efficient Use of Solar Energy:** Promotes traditional, low-carbon, and resource-efficient sun drying, reducing reliance on energy-intensive methods. • **Supports Sustainable Forest Use:** Encourages responsible NTFP harvesting by enhancing value without damaging ecosystems. **Economic-** • **Improved Market Value of NTFPs:** Clean and uniformly dried produce fetches higher prices in local and regional markets. • **Increased Household Incomes:** Reduction in rejection/spoilage increases net income for tribal and forest-dependent families. • **Collective Economic Asset:** The platform serves as shared community infrastructure, reducing the need for individual household investment. • **Potential for Value Addition:** Dried NTFPs can be stored longer, allowing farmers to sell when prices are higher, or process into secondary products (e.g., Aamchur, Mahua sweets). **Social-**

Domains	Crops
Intervention	**Drying Platform for Drying of NTFPs (Mahua, Tamarind (Imli), Mango (Aam), etc.)**
	• **Reduces Drudgery for Women:** Especially for women collectors, the clean, dedicated space reduces time spent cleaning and re-drying. • **Strengthens Community Ownership:** Promotes collective decision-making and shared resource management. • **Promotes Hygiene and Food Safety:** Cleaner drying conditions improve food quality and reduce health risks. • **Inclusiveness:** If managed well, the platform benefits all households regardless of land ownership or wealth status. • **Revitalises Traditional Knowledge:** Strengthens traditional forest livelihoods by aligning them with modern standards of hygiene and quality.
Key stakeholders involved and their roles in implementation	**Gram Panchayat / Village Council** • Allocate and approve land for construction through the Gram Sabha resolution. • Support for community mobilisation and for integrating the platform into village development plans. • Facilitate convergence with schemes like MGNREGS. **Self-Help Groups (SHGs) / NTFP Collectors' Groups** • Act as primary users and custodians of the drying platform. • Monitor cleanliness, ensure equitable access, and organise seasonal usage. • Mobilise women NTFP collectors and promote collective responsibility. **Implementing Agency / NGO** • Facilitate planning, technical design, budgeting, and capacity building. • Oversee quality construction and operationalise the platform. • Provide training on usage norms and coordinate with other stakeholders. **Local Masons / Contractors** • Execute construction in accordance with the technical specifications (50×50 ft with Kadapa stone or an alternative). • Ensure the timely delivery of materials and labour for each village phase. **MGNREGS and Rural Development Department** • Provide funding and technical approval for labour and partial materials under convergence. • Issue job cards and work orders if labour is sourced locally. **Forest Department** • Co-finance platform under NTFP value chain strengthening programs (especially in forest-fringe areas). • Ensure sustainable NTFP harvesting practices align with improved post-harvest infrastructure.
Additional human resources required	1. Technical Supervisor / Civil Engineer: Prepare layout plans, ensure quality construction, and supervise the use of proper materials (e.g., Kadapa stone). 2. Community Mobilizers: Conduct village-level meetings with SHGs and Gram Sabhas. Facilitate land identification and

Domains	Crops
Intervention	**Drying Platform for Drying of NTFPs (Mahua, Tamarind (Imli), Mango (Aam), etc.)**
	the resolution of the Gram Sabha. Coordinate usage norms and support post-construction management. 3. Trained Masons and Construction Workers (as per phase-wise plan): Carry out construction work as per design and schedule, including stone laying, drainage, and finishing.
Institution required, if any	Gram Panchayat / Village Council/ SHG Federations / Village-Level Institutions/ Block / District Rural Development or Forest Department (Convergence Authority)/ Technical Institution or NGO

5.2.5. Installation of solar dryer

The installation of solar dryers directly addresses the inefficiencies and losses associated with traditional open-sun drying of Non-Timber Forest Produce (NTFP). Conventional drying methods expose produce to contamination, dust, pests, and unpredictable weather, leading to significant post-harvest losses and reduced product quality. Solar dryers provide a clean, controlled, and efficient drying environment that minimises spoilage, enhances shelf life, and reduces dependency on weather conditions.
By preserving the natural colour, aroma, and nutritional content of NTFPs, solar drying improves marketability and allows communities to command better prices for higher-grade products. Additionally, the intervention facilitates local value addition by enabling the production of diversified products such as dried fruit, powders, and herbal items. This not only opens access to new markets but also ensures higher and more stable incomes for households engaged in NTFP collection and processing.

Domains	Crops
Intervention	**Installation of solar dryer**
When will it start functioning?	First Year
What will it do?	• Enable community-level processing and value addition by providing SHGs access to solar drying technology. • Help in the reduction of post-harvest losses, particularly of perishables like fruits (Mango pulp), and forest produce (e.g., Mahua flowers). • Improve the quality, shelf-life, and marketability of agri-produce and NTFPs (Non-Timber Forest Products). • Provide an eco-friendly, cost-effective drying solution that reduces dependence on traditional sun drying, which is often unhygienic and weather-dependent. Strengthen value chain linkages by producing better-quality, market-ready products.
Who will implement it? (stakeholders, including institutions)	• **Self-Help Groups (SHGs):** Primary users and operators of the solar dryer are responsible for managing day-to-day drying operations and processing activities. • **Facilitating Agencies/ NIRMAAN/ Implementing Agency:** Capacity building of SHGs on use, hygiene, and product value addition; monitoring and handholding support. • **Suppliers/ Technical Service Providers/Vendors:** • Supply and install the solar dryers; offer maintenance services and technical training for operation and troubleshooting.
Key Issues and Challenges for Saturation	1. **Technical Challenges:** • **Limited technical know-how** among SHG members on operating and maintaining solar dryers effectively. • **Inconsistent solar exposure due to weather fluctuations reduces efficiency during monsoon or cloudy periods.**

Domains	Crops
Intervention	**Installation of solar dryer**
	• **Quality control issues** in drying, especially for different types of produce requiring varied drying conditions. • **Lack of local technicians** for regular maintenance and repair, leading to equipment downtime. **2. Challenges in Coverage of Villages & Households:** • Uneven demand or readiness among SHGs across villages to adopt the technology due to varying awareness levels. • Remote or inaccessible villages may delay the installation process due to logistical constraints. **3. Associated Implementation Challenges:** • Resistance to behavioural change – traditional sun drying is deeply entrenched and may be preferred despite its limitations. • **Coordination gaps** between implementing agencies, vendors, and SHGs can hinder the timely rollout.
How it will be implemented	**1. Phase-Wise Rollout:** • Implemented across 60 villages in a phased manner over four years (15% in Year 1, 25% in Year 2, 30% each in Years 3 and 4). • One SHG per village to receive and manage the solar dryer. **2. Identification of SHGs:** • Preference to women-led SHGs actively involved in value addition and collective marketing. **3. Site Selection and Installation:** • Installation to be carried out by empanelled vendors with support from the facilitating agency or technical partner. 4. **Capacity Building and Training:** SHGs will undergo training from the implementation agency/ NIRMAAN. • Operation and maintenance of the solar dryer. • Best practices for drying different produce. • Hygiene, quality control, and packaging techniques. 5. **Community Ownership and Usage: S**HGs will operate and manage the dryer, ensure fair access among members, and maintain records of usage. 6. **Convergence and Market Linkage:** Facilitation of market linkages from the implementation agency/NIRMAAN for dried products to enhance income generation.
Feasibility/ viability issues, if any	• SHGs may not immediately adopt solar dryers due to unfamiliarity with the technology or a preference for traditional methods. • The effectiveness of solar drying is limited during monsoon or extended cloudy periods, affecting drying schedules and quality. • A lack of local technical skills for servicing or repairing dryers could lead to prolonged downtime. • Without assured market linkages or premium pricing for dried products, SHGs may not realise the full economic benefits. • Ensuring equal access for all SHG members may be challenging, particularly in larger or mixed-group SHGs. • Success depends on active handholding by implementation partners, federations, and local institutions, each with varying capacities.
Potential Funding Sources	• National Rural Livelihoods Mission (NRLM) • State Horticulture or Agriculture Department Schemes • CSR Funds • NABARD, FPO/SHG Support Programs
Key Milestones	1. Functional solar dryers installed across phased SHGs as per plan (60 SHGs across 4 years). 2. SHG members are trained in the use, maintenance, hygiene, and safety practices for operating dryers. 3. Dried products are linked to markets (local, mandis, or institutional buyers), with SHGs receiving income.

Domains	Crops
Intervention	**Installation of solar dryer**
	4. Extension of the product's usable period, allowing SHGs to store and sell at better prices. 5. SHGs take full operational ownership, with regular use, maintenance, and reinvestment from earnings. 6. Other SHGs and villages show interest in adopting the intervention based on visible benefits.
Potential Risks and	• Low Adoption by SHGs • Poor Maintenance Practices • Limited Technical Support Availability • Weather Dependency • Unclear Market Demand • Quality Control Challenges • Ownership & Access Conflicts
Ecological, Economic and Social Benefits	**Ecological**: • Reduces post-harvest losses of perishables and forest produce, minimising environmental waste. • Eco-friendly technology with zero carbon emissions, replacing fuel-based drying methods. • Promotes sustainable livelihoods by better utilising natural, seasonal produce. **Economic:** • **Enhances** SHG members' income by increasing the value and shelf life of their produce. • **Facilitates better market prices** through improved product quality and storage options. • **Creates local enterprise opportunities** (e.g., packaging, branding, sales of dried goods). • **Lowers drying cost** in the long run, as solar energy is free after installation. **Social:** • Empowers women's SHGs by providing a productive asset and value-addition tool. • Strengthens group cohesion through shared ownership and enterprise activities. • Reduces drudgery for women compared to traditional ground-sun drying.
Key stakeholders involved and their roles in implementation	• **Self-Help Groups (SHGs):** Primary users and operators of the solar dryers. Responsible for day-to-day maintenance, operation, and collective marketing of dried products. • **Implementing agency/ NIRMAAN:** Mobilise and train SHG members. Monitor dryer usage and resolve operational issues. Oversee planning, procurement, and installation. Coordinate training, documentation, and reporting—support market linkage for dried products. Assist in branding, packaging, and sales. • **Panchayati Raj Institutions (PRIs):** Facilitate local coordination and community buy-in. It may help in identifying suitable SHGs and locations. • **Technology Provider / Vendor:** Supply and install solar dryers. Provide technical training, warranty services, and maintenance guidance.
Additional human resources required	• Community Resource Persons (CRPs)/Cadre: Trained locals who guide usage, maintenance, and minor troubleshooting. Provide regular support to SHGs on operations • Technical Vendor Team: For supply, installation, and basic user training. To coordinate with the vendor, SHGs, and local institutions. To assess effectiveness, uptake, and resolve operational gaps. • Marketing Support Personnel: To help SHGs link with local and regional markets for dried produce.

Domains	Crops
Intervention	**Installation of solar dryer**
Institution required, if any	Self-Help Groups (SHGs), / Implementing Agency/ NIRMAAN/ Panchayati Raj Institutions (PRIs)

5.2.6. Forest Area Regeneration in the CFR Land

The Forest Regeneration intervention in Community Forest Resource (CFR) land aims to restore degraded forest areas, enhance biodiversity, and strengthen community-based forest management under the Forest Rights Act (FRA). The intervention will focus on regenerating CFR patches through planting high-value native and multi-purpose species such as mahua, tamarind, bamboo, jackfruit, amla, and other NTFP and timber species, with final species selection determined by the community to ensure ownership and relevance to local needs. Per-hectare regeneration cost is estimated at ₹18,000/ha based on inputs from FES, including nursery development, plantation, and initial maintenance. The implementation will be community-led, with Gram Sabhas, Forest Rights Committees (FRCs), and Village Forest Management Committees (VFMCs) taking ownership of planning, species selection, protection, and monitoring, while the Forest Department and facilitating NGOs provide technical guidance and capacity-building support.

Key challenges include ensuring community participation in long-term protection, preventing grazing and fire damage, maintaining high sapling survival rates, and building governance capacities for sustainable CFR management. Implementation will involve micro-planning with communities, nursery establishment, pit digging, planting selected species, and follow-up protection measures such as watch-and-ward and fire lines. The intervention is feasible due to community entitlement awareness under the RA, but success depends on sustained local engagement and convergence with government programs. Potential funding sources include CAMPA, MGNREGA, Green India Mission, and CSR support for afforestation and community forestry.

Key milestones include baseline mapping of CFR land, nursery setup and species selection, plantation and SWC support where needed, formation/strengthening of VFMCs for protection, and periodic monitoring of survival and growth. Potential risks include low sapling survival due to drought or grazing, slow ecological restoration, and challenges in maintaining long-term community motivation. Ecologically, the intervention will enhance biodiversity, soil fertility, and carbon sequestration while reducing erosion; economically, it will generate future income through high-value trees/ fruit trees, NTFPs, timber and other species decided by communities; and socially, it will strengthen collective governance, create community assets, and build a sense of ownership over restored forests.

Key stakeholders include Gram Sabhas and FRCs (planning and ownership), VFMCs (plantation and protection), Forest Department (technical and convergence support), and NGOs (mobilisation capacity building). Additional human resources required include community resource persons (CRPs) for monitoring, nursery workers, and plantation supervisors. A Cluster Facilitation Team (CFT) may be constituted to support the effective implementation of specific works that can be carried out in convergence with MGNREGA. Required institutions include Village Forest Management Committees under Gram Sabhas, functional Forest Rights Committees for governance, and coordination with the Forest Department for technical validation and convergence.

5.2.7. Agroforestry in IFR land

The Agroforestry intervention in Individual Forest Rights (IFR) land aims to enhance the productivity, sustainability, and economic returns of smallholder forest lands by integrating tree-based systems with existing agriculture. This intervention will cover approximately 500 hectares of IFR land, targeting 1-acre plots per farmer for about 1,250 farmers, representing around 10% of the total IFR land (5,020 ha across 4,121 IFR titles). The focus will be on planting high-value timber, fruit, and NTFP species such as teak, bamboo, amla, mango, and mahua to provide long-term income, soil enrichment, and climate resilience, with species selection finalised by farmers to ensure local relevance and ownership. The per-acre agroforestry cost is estimated at ₹30,000, with additional farmer contributions for planting and maintenance, and may include nursery support if required.

Implementation will be led by individual farmers under the guidance of Gram Sabhas and Forest Rights Committees (FRCs), with technical assistance from the Forest Department and facilitating NGOs. Key issues and challenges for saturation include ensuring farmers' willingness to dedicate land to tree crops, maintaining sapling survival, addressing water scarcity during early growth stages, and protecting against grazing and fire. The intervention will be implemented through farmer mobilisation, species selection and nursery development, pit preparation and planting, soil and water conservation (SWC) measures where needed, and regular follow-up with technical training for maintenance and pruning. Feasibility may be moderate to high due to farmer ownership of IFR lands.

Potential funding sources include MGNREGA (for pit digging and SWC), CAMPA, Green India Mission, NABARD's WADI or agroforestry programs, and CSR support for tree-based livelihood enhancement. Key milestones include baseline mapping of IFR lands, nursery setup, farmer selection and training, phased plantation, and first harvest of produce after its gestation. Potential risks and unknowns include low adoption due to long gestation for income, pest/disease attacks on young plantations, insufficient irrigation, and farmer dropout if immediate returns are not visible. Ecological benefits include improved soil fertility, reduced erosion, enhanced biodiversity, and carbon sequestration; economic benefits include diversified and sustainable income from timber, fruits, and NTFPs; and social benefits include strengthened farmer livelihoods, reduced migration, and enhanced community engagement in sustainable land management.

Key stakeholders and their roles include farmers (land preparation, planting, maintenance), Gram Sabhas and FRCs (mobilization, monitoring, and community governance), Forest Department (technical guidance, convergence with schemes), NGOs/facilitating agencies (training, monitoring, and linkage with markets), and Farmer Producer Organizations (FPOs) for aggregation and value chain support. Additional human resources required include nursery workers, community resource persons (CRPs), plantation supervisors, and technical experts for agroforestry management. Institutional requirements include functional Forest Rights Committees (FRCs), Gram Sabhas for land use planning, convergence with the Forest Department for technical validation, and linkages with FPOs or cooperatives for future marketing of agroforestry products.

5.3. Horticulture

5.3.1. Vegetable Cluster Development

To enhance vegetable cultivation across the landscape, every effort will be made to develop six vegetable varieties within the block. The Anchor Organisation will identify these clusters based on a combination of existing vegetable cultivation practices and the future potential to scale up vegetable production in the region. The goal is to transform these clusters into local hubs for procurement, aggregation, and marketing of vegetables, thereby strengthening farm-level incomes and creating market-oriented production systems.

Rationale and Challenges

There is an apparent community demand to reduce reliance on chemical-laden vegetables sold in local markets, as people do not want to consume them. This is driving interest in growing vegetables locally using safe and sustainable practices. At the same time, vegetable cultivation is already a proven income-generating activity in Dantewada, and many farmers are eager to expand their operations. However, limited access to market linkages is forcing farmers to restrict production, as they often have to sell produce themselves in weekly markets, which is time-consuming. This makes it necessary to develop organised clusters of vegetable growers, along with systems for aggregation and distribution, to meet both income and food safety needs.

- Total 6 Clusters with 20 farmers and 10 acres in each cluster (0.5 acre per farmer)
- List of 6 clusters: Chandenaar, Kameli, Balud-Chitaloor, Kuper-Tudparas, Bacheli, Ganjenar-Masenar

Proposed Infrastructure and Support

Each of the six proposed vegetable clusters will be equipped with the following:

- A low-cost temporary cooling chamber to store harvested or unsold vegetables for a few days. This will help reduce post-harvest losses and prevent distress sales.
- 100 stackable crates per cluster for efficient harvesting, sorting, and transport.
- 2 digital weighing scales to ensure transparent and fair transactions.

A typical vehicle for the transportation of vegetables from clusters

To support the transportation and aggregation of vegetables across the clusters, **one vehicle** will be provisioned for the entire landscape. This shared logistics support will help in the timely collection of produce and facilitate linkages with local and regional markets. The development of the six vegetable clusters is planned over a **three-year project cycle**, with **Year 1** focusing on detailed planning, site selection, farmer mobilisation, and resource alignment. In contrast, implementation of activities related to infrastructure creation, capacity building, market linkages, and the operationalisation of the clusters would be carried out in **Years 2 & 3.**

Convergence and Resource Mobilisation

Currently, there are limited opportunities for convergence; therefore, the initial investment will rely primarily on project resources. However, efforts will be made to explore future convergence possibilities once the model demonstrates viability and begins to scale.

5.3.2. Kitchen Garden

The Kitchen Garden intervention has been planned to address household food diversity and nutritional security. The supply of water in the Kitchen Garden is one of the most important considerations for the intervention. Moreover, women being in control of the kitchen garden would be empowered by a systematic management of the kitchen Gardens. Apart from household-level consumption, the sale of surplus in local markets will also increase household income.

5.3.3. Plantation of Fruit-Bearing Trees in Upland

Planting fruit-bearing trees in uplands has been proposed, with several considerations in mind. This intervention akin to BAIF's WADI concept aims to develop uplands into mini orchards of fruit-bearing trees like Mango, Guava, Jackfruit, Lemon, Pomegranate, Sapota (Chikoo), Litchi, Papaya, Coconut, Amla, Munga (Drumstick), Cashew, Clove, and Black Pepper etc. for strengthening farmers' livelihood by multiplying their income while arresting the incidence of increased use of uplands for paddy cultivation at the cost of agrobiodiversity.

The incarnation of fruit-bearing plants is not new. Earlier, while NMDC provided saplings of fruit-bearing trees in the district as part of its CSR initiatives, local communities planted 1000 Indigenous fruit trees in Chhattisgarh in collaboration with the Forest Department under the hiRP project, sponsored by several entities, including **Common Land 4 Returns from Landscape Restoration.**

To carry out this intervention, a nursery may be established in an identified village, creating additional employment. Also, training to identify interested farmers would be provided by experts from the State Horticulture Department, progressive practitioners, and the Anchor Organisation. The training sessions would impart knowledge on soil and weather conditions, on how and where to best plant the trees to have the highest yields, as well as restore the soil and retain the water, the distance to be maintained between saplings, how to prepare pits, the quality and quantity of organic manure to be put in pits, precautions to be taken, etc.

5.4. Animal Husbandry

5.4.1. Construction of Low-Cost Housing for Cattle (sheds with proper flooring)

The construction of low-cost cattle housing, including sheds with properly designed floors enabling the collection of dung and urine, is a critical intervention to enhance livestock management and optimise agricultural resource use. Proper cattle housing ensures that households can keep their animals safely at home, reducing the risk of stray livestock and associated losses. It also facilitates the systematic collection of cow dung and urine, which are essential raw materials for preparing compost and bio-inputs, thereby promoting sustainable agricultural practices. This intervention addresses a key gap in rural households where the absence of proper livestock housing often leads to unhygienic conditions, nutrient loss, and underutilization of organic resources. The initiative strengthens the foundation for integrated farming systems, enhances the availability of organic manure, and supports the production of bio-fertilisers.

Domains	**Livestock**
Intervention	**Construction of low-cost cattle sheds at the household level, with the provision of proper flooring to collect dung and urine**
When will it start functioning?	First year with gradual coverage of households in subsequent years
What will it do?	Promote the habit of keeping cattle in a shed/hh, which may increase the amount of animal dung available with hh for composting, biogas preparation, etc. Collected cow urine could be used to repair bio-inputs. This intervention is intended to support agriculture in the landscape.
Who will implement it? (stakeholders, including institutions)	• A cattle shed will be constructed at the household level (beneficiaries), • Pashu Sakhi (Livestock Cadre) will be responsible for generating awareness, identifying households, and implementing other activities at the village level. • Implementing NGO/Facilitating Agency (NIRMAN) for coordination, fund mobilisation, convergence, implementation and monitoring. • Training Institutions / Resource Agencies (capacity-building for Pashu Sakhis)
Key Issues and Challenges for Saturation	• Changing the community's behaviour: keeping animals at home during the Rabi season, as this habit currently hardly exists. • There are no specific grazers in the villages. During the Kharif season, households take their animal for open grazing in the forest or grazing areas. However, after the Khar harvest, if Animals are left out without being directed by households. • Availability of fodder at the household level, especially during the Rabi season • Construction of a shed is a capital-intensive activity thus, funds availability might also be a constraint • Collection and composting of animal dung at hh level
How it will be implemented	• Baseline & Planning Phase- Household identification, Village-level planning, Phasing strategy. • Finalising the design and material of cattle sheds, scale of financing for sheds, beneficiary contribution, etc. • Demonstration Units Setup (Y1)- Build community confidence through “seeing is believing”. May have 2-3 Cattle sheds per village and encourage these farmers to keep their cattle at home at night during the Rabi season. • Orientation and capacity-building for farmers to generate demand for the construction of cattle sheds. • Encouraging households to collect cow dung and cow urine for composting and bio-input preparation • Monitoring and Handholding: Regular follow-ups (By Pashu Sakhi), Performance monitoring (monthly report), Refresher

Domains	Livestock
Intervention	**Construction of low-cost cattle sheds at the household level, with the provision of proper flooring to collect dung and urine**
	support (Ongoing technical backstopping as needed), Remuneration and Institutional Support • Need-based repair and maintenance of the Cattle sheds
Feasibility/ viability issues, if any	• Dantewada receives good rainfall, which may reduce the durability of low-cost materials such as thatch, mud, or untreated bamboo, thereby increasing maintenance costs. Thus, the selection and combination are essential in the design and construction of a cattle shed. • Economic Viability for Small Farmers is due to cultural practices; farmers are not getting milk from animals. The sole purpose is for cow dung and cow urine, and thus, the overall economic return might not compensate for the cost of the shed. • Limited skilled workforce or trained masons who understand technical aspects like flooring gradient, urine channelling, etc • Households' priority for using backyard land for housing, vegetable cultivation, keeping other animals, etc., may pose a potential issue. • HH preference for keeping cattle is decreasing, and as mechanisation increases, some HH may no longer prefer to keep cattle.
Potential Funding Sources	MNREGS, Government (Different schemes such as NRLM, RKVY, NLM), District Mineral Foundation (DMF), Financial Institution (NABARD), Community, Philanthropic Foundations & NGOs
Key Milestones	• Establishment of demonstration units in each village during the first 2 years. • At least two orientation sessions are organised in each village during the first year to explain the benefits of the cattle shed. • Every household with a cattle shed is provided training and handholding support on composting and bio-input preparation. • 80% of households with cattle shed keep their animals in sheds during the Rabi season. • 70% of households with cattle sheds start composting the dung for application in agricultural fields.
Potential Risks and Unknowns	• Damage to cattle sheds as a result of natural calamities such as wind, high rainfall, fire, etc. • Even after the construction of the cattle shed, hh might not keep their animal in the shed due to a lack of fodder or any other cultural or religious reason (quite common for the project area)
Ecological, Economic and Social Benefits	• **Ecological -** Collection of dung and cow urine for composting and making bio-inputs will improve soil fertility. • Reduced greenhouse gas emissions: Proper composting reduces methane emissions compared to uncollected or unmanaged manure heaps. • **Economic -** Improved crop productivity; additional dung or compost could be sold to farmers and other buyers, such as the forest department and private nurseries. **Social Benefits**- Will ensure better health of animals, improved food productivity, and will provide food and nutritional security as well.
Key stakeholders involved and their roles in implementation	Target Households (Primary beneficiaries), Village/Community Organisations (VOs) for Community mobilisation and coordination, Pashu Sakhis (Livestock Cadres) as Frontline service providers, Implementation Support Agency (NGOs), Government Departments (Animal Husbandry, Livelihoods Mission, District Admin), Veterinary Officers / Paravets for Technical oversight

Domains	Livestock
Intervention	**Construction of low-cost cattle sheds at the household level, with the provision of proper flooring to collect dung and urine**
Additional human resources required	**Community-Centric Approach**: Pashu Sakhis (Livestock Cadres), Veterinary Assistant (1–2 per cluster or block), Block Livelihood Coordinator. **NGO / Implementation Support Agency-led Approach:** Livestock Intervention Coordinator, Training Expert, Monitoring & Evaluation (M&E) Officer, Finance & Procurement Assistant.
Institution required, if any	Livestock Development Department / Animal Husbandry Department, Cluster Level Federations (CLFs) / Organisations (VOs), Implementation Support Agency (NGO/CSO)

Capacity development for the Construction of Low-Cost Cattle Sheds with Proper Flooring will focus on equipping household members with the knowledge and skills to adopt improved livestock management practices while maximising the benefits of dung and urine collection for composting and bio-input preparation. Pashu Sakhis (livestock cadres) will conduct village-level orientations and hands-on demonstrations on the maintenance and optimal use of cattle sheds, including guidance on dung and urine collection. Informal knowledge sharing will be facilitated through household visits, SHG meetings, and peer-to-peer interactions, with early adopter households serving as exposure sites to encourage spillover adoption among neighbouring families.

5.4.2. Installation of the Bio Gas unit

The installation of biogas units represents a sustainable and multi-benefit intervention aimed at improving rural livelihoods and environmental health. By converting cow dung and organic waste into biogas, the intervention provides rural households with a clean, renewable cooking fuel, significantly reducing their dependency on firewood. This shift helps mitigate deforestation and reduce household air pollution, a major contributor to respiratory health issues, especially among women who are primarily engaged in cooking.

Additionally, the bio-slurry generated as a by-product serves as a nutrient-rich organic fertiliser for farms, improving soil fertility and promoting sustainable agriculture. The intervention reduces drudgery for women by minimising the time spent collecting firewood, enhances indoor air quality, and contributes to a circular economy by utilising locally available organic resources. Overall, the installation of biogas units strengthens energy security, improves health outcomes, and supports eco-friendly agricultural practices in rural communities.

Domains	Livestock
Intervention	**Household-level Biogas unit (2 m^3 unit)**
When will it start functioning?	In the first year, planning and site selection can be carried out; Installation stats from the second year
What will it do?	• Provide clean cooking fuel for rural households, reducing dependency on firewood. • Convert cow dung and organic waste into biogas and bio-slurry. • Improve indoor air quality, reduce drudgery (especially for women), and provide nutrient-rich slurry for farms.
Who will implement it? (stakeholders, including institutions)	• The technology supplier of the bio-gas unit (considering the portable bio-gas unit) will install the units at the household level with proper installation and initial orientation to the household and CRPs. The supplier may also provide maintenance support for the first 2 years. • Households (beneficiaries) will provide space for the installation of bio-gas units, including space for laying pipes for the supply of the Bio-gas unit.

Domains	Livestock
Intervention	**Household-level Biogas unit (2 m^3 unit)**
	• Pashu Sakhis (Livestock Cadres) will receive orientation and training on the unit's functioning and how to address potential issues. • Implementing Agency/ (NIRMAN) for overall coordination and monitoring.
Key Issues and Challenges for Saturation	• Low awareness of biogas benefits. • Limited access to skilled technicians. • Practice of cooking food on stoves • Maintenance and lack of after-sales service for repairs • Regular dung supply due to the existing practice of open grazing
How it will be implemented	• Identifying the agency/supplier for the supply and installation of the bio-gas unit • Baseline and planning phase: Identification of eligible households having sufficient cow dung (hh with minimum 4-5 indigenous cows) through SHGs/CRPs. • Capacity building of CRPs or identified youth on the installation and maintenance of the gas unit. • IEC campaigns to promote the adoption and use of biogas for cooking and as slurry for field application. • Community-level follow-ups for performance monitoring
Feasibility/ viability issues, if any	• Low livestock ownership in some hamlets and limited availability of cow dung due to the practice of open grazing • Water scarcity during the summer months • Cultural preference for firewood in some tribal communities • Initial capital cost, even with a subsidy, may be a barrier
Potential Funding Sources	• MNRE's National Biogas and Organic Manure Programme (NBOMP) • MGNREGS (for pit-digging and infrastructure work, in case of a construction-based bio-gas unit) • CSR funds of local industries • Convergence with NRLM, Swachh Bharat Mission, and climate-focused donors • Linking the users with carbon markets to tap into the carbon credits
Key Milestones	• By project end, 20% households have installed bio-gas units and use slurry as bio-input
Potential Risks and Unknowns	• Slurry management is not practised effectively as it's not part of the current practice. • Abandonment due to lack of aftercare, Flooding or extreme weather conditions are damaging units. • Seasonal variation in dung and water availability
Ecological, Economic and Social Benefits	**Ecological:** Reduction in deforestation and carbon emissions, encourages community-led environmental stewardship. **Economic:** Use of slurry improves soil fertility and crop yield. Saving on LPG costs for those households using LPG **Social:** Decrease in health issues from smoke inhalation, time saving for women and children collecting firewood
Key stakeholders involved and their roles in implementation	Already covered above
Additional human resources required	Master Trainers to build the capacity of the CRP, Community Resource Persons (CRPs) for IEC and follow-up
Institution required, if any	NA

Community Resource Persons (CRPs) and Pashu Sakhis will receive hands-on training from the technology supplier and master trainers on site selection, dung and water management, basic

troubleshooting, and slurry application in agriculture. At the household level, informal orientations and peer-to-peer demonstrations will be conducted during installation and subsequent follow-ups to build confidence in daily usage and maintenance practices. Early adopters will serve as demonstration households, facilitating farmer-to-farmer learning and encouraging spillover adoption among nearby households at no additional cost for informal capacity building.

5.4.3. Improved Goat Rearing and Management

The improved goat rearing and management intervention is designed to enhance livestock productivity, household income, and rural livelihood resilience, particularly for small and marginal farmers. Goats are a vital source of income and nutrition, and their improved management directly contributes to poverty alleviation and economic security. By providing basic veterinary care and supplementation, the intervention reduces disease incidence, enhances reproductive performance, and improves the market value of goats, leading to higher returns for farmers. The construction of low-cost, raised goat sheds further strengthens the intervention by protecting goats from extreme weather and minimising parasitic infections caused by damp conditions. This housing also facilitates the collection and use of goat droppings as compost or organic fertiliser, promoting sustainable agricultural practices.

Domains	**Livestock**
Intervention	**Improved Goat rearing and management practices**
When will it start functioning?	From the first year onwards. However, the coverage of HH will be in a gradual approach.
What will it do?	The intervention includes improved goat management practices—provisions for basic veterinary care, mineral supplementation, insurance, and low-cost housing for 45 goats —collectively helping improve the health, weight gain, reproductive performance, and market value of goats. These measures also reduce mortality and disease incidence.
Who will implement it? (stakeholders, including institutions)	• Goat housing and other services will be provided at the household level (beneficiaries), • Pashu Sakhis (Livestock Cadres) will be responsible for awareness generation, household identification, provision of veterinary services, and implementation & monitoring of activities at the village level. • Implementing NGO/Facilitating Agency (NIRMAN) for coordination, fund mobilisation, convergence, implementation and monitoring. • Training Institutions / Resource Agencies (capacity-building for Pashu Sakhis)
Key Issues and Challenges for Saturation	• Most households rely on traditional, low-input goat-rearing practices with limited exposure to improved methods. Behaviour change is a slow, gradual process, and it might take longer than the expected time outlined in this document. • Availability of bucks with improved breeds to improve the breed quality and productivity of animals. • Convergence and mobilisation of funds promptly with Government departments to ensure the implementation of activities within a stipulated time.
How it will be implemented	• Baseline, need assessment & Planning Phase- Household identification, Village-level planning, Phasing strategy. • Finalising the design, material and costing of goat housing in close consultation with experts and the community. • Capacity Building of Pashu Sakhis: Recruitment, Training, and support (Provide training materials). • Demonstration Units Setup - Build community confidence through “seeing is believing”: Demo units may include proper sheds with a platform, improved breeding practices,

Domains	Livestock
Intervention	**Improved Goat rearing and management practices**
	a herd size of at least five animals, provision for vaccination and animal care, and a mix of open grazing and supplementary feeding. • Incentivise HH for setting up new units with the provision of sheds, vaccination, feed and proper handholding and training. • The intervention begins with 20% of the targeted households to establish model households. In the subsequent years, the intervention scales up to 20% target households per year. This phase-wise expansion is based on the assumption that visible improvements in goat productivity and household income in earlier phases will generate greater interest and readiness among the remaining households. • Monitoring and Handholding: Regular follow-ups (By Pashu Sakhi), Performance monitoring (monthly report), Refresher support (Ongoing technical backstopping as needed).
Feasibility/ viability issues, if any	• Attacks by dogs and wild animals have become a significant issue, • Availability of fodder for stall feeding
Potential Funding Sources	Animal husbandry department, Government schemes such as NRLM, RKVY, NLM, Financial Institution (NABARD), Community, Philanthropic Foundations & NGOs
Key Milestones	1. Average herd size in the block reaches to more than five goats per hh 2. Installation of demonstration units with a shed and other provisions in all the project villages. 3. A minimum of 50% households covered under the intervention construct separate sheds for goats 4. Vaccination rates in goats are more than 60% 5. 10 market players onboarded for measurement-based buying and a transparent pricing system
Potential Risks and Unknowns	Disease outbreaks leading to the death of goats, household constructs the sheds and keep their goats there, market players get ready for measurement-based buying systems
Ecological, Economic and Social Benefits	**Ecological**: Indigenous breeds are resilient to local conditions and help preserve genetic diversity. Rearing is done in homestead areas, avoiding the need for additional land conversion. The waste is recycled and used in fields as manure to improve soil nutrients. **Economic-** Households can earn additional income from the sale of goats with minimal input costs. Promotes entrepreneurship at the household level. Encourage local employment through Pashu Sakhis. Increased goat production may trigger the development of input/output marketing channels. **Social Benefits-** Improved income will ensure an improved quality of life for the household. Besides, the availability of goat meat enhances dietary diversity, especially for women and children. Capacity building of the local community and Pashu Sakhis contributes to long-term livelihood knowledge.
Key stakeholders involved and their roles in implementation	Target Households (Primary beneficiaries), Village/Community Organisations (VOs) for Community mobilisation and coordination, Pashu Sakhis (Livestock Cadres) as Frontline service providers, Implementation Support Agency (NGOs), Government Departments (Animal Husbandry, Livelihoods Mission, District Admin), Veterinary Officers / Paravets for Technical oversight

Domains	Livestock
Intervention	**Improved Goat rearing and management practices**
Additional human resources required	**Community-Centric Approach**: Pashu Sakhis (Livestock Cadres), Veterinary Assistant (1–2 per cluster or block), Block Livelihood Coordinator. **NGO / Implementation Support Agency-led Approach:** Livestock Intervention Coordinator, Training Expert, Monitoring & Evaluation (M&E) Officer, Finance & Procurement Assistant.
Institution required, if any	Livestock Development Department / Animal Husbandry Department, Cluster Level Federations (CLFs) / Village Organisations (VOs), Implementation Support Agency (NGO/CSO)

5.4.4. Improved Breed Management for Goats

The intervention on improved breed management for goats addresses critical challenges faced by smallholder goat farmers, particularly low productivity, poor growth rates, and high disease susceptibility arising from inbreeding and inferior genetic stock. Introducing healthy, high-performing breeding bucks into the village enhances the genetic quality of local goat populations, thereby increasing milk and meat yields and improving the overall market value of livestock. The intervention directly contributes to income enhancement for smallholder farmers, many of whom belong to economically weaker sections, by enabling better-quality breeds that fetch higher market prices and reduce mortality.

Domains	Livestock
Intervention	**Improved Breed Management for Goat: Intervention proposed at the Cluster level**
When will it start functioning?	The initiative will start in year 1 and be implemented gradually over the years.
What will it do?	The availability of quality bucks for breeding will ensure that random mating is minimised and that improved breeding occurs. The improved breeding will ensure that genetic quality improves with each generation, selected traits become stronger and more consistent, leading to a gradual improvement in the overall quality of the herd.
Who will implement it? (stakeholders, including institutions)	An Improved Breeding Centre will be established in each of the identified villages. This centre can be established either with SHGs or identified Households providing breeding services on an enterprise basis. Pashu Sakhis (Livestock Cadres) will generate awareness and provide the requisite capacity-building support to IBC. Implementing NGO/Facilitating Agency (NIRMAN) and Training Institutions/Resource Agencies (capacity-building for Pashu Sakhis) will provide need-based support.
Key Issues and Challenges for Saturation	During natural breeding, bucks mate freely with any female, making it impossible to track parentage or plan for trait improvement. Also, open natural/random breeding with weak or poor-quality bucks might lead to weaker offspring, lower fertility, slower growth, poor disease resistance, and higher mortality.
How it will be implemented	A proper breed management intervention needs to be implemented in the villages, which includes • Establishment of an improved breed centre at the identified SHG/Individual enterprise in the village. • Capacity building and handholding support to IBC enterprises around improved goat management and breeding practices. • Provision of 3 quality bucks (considering that one buck can meet up to 50 goats in a season), low-cost housing

Domains	Livestock
Intervention	**Improved Breed Management for Goat: Intervention proposed at the Cluster level**
	and improved feed and animal care to ensure that bucks remain healthy. • Capacity-building of CRPs in breed management. Implement proper measures to identify quality breeding bucks. • Awareness and behaviour change campaign to stop the natural and random breeding of goats by the CRPs • Breeding-as-a-service provisions to ensure controlled breeding with identified bucks. • Record keeping to ensure the genetic record is maintained.
Feasibility/ viability issues, if any	Availability of quality bucks for breeding in the villages, changing communities' behaviour for breeding by the earmarked bucks at IBC, communities paying for the breeding services, which are generally free
Potential Funding Sources	National Livestock Mission provides subsidies (up to 50% of the total project cost) for setting up goat breeding farms and other related units. Besides this, support can also be sought from SRLM and NABARD
Key Milestones	• 3 Quality bucks are identified in every village for breeding, and IBCs are set up in every village. • 50% households take breeding services to breed their goats • Pashu-Sakshi maintain the records of breeders and potential improvement in breeds • There is an improvement in the quality of goats over the years
Potential Risks and Unknowns	• IBC rear their bucks properly for breeding services and do not sell the bucks • Death of bucks due to outbreaks of diseases or attacks by animals.
Ecological, Economic and Social Benefits	**Ecological**: • When goats are healthier and more productive, households can maintain smaller herds to meet their livelihood needs, which reduces overgrazing, soil erosion, and vegetation loss. • Improved goat health and housing practices enable more consistent droppings collection, which can be converted into organic manure, thereby improving soil fertility. • Healthier goats mean less carcass disposal and lower environmental contamination from disease outbreaks, supporting cleaner village surroundings. • By promoting the adoption of productive indigenous breeds, communities rely on locally adapted animals that are resilient to climatic stress, thereby reducing the ecological footprint of goat rearing compared to introducing exotic breeds that require intensive management. **Economic**: Additional income to the household from providing breeding services, improved buck quality (higher productivity), and better feed-to-meat conversion rates.
Additional human resources required	The community cadre of Pashu-Sakhi will lead the implementation of this intervention. Thus, no additional HR is required.

Domains	Livestock
Intervention	**Improved Breed Management for Goat: Intervention proposed at the Cluster level**
Institution required, if any	An improved breed centre will be established either with existing SHGs or individual enterprises. No new institution is required for this intervention.

5.4.5. Promotion of Back Yard Desi Poultry (BYDP)

The promotion of backyard desi poultry serves as a low-cost and sustainable livelihood option for rural households, particularly benefiting small and marginal farmers. Backyard poultry provides a consistent supply of eggs and meat, directly contributing to household nutrition and improving dietary diversity. The intervention is economically viable as it requires minimal capital investment and operational expenses while delivering quick returns, often within a few months of initiation. Furthermore, integrating ethno-veterinary practices and basic disease management significantly enhances poultry survival rates, thereby reducing mortality and economic losses. This approach not only strengthens household income but also promotes food and nutritional security in rural areas, making backyard poultry a resilient and scalable livelihood intervention.

Domains	Livestock
Intervention	**Promotion of Indigenous Backyard Poultry**
When will it start functioning?	First year with gradual implementation over the years
What will it do?	Increase the flock size from the existing average of 5 birds per household to 10, with improved veterinary care and practices. This will lead to enhanced household-level nutrition and livelihood opportunities.
Who will implement it? (stakeholders, including institutions)	• Households (beneficiaries) will rear the poultry birds • Pashu Sakhis (Livestock Cadres) will provide the handholding, veterinary care and other support to the household. • Implementing NGO/Facilitating Agency (NIRMAN) will be responsible for overall coordination, implementation and monitoring. • Training Institutions / Resource Agencies for the capacity-building of Pashu Sakhis
Key Issues and Challenges for Saturation	• Mortality and Disease Outbreaks. • Feed Constraints (Although feed is expected to be from household leftovers, quantity and quality may not be sufficient for optimal bird growth.). • Maintaining quality and consistency across 60 villages in a phased manner. • Timely procurement and delivery of quality chicks across all villages.
How it will be implemented	• Baseline & Planning Phase- Household identification, Village-level planning, Phasing strategy. • Identification/establishment of mother units (suggested as a separate intervention) to ensure the availability of chicks for households. • Capacity Building of Pashu Sakhis around the backyard poultry that includes improved care, housing, vaccination, and veterinary services, among others. • Establishment of demonstration Units to build community confidence through “seeing is believing” in the first year. • Procurement & Distribution- Procure chicks(7–15-day-old chicks sourced in bulk, ensuring good health. Distribution, Vaccination & care. • Monitoring and Handholding: Regular follow-ups (By Pashu Sakhi), Performance monitoring (monthly report),

Domains	Livestock
Intervention	**Promotion of Indigenous Backyard Poultry**
	• Refresher support (Ongoing technical backstopping as needed). • Linkages with market players for the sale of eggs and poultry birds.
Feasibility/ viability issues, if any	Fluctuating bird prices, Transport and distribution challenges, Lack of experience in poultry care, Scaling issues, Disease outbreaks, Less Vaccination coverage
Potential Funding Sources	There are schemes for the National Livestock Mission. Besides this, funds can be mobilised from NRLM/SRLM-supported CLFs/PGs and SHGs, NABARD schemes and CSR programs.
Key Milestones	• Sourcing chicks for distribution to households. • Ensure higher coverage of vaccination (more than 70%) • Reduce the mortality rate to the minimum extent. • Installation of 300 demonstration units established (5 per village) with five birds each.
Potential Risks and Unknowns	High mortality in chicks, especially if vaccination or care protocols are not followed. Outbreaks of poultry diseases (e.g., Ranikhet, fowl pox) in the absence of timely intervention, Drop-out or low motivation of Pashu Sakhis, Unequal household participation, Delays in chick procurement and distribution, and Predation by animals (dogs, wild animals).
Ecological, Economic and Social Benefits	**Ecological Benefits** – • Household food leftovers are reused as feed. Indigenous breeds are resilient to local conditions and help preserve genetic diversity. Rearing is done in homestead areas, avoiding the need for additional land conversion. **Economic Benefits –** • Households can earn additional income annually from the sale of poultry and eggs with minimal input costs. Promotes entrepreneurship at the household level. • Encourage local employment through Pashu Sakhis. • Increased poultry production may trigger the development of input/output marketing channels. **Social Benefits-** • Regular access to eggs and meat enhances dietary diversity, especially for women and children. • Capacity building of the local community and Pashu Sakhis contributes to long-term livelihood knowledge.
Additional human resources required	The Pashu-Sakhi community cadre will implement this intervention. Thus, no additional HR is required.
Institution required if any	No new institution is required.

5.4.6. Establishing a Parent stock unit for indigenous (desi) poultry

The establishment of village-level parent stock units for indigenous poultry addresses a critical supply-side gap in backyard poultry (BYP) expansion by ensuring a consistent and localised source of day-old chicks. In many rural areas, the unavailability and irregular supply of chicks from external markets limit

the adoption and scaling of BYP activities. By establishing a parent stock unit, the intervention fosters rural entrepreneurship, collective ownership, and women's economic empowerment while creating a sustainable, community-driven chick production system. Additionally, this intervention reduces dependency on private or distant suppliers, which often restricts access for low-income and remote households. By phasing the rollout in alignment with household-level BYP adoption, the intervention ensures that supply infrastructure grows in tandem with demand, supporting long-term sustainability and wider community benefit.

Domains	**Livestock**
Intervention	**Parent stock unit for indigenous poultry**
When will it start functioning?	First year with gradual coverage over the years
What will it do?	It will ensure the availability of indigenous chicks locally for households interested in either setting up new or increasing the flock size of their Backyard poultry unit
Who will implement it? (stakeholders, including institutions)	• The identified SHG group in each project village will establish the parent unit and serve households in that village. SHG members will undergo training to manage the unit's operations. • Pashu Sakhis (Livestock Cadres) will provide the handholding, veterinary care and other support to the household. • Implementing NGO/Facilitating Agency (NIRMAN) will be responsible for overall coordination, implementation and monitoring. • Training Institutions / Resource Agencies for the capacity-building of Pashu Sakhis
Key Issues and Challenges for Saturation	• The current capacity of communities to run such units is limited. • Identification of enterprises interested in setting up the unit • Creating organic demand for chicks, as households do not have a habit of buying chicks Ensuring regular technical and health care support
How it will be implemented	• Identification of SHG groups with interest and resources for setting up the enterprise unit. One unit to be established in each project village. • Estimation of demand in project villages to determine demand patterns, seasonality, and unit scale. • Capacity building of identified SHG groups for managing the operations of the parent stock unit. Need-based refresher training for SHG members. • Financial linkages with Government programs to develop the requisite infrastructure and purchase male and female poultry birds. • Provide veterinary and other support through CRPs to manage operations. • Regular handholding and monitoring by the CRPs to ensure smooth unit operations. • Create local demand or establish market linkages to sustain regular chick sales.
Feasibility/ viability issues, if any	Demand from the local households and management of the unit by newly set-up enterprises
Potential Funding Sources	The National Livestock Mission has a scheme to set up a parent stock unit. Besides, this fund can also be leveraged through schemes such as the Tribal sub-plan, the SRLM-supported producer groups fund, and the CLF fund.
Key Milestones	• 12 parent stock units become functional during -1. • Gradual increase in the flock size at the village level to ensure the continued demand for parent stock units.

Domains	Livestock
Intervention	**Parent stock unit for indigenous poultry**
	• Training of these enterprises on technical know-how, unit management, and other relevant areas.
Potential Risks and Unknowns	• Communities do not have prior experience of setting up such units • High mortality in chicks, especially if vaccination or care protocols are not followed. • Identified enterprises might not continue with the parent stock unit
Ecological, Economic and Social Benefits	**Ecological**- This will ensure the availability of indigenous chicks for household rearing. In the absence of local parent stock units, indigenous chicks are gradually being replaced by breeds from other regions that are not suited to local climatic conditions. **Economic-** Enterprises can earn additional income from the sale of chicks. Households will also have access to quality chicks for the BYP unit and can earn additional income from the sale of poultry and eggs with minimal input costs. **Social Benefits-** Regular access to eggs and meat enhances dietary diversity, especially for women and children. Capacity building of the local community and Pashu Sakhis contributes to long-term livelihood knowledge.
Key stakeholders involved and their roles in implementation	• Target enterprises: SHGs for setting up the enterprise unit • Households doing BYP: purchase the chick (Access to quality chicks), • Implementing organisation: Create demand by placing the order for the supply of chicks to the household as part of the BYP intervention. • Village/Community Organisations (VOs) and SHGs for Community mobilisation and coordination • Pashu Sakhis (Livestock Cadres) as Frontline service providers. • Animal Husbandry Veterinary Officers / Paravets for Technical oversight and providing available support for vaccination, veterinary services, etc.
Additional human resources required	The community cadre of Pashu-Sakhi will lead the implementation of this intervention. Thus, no additional HR is required.
Institution required, if any	Existing SHGs at the village level may take the lead in this; if no SHGs are available with the willingness and resources, new SHGs can be formed. Alternatively, a producer group could be formed, as it has access to SRLM funds.

5.5. Fishery

5.5.1. Fishery in Water Tanks and Farm Ponds

The proposed fishery intervention in Dantewada seeks to utilise and rejuvenate existing community water tanks (18 tanks covering 134.6 ha) for rainfed fisheries, thereby creating a sustainable livelihood opportunity while enhancing local nutrition and income security. With an estimated revival cost of ₹25,000/ha, the intervention will focus on tank desilting, liming, and preparation, followed by stocking fingerlings sourced from the fisheries department's hatchery in Geedam block, where fingerlings are available at affordable rates (₹2–2.5/piece). The recommended stocking density is 6,000–10,000

fingerlings per hectare, with provision of cow dung, lime, and supplementary feed to improve fish productivity.

We assume that 10% of the families will have farm ponds (on an average of 0.15 ha of land) through SWC work. To support the promotion of fisheries in these farm ponds, one-time fingerlings, along with lime and feed, totalling Rs. 5000 per pond, will be provided to these families.

Implementation will be led by local community institutions such as Gram Sabhas and SHGs, with technical support from the Fisheries Department and NGOs, ensuring participatory planning and monitoring. The key challenge for saturation will be ensuring equitable access and management across villages, especially avoiding over-dependence on groundwater, as the intervention will promote rainfed systems. Feasibility is high given the availability of water bodies, departmental hatchery support, and community demand for fisheries. However, risks include climate variability (irregular rainfall and tank drying), disease outbreaks, and conflicts over management among user groups. Potential funding can come from MGNREGS (tank revival), Fisheries Department schemes, and convergence with ongoing watershed/SWC projects; private investments may also be tapped for larger tanks. Milestones will include tank revival, stocking, first harvest (usually within 8–12 months), and scaling up to cover all 18 tanks in 4 years (25% annually). Ecological benefits include better tank ecosystem management, improved soil-water interface, and biodiversity conservation; economic benefits include regular income through fish sales and reduced protein deficiency; and social benefits include collective management of common resources and improved community cohesion.

Key stakeholders will include Gram Sabhas (ownership and decision-making), Fisheries Department (technical and hatchery support), NGOs/CSOs (capacity building and training), SHGs/FPOs (management and marketing), and Panchayati Raj Institutions (coordination). Additional human resources required include at least one dedicated Fishery Field Facilitator per tank cluster for handholding, along with periodic technical experts for disease management and feed optimisation. No new standalone institutions are required; instead, strengthening existing institutions, such as Gram Sabhas and SHGs, for community-based fisheries management will ensure sustainability.

5.6. Natural Resource Management

5.6.1. SOIL AND WATER CONSERVATION (SWC) INTERVENTIONS

The Dantewada landscape receives ample annual rainfall, yet much of it is lost to runoff and soil erosion, particularly during the monsoon season. The absence of effective soil and water conservation (SWC) measures and limited rainwater harvesting infrastructure have resulted in poor irrigation water availability during the winter and summer months. This directly affects agricultural productivity and limits farmers' ability to grow crops year-round.

Planned Interventions

To address these challenges, a series of soil and water conservation interventions is proposed across both private and shared lands. These will help retain rainwater, reduce soil erosion, and improve groundwater recharge. Some of these interventions include: Construction of farm ponds, check dams and gully plugs to slow down runoff and enhance water percolation, contour trenches and bunding on slopes to reduce soil erosion and capture water, water harvesting structures, such as percolation tanks and recharge pits and improved drainage channels to manage excess runoff and protect fields, etc.

Potential SWC interventions start with community-centric planning, in which resource maps, areas of soil erosion, types of water flows, types of streams, and channels are mapped across any geographic location, primarily centred on the ridge.

This resource mapping, aided by transact work, would help create DPRs/plans for SWC interventions, and efforts would be made to integrate the process into Gram Panchayat Development Plans (GPDP). This work would follow an approach in which one starts from the **ridge** and goes around to **the eye**. On the ridge, various structures such as contour trenches, gabion checks, loose-sand checks, and

boulder checks at the higher level can be constructed. Moreover, based on the slope contour bands, a treatment may be required on the ridge areas, and then, as they go downwards, there may be a possibility of constructing check dams, farm ponds, and other water conservation structures. This is a general, typical watershed approach and would be implemented for soil and water conservation in the landscape.

These interventions will be designed in close consultation with local communities and technical experts to ensure they are appropriate for the specific soil type, land use, and topography of the area. The work will be implemented in phases, covering 10,000 hectares over 10 years.

Scope for Convergence and Community Participation

There is significant potential to mobilize funds from various sources for these activities, including MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme), District Mineral Foundation (DMF) funds, Corporate Social Responsibility (CSR) funds operating in the area and other relevant government schemes or programs that may be identified during implementation Communities, especially in the case of interventions on private lands, will also be encouraged to contribute through Shramdan (voluntary manual labor).

5.6.2. Biodiversity Register and Volunteering Programme

The landscape project places a deliberate and practical focus on biodiversity relevant to agriculture, emphasising species and ecological functions that directly support farming systems. At the beginning of the project, a team of agrobiodiversity experts will visit the landscape and map the beneficial agrobiodiversity in terms of crops, trees, pollinators (e.g. bees, butterflies), pest predators (e.g. birds, insects), soil organisms (e.g. earthworms, microbes), amphibians (e.g. frogs), and livestock breeds. This team will enhance the biodiversity register and other documentation using participatory methods and traditional knowledge to update the People's Biodiversity Register (PBR), documenting habitats, landraces, and community practices. The team will help identify key ecosystem services supported by local biodiversity, such as pollination, pest regulation, soil health, and water management, and suggest ways to enhance agriculture-relevant biodiversity in the landscape. They will also support the identification and management of non-beneficial organisms, including invasive species and pest hosts. Additionally, the team will work to build the capacity of local students and youth to monitor and document biodiversity using participatory tools, including registers, species surveys, and digital platforms.

As part of this, a *Biodiversity Volunteering and Management Programme* will be introduced, engaging trained community representatives who will function as a local cadre to regularly monitor, record, and support the management of biodiversity in their areas, ensuring continued community participation and long-term stewardship of local ecosystems.

5.7. Market Development

5.7.1. Setting up Homestays as part of Agrotourism

The proposed Agrotourism intervention in the Dantewada landscape seeks to develop farm-based homestays to diversify farmers' incomes, promote local culture, and integrate sustainable livelihoods with tourism. Leveraging the Chhattisgarh government's homestay policy, which provides up to ₹1 lakh support for basic infrastructure, one demonstration unit will be established in each of the four identified clusters, beginning with a phased approach of one homestay per year between Years 3 and 6. These units will be set up on the farms of progressive organic farmers, with an additional focus on capacity building for hospitality management, linking with external booking platforms, and forging partnerships with travel facilitators such as Unexplored Bastar and local tour operators already active around Danteshwari Temple and nearby waterfalls. Implementation will be driven jointly by local farmer

institutions (FPOs/SHGs), the tourism department, Panchayati Raj institutions, and private agencies, with technical support from NGOs for training and monitoring.

The key challenges for scaling include ensuring quality standards in facilities, addressing gaps in digital literacy for online booking, and sustaining year-round tourist inflows. The feasibility is strengthened by growing eco-tourism interest in Bastar, though viability will depend on marketing linkages and visitor satisfaction. Potential funding sources include state government schemes, CSR support, and convergence with NRLM/tribal development programs. Key milestones include the establishment of envisaged units (Years 3–6), completion of training, operationalisation with tourist footfall, and eventual replication across all clusters. Risks include fluctuating tourist demand, perceptions of safety and security, and ecological stress if not regulated. However, the environmental benefits include promoting organic farming landscapes, reducing migration, and conserving local biodiversity through agro-based tourism models. Socially, the intervention fosters cultural exchange and women's participation, while economically, it supplements farmer incomes. Additional human resources will be required, including hospitality trainers, digital marketing facilitators, and community mobilizers. At the same time, institutions such as a district-level Agrotourism Coordination Committee comprising government, farmer leaders, NGOs, and tour operators will be needed to ensure planning, quality control, and monitoring for long-term sustainability.

5.7.2. Strengthening local markets (Weekly Bazaar)

Promoting Weekly Haats for strengthening the Agroecology Landscape

Strengthening weekly haats as hubs for agroecological produce would be instrumental in preparing the market for the agroecological transition unfolding in the Dantewada landscape.

Rationale

Recognising the profound significance of the weekly haats (popularly known as *haat bazaars*) in Dantewada block as a vital Common Property Resource (CPR) that underpins both economic and social life, particularly for local producers, this plan outlines further activities to enhance their role within an agroecology-promotion framework. These haats, deeply embedded in regional contexts and often managed by Village Panchayats (PRIs), symbolise the principles of regional marketing and community governance and offer a crucial avenue for realising agroecological goals. By strategically investing in their development, we can strengthen local economies, empower marginalised communities, and foster sustainable agricultural practices.

Focus

To transform Dantewada's weekly haats into vibrant, well-governed, and inclusive hubs that champion local agroecological produce, empower local producers, and serve as thriving centres for community exchange.

Major activities

- Strengthening Community Governance with Women's Leadership
- Investing in Foundational Infrastructure for Enhanced Functionality
- Championing Local Agroecological Produce and Producer Empowerment
- Creating Dedicated and Dignified Spaces for Women Entrepreneurs
- Fostering the Marketing and Adoption of Bio-Inputs

Investment Allocation

- Infrastructure: This will be strategically allocated based on the PRI-owned haats' needs assessment, prioritising essential facilities such as platforms, sheds, water, and sanitation. Phased implementation across the haats will ensure efficient resource utilisation.
- Awareness Creation: This will cover the costs of developing and disseminating information materials (leaflets, posters), organising community meetings, and conducting awareness campaigns on agroecology and the enhanced role of the haats.

- Training: This budget will support the organisation of training programs tailored to women representatives in governance, local producers on agroecological practices and marketing, and women entrepreneurs on business skills.

An overall cost for strengthening the weekly haats has been indicated; however, detailed costing, including specific cost components, may need to be ascertained during planning for implementation.

Also, while Annexure 3: Modernization of Haat Bazaar / Small Godown under MSP for MFP scheme & Annexure 4: Haat Bazaar Sanchika- Guidelines for Operation and Management of Haat Bazaar gives a detailed understanding of how haat bazaars can be envisaged to be modernized., it would be incumbent to identify the gaps around the management, infrastructure, operationalization of the haat bazaars and address the same by developing a comprehensive haat bazaar development plan.

5.7.3. Support to Bhoomgaadi Organic Farmer Producer Company

The proposed intervention, Support to Bhoomgaadi Organic Farmer Producer Company (FPC) for Business Development, aims to strengthen institutional marketing systems, enhance value-addition capacities, and establish a revolving fund that allows the FPC to expand and/or scale its business activities in NTFP and agri-value chains. With marketing support, the FPC will deploy a sales team, organise consumer-focused events, secure 3rd-party certifications, and invest in packaging infrastructure to effectively access B2B and B2C markets. Value-addition development will focus on investments in modern processing machinery, such as Colour Sortex, dal and spice processing lines, and warehousing upgradation, thereby improving product quality, reducing post-harvest losses, and ensuring a competitive market presence. The revolving fund, set at ₹50 lakh, will support entrepreneurial ventures and working capital needs and provide financial liquidity for scaling trade and aggregation. The intervention will be implemented primarily through the Bhoomgaadi Organic FPC, in collaboration with SHGs, Cooperatives, Krishi Sakhis, Jaivik Karyakartas, and Van Sakhis. At the same time, external stakeholders, such as certification bodies, buyers, and traders, will provide technical and market linkages. Key issues and challenges include ensuring saturation across SHGs, maintaining quality control standards, and managing risks of unsustainable harvesting and price volatility. Implementation will rely on building institutional capacities at the FPC and cooperative levels, supported by additional human resources, including marketing professionals, processing technical experts, and quality control managers.

The initiative is desired as it leverages existing SHG and cooperative structures, requires a moderate infrastructure investment (₹1.35 crore total), and aligns with ongoing organic and regenerative agriculture promotion efforts in the region. Potential funding sources include state livelihood missions, CSR funds, NABARD, and international donors supporting sustainable value chains. Milestones will consist of the establishment of certified processing units, the operationalisation of packaging and storage facilities, the activation of the revolving fund, and market penetration within 2 years. Risks include market fluctuations, climate variability affecting NTFP availability, and institutional coordination challenges, but these can be mitigated through diversification, strong governance structures, and adaptive financial planning. The intervention will generate ecological benefits by promoting sustainable harvesting and organic practices, economic benefits through higher price realisation and employment generation, and social benefits by strengthening SHGs, empowering women (via Van Sakhis), and improving livelihoods at the grassroots. Institutional requirements include strengthening governance within the Bhoomgaadi FPC, capacity-building support for SHGs and cooperatives, and partnerships with external certification and marketing agencies to ensure credibility and scale.

5.8. Nutrition

5.8.1. Community-Based Nutrition Education

A preliminary assessment of diet diversity and quality in the three landscapes reveals that, while dietary diversity is relatively high, indicating access to a variety of food groups, there is also an

unexpectedly high consumption of snacks, processed foods, and sugar-sweetened beverages. This trend is shocking, given that these areas are remote, which have historically been less exposed to the commercial food industry.

These findings highlight the need to address the double burden of nutrition, promoting healthy, diverse diets while also reducing the consumption of ultra-processed and unhealthy foods. Interventions promoting healthy diets are critical as these communities are likely in the midst of a nutrition transition. Consequently, interventions in these regions must be designed to address both dimensions.

Education-based interventions have been planned for the landscape, aiming to build awareness and shift everyday food choices. Targeted programs within communities include school programs, community-based awareness campaigns, and training of government frontline workers.

Feasibility

Technical Feasibility and Financial Viability Considerations

- In the context of agroecological landscapes in India, education-based strategies must be locally relevant and community-driven.
- Success depends on the quality, accessibility, and cultural relevance of behaviour change materials, as well as the capacity of local actors to deliver consistent messaging.
- Cost-efficiency can be improved by integrating nutrition training with ongoing capacity-building efforts for government functionaries and women leaders in the landscape.

Potential Risks and Unknowns:

- Resistance to behaviour change may occur due to ingrained food habits or social norms. Community-led action to reinforce healthy diets and curb the rise of non-communicable diseases is critical to the success of these strategies.
- Effective monitoring and periodic reinforcement are needed to ensure sustainability and scale.

Ecological, Economic, and Social Benefits

Social Benefits:

- Improved public health and nutrition outcomes through reduced consumption of ultra-processed foods and better-informed dietary choices.
- Empowerment of women leaders and frontline workers through skill-building and increased visibility in the community.
- Enhanced intergenerational impact through school-based education, potentially shifting dietary behaviours from a young age.

Economic Benefits:

- Improved dietary practices with long-term adherence can contribute to reduced health expenditures at the household level over time.

Implementation Design and HR

Implementation is planned over 5 years, with phased roll-out starting with content development and initial training in Year 1, followed by implementation and periodic reinforcement. Beyond the five years, nutrition-related interventions and community engagement can be implemented by local stakeholders

and the community based on their specific needs.

How Will It Be Implemented?

A multi-level behaviour change strategy will be used, focusing on education and community-led action:

- **School Programs**
  - Children will learn to identify healthy foods and understand the harms of processed and sugary foods.

- **Community-based Awareness Campaigns**
  - Led by trained women leaders inspired by successful models like *Health Karyakarta* (Deccan Development Society) and *Poshan Vanitha* (WASSAN).

- **Training Frontline Government Workers**
  - ASHAs, Anganwadi workers, and schoolteachers will be trained as key influencers of nutrition.

- **Supportive Materials**

  To implement this strategy effectively, financial support is required for the development and testing of resource material, training programs, and behaviour change campaigns within the community. These interventions should be supported by a suite of accessible, high-quality resources, including:

  - Nutrition-focused school curriculum materials,
  - Practical guides and flipbooks for frontline workers, and
  - Audio-visual content (radio, short videos) is periodically developed and disseminated in local languages, ready for circulation via WhatsApp or community screenings.

Key Stakeholders in Implementation

- Anchor Organisations in each landscape will lead coordination and oversight.
- Trained women leaders leading community-based awareness efforts
- Frontline government workers (ASHA, Anganwadi workers, schoolteachers), and local schools will implement ground-level activities.
- Nutrition experts will be engaged for content development.
- District Administration will support the integration with existing schemes, providing policy and budget support.
- The Gram Panchayat will support ground-level implementation, mobilise other stakeholders, and facilitate community engagement.

Additional Human Resources Required

- Nutrition communication specialist (content development and training)
- Audio-visual content creator (local language expertise)
- Community facilitators (to coordinate school and village-level efforts)

Institutions Required, If Any

No new institutions are proposed; the intervention will leverage existing public health and education systems.

5.8.2. Agroecology in Schools: Integrated Food and Farming System Curriculum

The children today are growing far away from the idea of how their food is grown and where it is coming from. There is a need for generating an environmental literature in today's school curriculum enabling the students to learn about their food, how it is grown, what sources are being used, and various other environmental issues.

The Solution: Learning Rooted in Life

This intervention takes from a solution designed by the Centre for Sustainable Agriculture (CSA), Hyderabad, in collaboration with Help Us Help Them (HUHT), Kolkata, launched a pioneering initiative at Adhigam Bhoomi, a residential school for 1000 underprivileged girls in West Bengal. The goal: to integrate food and farming systems into the formal school curriculum, turning the act of growing food into a core learning experience.

The solution positions farming not as a peripheral vocational option, but as a core knowledge system with cross-disciplinary value. By aligning classroom education with hands-on agricultural practice, the curriculum promotes:

- Environmental literacy
- Understanding of food systems
- Healthier food habits
- Life skills and teamwork
- Emotional and psychological development

Primary Objectives

- To design and implement an age-appropriate food and farming curriculum for children aged 6–16 years (Grades 1–10)
- To promote food literacy, healthy food habits, and nutrition security
- To connect academic subjects with practical farming experiences
- To build environmental consciousness and local market awareness
- To develop leadership, responsibility, and teamwork among students
- To create a learning ecosystem that supports holistic child development

Strategy and Implementation Plan

- Curriculum Development
    - CSA has developed a full curriculum framework and prepared teacher and student manuals for Grades 1 to 10, reaching to 1000 girls, from the backward classes in the Sundarbans district of West Bengal.
    - Curriculum is divided into three categories with different themes:
        1. Understanding Food for children aged 6 to 8 years
        2. Natural resources, health & nutrition, biodiversity, ecosystems, for children aged 9 to 12 years and
        3. Understanding local agriculture and hands-on experience in farming for children aged 13 to 15 years.
- Teacher Training and Support
    - Teachers from HUHT's residential school were trained by CSA.
- Field-Based Learning
    - Students engage in hands-on activities such as soil preparation, sowing, weeding, harvesting, and basic cooking.
    - The curriculum integrates with the NIOS academic framework, ensuring learning continuity while innovating pedagogy.

- Linking Home and School
    - Students return to their villages for two months annually and apply their learning at the household or community level, reinforcing practical knowledge.

The project envisions a future where every child learns not just how to read and write, but also how to grow food, eat well, and care for the planet. By integrating food and farming into mainstream education, we nurture children who are healthier, wiser, and more connected to their environment.

This Integrated Learning is not just a curriculum—it is a philosophy of education that roots learning in the soil, shapes it through experience, and harvests it in the form of healthier, more resilient future generations.

5.9. Enterprise Development

5.9.1. Promotion of Enterprise Models

To foster enterprise, drive economic development, and inspire youth, we suggest a dedicated investment of ₹1 crore. This investment could be channelled to a specialised agency (which could also be an anchor organisation) tasked with implementation. It is proposed that the funding be phased over three years, with approximately ₹33 lakhs released annually, contingent on achieving key project milestones. These funds would be intended to cover the agency's operational costs and provide technical expertise for enterprise development.

This would support the creation of a strong local team, including a manager, coordinators, and field staff, who would provide hands-on support to new businesses. The aim is to establish 8-10 diverse, economically viable, and environmentally friendly enterprises. A portion of the funds would also be allocated for crucial activities such as training, branding, and integrating clean energy solutions like solar power to enhance profitability and sustainability. The ultimate goal of this proposed investment is to build resilient local economies and empower rural communities, with a particular focus on women and young people.

Examples of the types of enterprises that could be supported include:

- Primary Processing Units: Small-scale, community-run units for milling rice, pulses, and oilseeds, often powered by renewable energy.
- Millet and Ready-to-Eat (RTE) Enterprises: businesses that process local millets into flour, snacks, and other value-added food products for local and urban markets.
- Renewable Energy-Powered Enterprises: Using solar or other clean energy to power irrigation, processing units, and other agricultural equipment to reduce fuel costs and improve productivity.

5.10. Capacity Building

5.10.1. Induction of Community Cadre and building their capacities

Inducting new Community Cadre & Capacity Building of both existing and new cadre, namely- *Pashu Sakhi for Livestock (Poultry, Goatery and Cattle), Jaivik Karyakarta/ Krishi Sakhi for Agriculture, Horticulture and NTFPs and Van Sakhi for Natural Resource Management, works* to facilitate implementation of interventions.

5.10.2. Orientation of Government Departments on Agroecological Practices

Planning is necessary to orient Government Line Departments and other relevant agencies to the agroecological paradigm and practices. An overall cost has been provisioned for carrying out the activities.

5.10.3. Building Capacities of Farmer Households

Farmers are the first stakeholders who would implement the proposed interventions. For farmers to become equal stakeholders, they will have to be sensitised and capacitated to participate, decide, and adopt the agreed interventions. A range of interventions, ranging from training by experts, expert institutions, and resources, has been proposed. Along with these interventions, the cadre (krishi sakhi, pashu sakhi, and NRM cadre) would not only conduct hands-on training for farmers at the village level but also handhold them, ensuring adequate grounding. Additionally, exposure, both within and outside the state, to best practices across subsectors would be organised to allow practical learning at the farmers' level.

5.10.4. Implementing Agency's Staff

Cross-cutting (landscape-level) interventions, such as the induction of Staff at NIRMAAN and their Capacity Building, would be essential to implement the recommended interventions. Costs for recruiting staff and building their capacity have been provisioned. This would help the staff effectively carry out the agreed activities/interventions across the indicated potential sub-sectors.

PART 2 - INVESTMENT PLANNING FOR INTERVENTIONS

The linked plan provides a detailed and consolidated overview of investments and their breakdowns for Chitrakonda's agroecological transformation plan over the total implementation period. The implementation cost for each intervention in each domain, as well as a breakdown of the expenses from primary sources, including community contributions, government scheme convergences, grants, debt, and guarantees, has been calculated and presented categorically.

INVESTMENT PLAN FOR AGROECOLOGICAL TRANSFORMATION IN DANTEWADA

CHAPTER 6

Landscape Investment Plan for Dantewada

6.1 Introduction to the Investment Framework

The landscape investment plan for Dantewada Block in Chhattisgarh represents a comprehensive strategy for agroecological transformation across 60 inhabited villages spanning approximately 584 square kilometres. This investment framework builds upon the district's decade-long organic farming legacy while addressing critical gaps in productivity, infrastructure, and market systems. The plan capitalises on Dantewada's unique strengths: predominantly chemical-free agriculture, strong tribal cultural heritage with traditional knowledge systems, the existing Bhoomgaadi Organic Farmer Producer Company, and significant potential for sustainable NTFP-based livelihoods.

The investment plan is structured around eight thematic areas: Agriculture, Livestock, Non-Timber Forest Products (NTFPs), Horticulture, Natural Resource Management, Nutrition, Market Development, and Enterprise Development. The total investment requirement stands at ₹155.43 crores (net investment after government funds and community contributions), with implementation phased over three stages to ensure sustainable adoption and institutional capacity building.

6.2 Investment Architecture and Financing Strategy

6.2.1 Overall Investment Structure

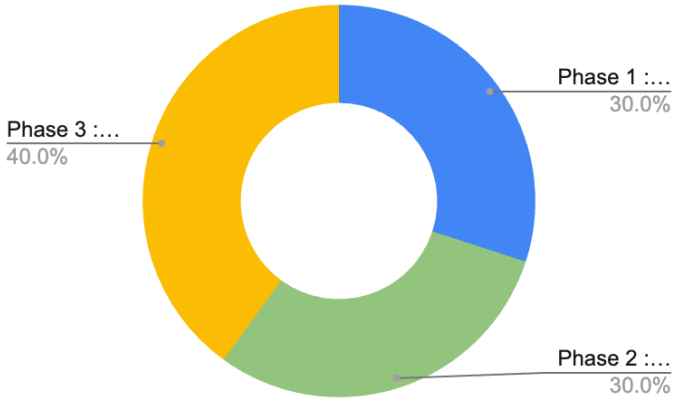


Fig. 6.1 – Overall Investment Structure

The total cost of the agroecological transformation program is estimated at **₹411.56 crores**, with **₹155.43 crores** available through existing government schemes and **₹100.70 crores** as community contribution, leaving a net investment requirement of **₹155.43 crores**. **The investment requirement of ₹155.43 crores leverages ₹256.13 crores in combined government and community resources, achieving a 1:1.65 ratio that amplifies impact while ensuring local ownership and sustainability.** The full details can be found in the sheet here.

This investment is distributed across three implementation phases:

- **Phase 1 (Years 1-3): ₹46.63 crores,** focusing on establishing foundational infrastructure, capacity building of community cadres (Jaivik Karyakartas, Pashu Sakhis, Van Sakhis), piloting key interventions through demonstration units, and strengthening existing institutional frameworks
- **Phase 2 (Years 4-6): ₹46.63 crores** for scaling successful models, expanding coverage of proven interventions, strengthening farmer producer organisations and SHG federations, and developing robust market linkages
- **Phase 3 (Years 7-10): ₹62.17 crores** for full-scale implementation across the landscape, establishing sustainability mechanisms, transitioning community institutions to financial self-sufficiency, and consolidating value chains

The financing mix employs multiple instruments tailored to intervention types, community institution maturity, and target population capacities. Grants comprise the largest share at 51% for capacity building, natural resource management, and non-revenue generating activities, while returnable grants, results-based financing, and debt instruments support productive investments in agriculture, livestock, processing infrastructure, and NTFP value addition. Guarantee mechanisms and interest subventions are strategically deployed to de-risk private investments and reduce the cost of capital for smallholder farmers, women's SHGs, and community institutions operating in this predominantly tribal landscape.

6.2.2 Financing Instruments and Allocation

The investment plan utilises six primary financing instruments, each serving specific purposes within the agroecological transformation:

Grants (Technical Assistance/Pilots)

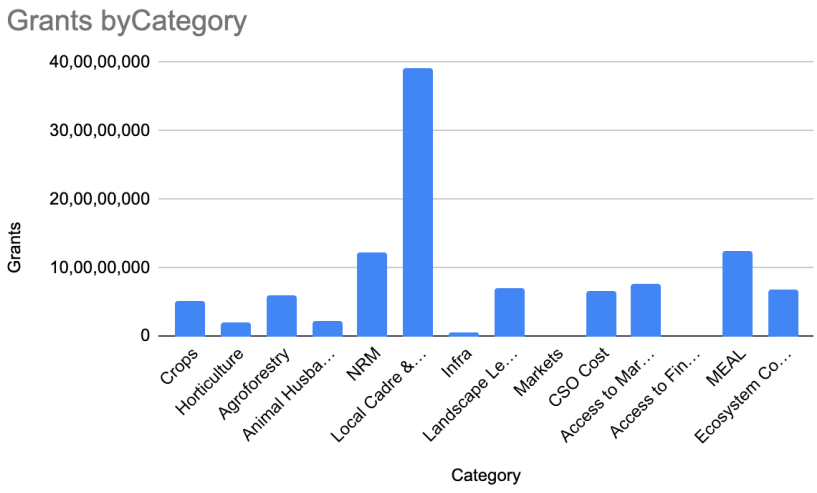


Fig. 6.2 – Grants

Grants constitute ₹107.89 crores (69.4% of net investment required) and represent the dominant funding mechanism for ecosystem coordination, social capital development, natural resource management, and foundational capacity building. The largest allocation goes to community cadre development at ₹38.05 crores, supporting 200+ community resource persons (Jaivik Karyakartas, Pashu Sakhis, Van Sakhis, Krishi Sakhis) who serve as the backbone of extension services. Natural resource management receives ₹34.43 crores, combining community-level soil and water conservation structures (₹10.50 crores) with individual farm-level irrigation investments (₹23.95 crores) covering land levelling and water harvesting.

Livestock systems receive ₹3.72 crores for cattle shed construction, breed improvement, and demonstration units. Agroforestry interventions receive ₹7.91 crores for CFR land regeneration, IFR afforestation, and mahua tree plantation. Capacity building programs receive ₹6.74 crores for farmer training and field schools, while ecosystem coordination activities total ₹16.54 crores, covering anchor organisation operations (₹4.95 crores), market development (₹4.47 crores), and MEAL systems (₹7.12 crores). Grants are front-loaded in Phase 1 (₹38.05 crores) to build foundational capabilities and establish demonstration units, recognising that soil health rebuilding, biodiversity conservation, and traditional knowledge preservation generate public goods requiring non-commercial support.

Returnable Grants

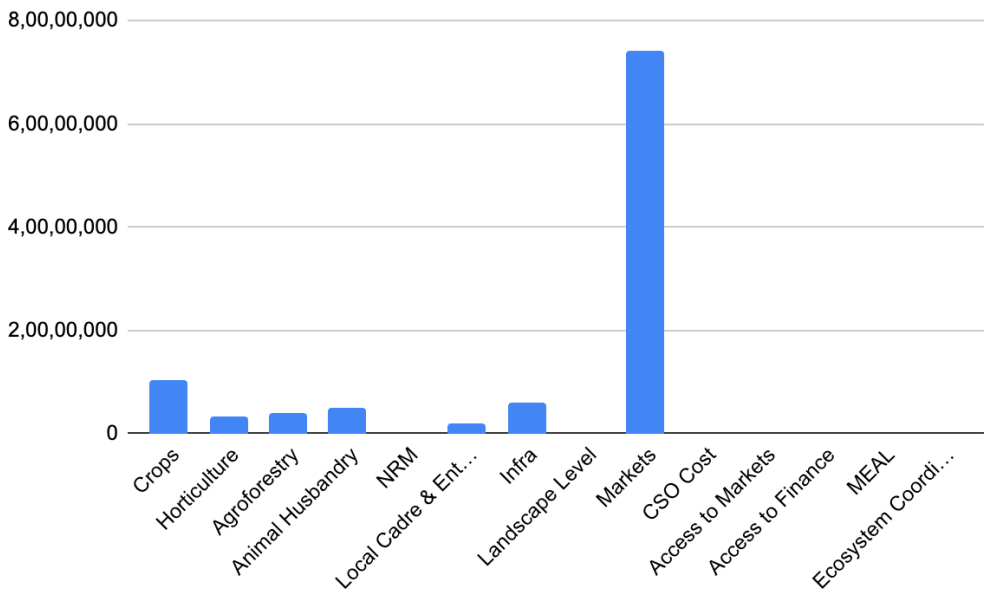


Fig. 6.3 – Returnable Grants

Returnable Grants provide ₹10.49 crores (5.1% of total cost), strategically allocated for revenue-generating physical infrastructure with medium-term payback potential. The largest component is working capital for Bhoomgaadi FPC and emerging SHG federations at ₹7.41 crores, establishing a revolving fund that enables aggregation of organic produce and NTFPs, provision of seasonal credit to members, and management of procurement operations. Processing infrastructure investments at ₹59.27 lakhs support common processing centres for dal, oil, millet, and spice processing, hybrid solar-powered cleaning and grading facilities, and a centralised 500 MT warehouse. Horticulture development receives ₹33.16 lakhs for vegetable cluster infrastructure, including cooling chambers, crates, and weighing scales across six clusters at Chandenaar, Kameli, Balud Chitaloor, Kuper Tudparas, Bacheli, and Ganjenar Masenar.

Livestock enterprise development receives ₹1.03 crores for parent stock units for indigenous poultry across 60 villages and improved breed centres for goats to upgrade genetic quality while maintaining indigenous characteristics. Natural resource management at ₹51.34 lakhs supports lift irrigation infrastructure, portable sprinklers, and drip irrigation systems, generating returns through enhanced cropping intensity. The returnable grant structure ensures capital recycling within the landscape, with returns channelled through community institutions like Bhoomgaadi FPC, cluster-level federations, and SHG networks to support additional farmers. Recovery timelines are differentiated by investment type: processing infrastructure and market working capital at 5 to 7 years, livestock enterprises at 3 to 5 years, and agroforestry, allowing 7 to 10 years, given longer gestation periods.RetryClaude can make mistakes. Please double-check responses.

Results-Based Financing

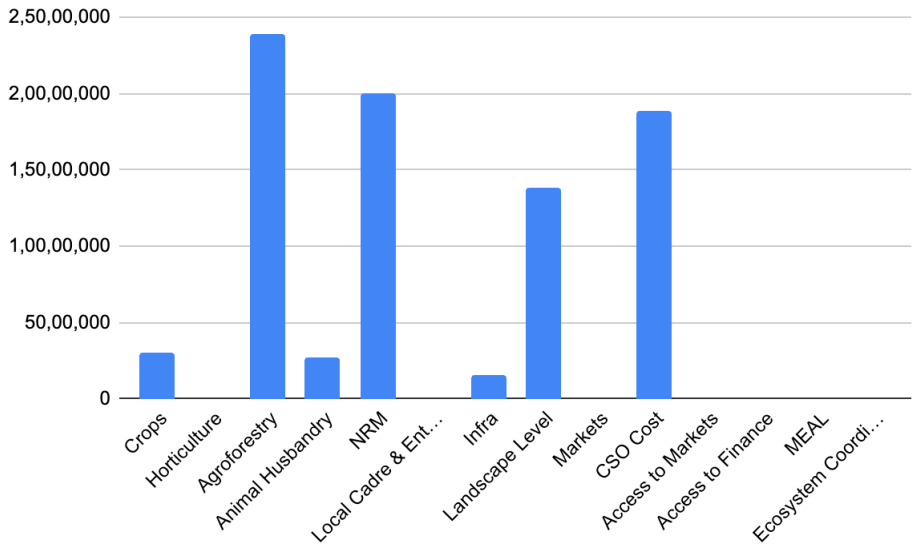


Fig. 6.4 – Results-based Financing

Results-Based Financing accounts for ₹8.39 crores (5.4% of total net investment), strategically deployed where performance can be directly measured. The largest allocation goes to animal husbandry (₹2.39 crores), linking payments to verified livestock health improvements, mortality reduction, and productivity gains in goat rearing, indigenous poultry, and cattle management. Crops receive ₹2.00 crores tied to the adoption of improved practices, including seed selection, bio-input preparation, and organic certification milestones across the 110 Large Area Certification villages and 8 ICS groups. Ecosystem coordination through CSO costs (₹1.89 crores) and access to finance (₹1.39 crores for landscape-level programs) link payments to institutional development milestones, including strengthening of Pani Panchayats, SHG federations, and community cadre performance.

Natural resource management (₹27.08 lakhs) rewards verified soil and water conservation outcomes, including successful establishment of lift irrigation systems, ring wells, and watershed structures. Horticulture (₹30 lakhs) ties funding to kitchen garden adoption and vegetable cluster productivity improvements. This payment-for-results framework builds accountability while providing flexibility for communities to innovate in achieving agreed outcomes, with verification conducted through community monitoring systems, technical assessments by KVKs and line departments, and participatory MEL processes that ensure transparency and learning.

Debt Financing

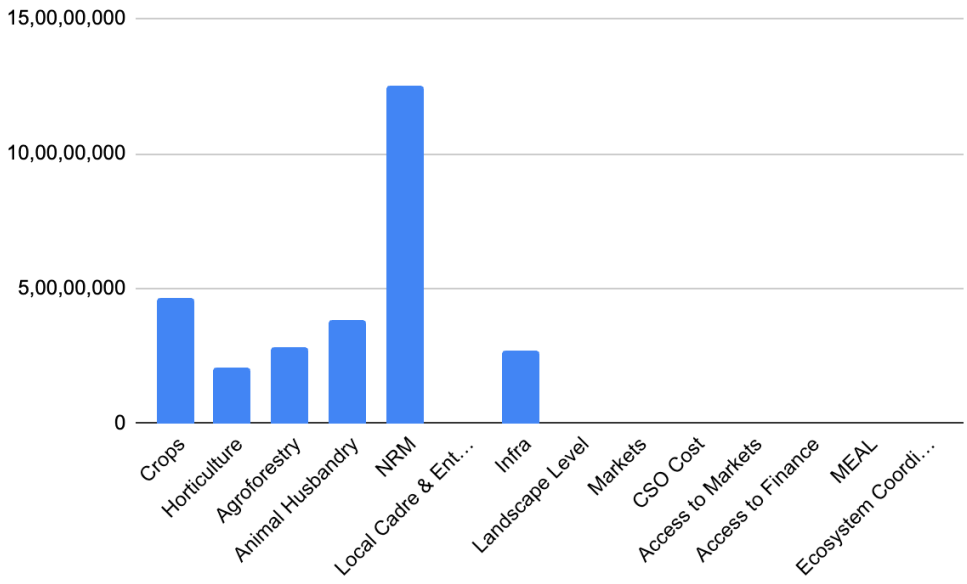


Fig. 6.5 – Debt Financing

Debt Financing totals ₹28.67 crores (18.4% of net investment), concentrated in sectors with shorter payback periods and proven revenue generation potential. Crops receive the largest allocation at ₹26.64 crores (93.0% of debt) for recurring seed and bio-input supply through community seed banks, farm implements through custom hiring centres covering 60 SHGs, seasonal credit for cultivation with 6 to 9 month repayment cycles, and support for extensive area certification covering the remaining 35 villages beyond the 110 already certified. Livestock systems receive ₹11.60 crore (40.5% of debt), supporting improved goat rearing for targeted households, backyard poultry expansion to reach average flock sizes of 10 birds per household, cattle shed construction to enable dung collection for composting, and biogas unit installation, reflecting 1 to 2-year payback periods. Natural resource management receives ₹6.85 crores (23.9% of debt) for irrigation investments, including ring wells at 60 per year for 5 years, totalling 300 units, micro-irrigation systems covering 560 acres under drip irrigation utilising existing borewells, lift irrigation serving 1,500 acres in phases of 300 acres annually, and soil water conservation works enabling multiple cropping. Horticulture (₹4.42 crores) supports six vegetable clusters with infrastructure and working capital, while agroforestry (₹2.85 crores) finances NTFP value chain development and infrastructure (₹2.73 crores) establishes processing facilities. The debt architecture maintains modest loan sizes of ₹15,000 to ₹ 50,000 per household, with flexible repayment schedules, utilising group lending through 1,059 women's SHGs, de-risked through ₹3.40 crores in guarantees, and made affordable through ₹3.33 crores in interest subvention.

Guarantee Mechanisms totalling ₹3.40 crores (11.9% of debt financing) support borrowing by covering default risks, particularly important for first-time borrowers from tribal communities comprising 64.23% of the population and nascent farmer collectives with limited formal credit history. Animal husbandry carries the highest guarantee coverage at ₹3.48 crores, reflecting livestock's biological risks, followed by crops at ₹1.45 crores, natural resource management at ₹0.54 crores, infrastructure at ₹0.34 crores, horticulture at ₹0.24 crores, and agroforestry at ₹0.29 crores. Interest Subvention totalling ₹3.33 crores (11.6% of debt financing) reduces effective interest rates from typical commercial rates of 12 to 14% to affordable rates of 4 to 7%. Animal husbandry receives the largest subsidy at ₹3.48 crores, recognising capital costs for improved housing and equipment, followed by

crops at ₹1.45 crores, natural resource management at ₹0.47 crores, reflecting multi-year payback periods for irrigation investments, infrastructure at ₹0.34 crores, horticulture at ₹0.24 crores, and agroforestry at ₹0.29 crores. These instruments are critical for unlocking commercial finance in a region where only 5,040 Kisan Credit Cards have been issued versus 7,641 total farmers, many households hold IFR or CFR rights rather than formal land titles, and lending to tribal communities is often perceived as high-risk despite strong community repayment traditions through institutions like SHGs and Bhoomgaadi FPC.

6.3 Sectoral Investment Priorities

6.3.1 Sustainable Production Systems (Crops)

Crop Production Investments: The agricultural inputs investment totalling ₹15.08 crores aims to transition the Dantewada landscape from traditional low-input farming to productive agroecological agriculture. The supply of seeds and bio-inputs for consumption crops (paddy, millets, pulses) requires a net investment of ₹9.35 crores, with government funds of ₹4.24 crores (28%) and community contribution of ₹1.49 crores (10%) covering portions of the ₹15.08 crore total cost. The intervention targets 95-100% of households cultivating paddy during Kharif and 50-60% growing millets and other crops. Critical infrastructure investments include ₹39 lakhs for Bio-Resource Centre infrastructure spread across village clusters, ₹31.93 lakhs for seed production and multiplication facilities managed by SHGs/JLGs, and ₹31.67 lakhs for establishing seed banks and community seed exchange networks. These investments build upon Dantewada's unique position as an organic district where chemical fertiliser consumption dropped to 0.52 kg/ha in 2015, creating a foundation for certified organic production systems.

Agroforestry and Afforestation represent a strategic sectoral investment with a net requirement of ₹14.85 crores (total cost of ₹19.15 crores), primarily driven by payments for afforestation on private land (₹5.08 crores total cost, with ₹3.08 crores net investment after ₹1.60 crores in government funds and ₹37.05 lakhs community contribution). This substantial recurring investment reflects both the ecological imperative of restoring the region's forest cover, which currently comprises 9.67% of the landscape, and the livelihood potential of non-timber forest products (NTFPs) that contribute 25-50% of household income. The supply of quality planting materials requires ₹9.10 crores in net investment to establish nurseries capable of producing saplings of mahua, tamarind, cashew, amla, and other high-value species. By integrating NTFP-bearing trees into Individual Forest Rights (IFR) lands and Community Forest Resource (CFR) areas through SHGs and JLGs, these investments create multiple revenue streams while enhancing ecosystem services like soil conservation and watershed protection in the undulating Bastar Plateau terrain. The 110 villages already certified under Large Area Certification provide a ready foundation for scaling organic agroforestry systems.

Horticulture Development (₹6.09 crores total cost, with ₹1.5 crores from the government and significant net investment requirement) focuses on establishing critical post-harvest infrastructure to address losses currently experienced by farmers cultivating vegetables (540 ha arbi, 465 ha tomato, 375 ha okra), fruits (1,412 ha mango, 788 ha cashew, 260 ha banana), and floriculture. The investment in fixed capital for warehousing, processing, and transportation facilities will be managed by FPOs like Bhoomgaadi, ensuring community ownership and equitable benefit distribution. This infrastructure is essential for capitalising on the landscape's diverse soil types (Bhata, Matasi, Dorsa, Kanhar) and moderate rainfall (1,237.5 mm annually) favourable for horticulture. The horticultural strategy emphasises indigenous varieties alongside improved cultivars, recognising the market potential of tribal organic produce. Kitchen garden development and vegetable cluster initiatives will enhance household nutrition security while generating surplus for local weekly haat markets in Dantewada, Geedam, Bacheli, and surrounding areas, building on the district's commitment to chemical-free agriculture established since 2013.

6.3.2 Livelihood and Economic Empowerment

Animal Husbandry Investments totalling ₹6.85 crores net investments (₹13.3 crores total) recognize livestock as a critical livelihood component for Dantewada's tribal population, where 70-80% of households rear cattle (4-5 animals per household) and goats (3-5 animals per household), contributing significantly to household incomes (₹20,000-50,000 annually from goat rearing). The supply of chicks/ducks for backyard rearing (₹93.80 lakhs total cost, with ₹61.48 lakhs net investment) addresses the current scenario where 100% of households maintain backyard poultry with an average flock size of only 5 birds, facing high mortality during monsoons. This recurring investment will strengthen household nutrition security and provide supplementary income, building on the existing practice where indigenous birds fetch higher prices (₹2,500-3,500 per bird) than broilers in weekly haat markets.

Low-cost shelter construction (₹1.20 crores total cost, with ₹60.18 lakhs net investment after ₹48.15 lakhs government funds and ₹12.04 lakhs community contribution as one-time investment) addresses immediate animal welfare and productivity concerns in a landscape where most households keep animals in open spaces with no proper roofing or flooring. Improved housing will directly enhance manure collection for composting and bio-input preparation—critical given Dantewada's organic district status and the ban on chemical fertilisers since 2015. These shelters will significantly improve animal health outcomes while enabling systematic collection of cow dung and urine, supporting the district's 8,780 PGS-certified organic farmers and 110 villages under Large Area Certification.

Breed improvement programs (₹35.46 lakhs total cost, with ₹21.28 lakhs net investment after ₹7.09 lakhs each from government and community) will enhance the productivity of indigenous cattle breeds and Anjori goats, well-adapted to local conditions. This investment addresses the current challenge of random breeding without record-keeping, which has led to genetic dilution despite the landscape's rich livestock diversity (1,87,212 indigenous cattle, 75,745 goats, and a substantial poultry population as per the 20th Livestock Census). The emphasis on indigenous breeds preserves genetic resources while improving traits like disease resistance, growth rates, and productivity—essential in a context where veterinary services are limited despite the presence of Pashu-Sakhis in some villages.

Market Development Infrastructure

Working capital for Community-Based Organisations, including FPOs and Women Federations (₹11.14 crores total cost, with ₹7.41 crores net investment), bridges the production-market gap in a landscape where Bhoomgaadi Organic Farmer Producer Company already serves 3,000 tribal organic farmers, primarily women. This revolving fund mechanism will provide flexible capital for FPOs and other cooperatives to respond to market opportunities, enabling procurement of indigenous paddy varieties, millets, pulses, and NTFPs at fair prices. The investment is critical given that only 51.58% of registered paddy farmers directly sell to procurement centres, with many depending on local traders in weekly haat markets (Dantewada, Geedam, Bacheli) or Bhoomgaadi's "Aadim" brand network across 14 states. This patient capital enables year-round aggregation and processing operations, essential for maintaining Dantewada's position as an organic district while ensuring farmers receive MSP and premium prices for certified organic produce.

5.3.3 Natural Resource Management

Natural Resource Management investments totalling 48.1 crores (net investment of 26 crores) tackle the fundamental challenge of water scarcity in this rain-dependent landscape, where agriculture is currently confined to the Kharif season. These recurring investments will build upon and extend beyond the existing 884 hectares of minor lift irrigation potential established in 2021 to 2022, supplementing current surface water systems while creating farm ponds and percolation tanks. By capturing water from mountain streams, currently the primary water source for many villages, and harvesting rainwater, the programme seeks to extend cultivation beyond the Kharif season, enabling

farmers to grow vegetables, pulses, and fodder crops during the Rabi and summer seasons. This is particularly crucial given that several villages assessed by the team had no irrigation infrastructure whatsoever, depending entirely on monsoon rainfall.

The integration of traditional practices, including bamboo water barriers, stone bunding, and terracing already employed by farmers with modern techniques like micro-irrigation and water budgeting tools, ensures culturally appropriate and technically sound solutions. Community ownership through Pani Panchayats, currently 76 operational in Dantewada covering 1,500+ hectares, will be strengthened to ensure equitable water distribution and sustainable resource management.

6.3.4 Governance and Ecosystem Coordination

Governance and Ecosystem Coordination represents a comprehensive investment in institutional strengthening and programme management. Social Capital Development totalling ₹4.50 crores net investment forms the backbone of agroecological transformation, recognising that technical interventions alone cannot succeed without strong community institutions and enhanced capacities. Capacity building programmes for farmers at ₹84 lakhs recurring, community cadre expenses at ₹1.15 crores covering honorarium, incentives, capacity building, and exposure visits, entrepreneur development at ₹1.00 crore, and nutrition education interventions at ₹1.51 crores are entirely funded through net investment requirements, reflecting their foundational importance.

The investment in nutrition education directly addresses critical malnutrition indicators documented in the 2022 District Nutrition Profile, with 72% anaemia among non-pregnant women, 39% underweight women, 32% child stunting affecting 32,088 children, and 19% wasting affecting 13,995 children under 5 years. By promoting production and consumption of nutritious traditional foods like finger millet, little millet, pulses, and indigenous vegetables, these interventions link agricultural transformation with health outcomes.

Strengthening of Gram Panchayats at ₹10 lakhs annually, fully government funded, recognises the critical role of local governance in landscape transformation, particularly important given the historical isolation and limited government presence until recent years.

Ecosystem Coordination, totalling ₹27.9 crores net investment, funds the operational infrastructure necessary for landscape-level implementation. The anchor organisation costs annually support field teams, monitoring systems, and coordination mechanisms, essential given the challenging terrain where some villages remain 50 to 80 km from basic services.

This coordination layer, entirely requiring net investment, represents a significant allocation given the complexity of transforming a 570 sq km landscape with 62,159 people across 287 villages while coordinating multiple departments, including Agriculture, Forest, Animal Husbandry, Watershed, ITDA, community institutions like SHGs, FPOs, Pani Panchayats, Vana Sangrakshyana Samitees, and financing sources. The MEL component ensures rigorous documentation of this pioneering tribal agroecology transformation for replication elsewhere in the Eastern Ghats.

6.4 Implementation Phasing and Risk Mitigation

The implementation strategy balances the urgency of addressing malnutrition (72% anaemia among non-pregnant women, 32% child stunting, 19% wasting per 2022 District Nutrition Profile) and water scarcity with the reality of institutional capacity constraints and the need for learning and adaptation. The total net investment of ₹155.43 crores employs a diverse financing mix: ₹107.89 crores in grants (69.4%), ₹10.49 crores in returnable grants (6.7%), ₹8.39 crores in results-based financing (5.4%), ₹28.67 crores in debt (18.4%), with ₹3.40 crores in guarantees and ₹3.33 crores in interest subvention to de-risk lending and borrowing.

The financing architecture reflects the nature of investments across sectors. Social interventions including landscape level programs (₹7.05 crores grants, ₹1.39 crores RBF), local cadre and entrepreneurs (₹39.12 crores grants, ₹20 lakhs returnable grants), and ecosystem coordination including CSO costs, access to markets, access to finance, MEAL, and CAT coordination (₹34.56 crores entirely in grants) are predominantly grant funded, recognizing their foundational and public good nature.

Productive sector investments employ blended finance to build bankability. Crops (₹12.12 crores grants, ₹2.00 crores RBF, ₹26.64 crores debt with ₹1.45 crores guarantees and interest subvention) demonstrate the highest debt proportion, reflecting shorter payback periods and proven market demand. Animal husbandry (₹5.96 crores grants, ₹40.54 lakhs returnable grants, ₹2.39 crores RBF, ₹11.60 crores debt with ₹3.48 crores guarantees and ₹3.48 crores interest subvention) uses substantial blended finance given livestock's quick returns. Agroforestry (₹2.01 crores grants, ₹33.16 lakhs returnable grants, ₹4.42 crores debt with ₹1.33 crores guarantees and interest subvention) balances long gestation periods with community ownership, while horticulture (₹5.15 crores grants, ₹1.03 crores returnable grants, ₹30 lakhs RBF, ₹11.15 crores debt with ₹3.35 crores guarantees and interest subvention) supports kitchen gardens and fruit tree plantations.

Natural resource management (₹2.24 crores grants, ₹51.34 lakhs returnable grants, ₹27.08 lakhs RBF, ₹6.85 crores debt with ₹2.05 crores guarantees and interest subvention) combines public investment with community co-financing for lift irrigation, ring wells, and soil water conservation, while infrastructure development (₹47.41 lakhs grants, ₹59.27 lakhs returnable grants, ₹15.80 lakhs RBF, ₹3.95 crores debt with ₹1.19 crores guarantees and interest subvention) prepares processing centres and warehouses for eventual commercial viability. Markets (₹11.14 crores with ₹7.41 crores returnable grants) establish revolving funds for Bhoomgaadi FPC and value chain development.

Risk mitigation is embedded through multiple mechanisms: (1) diversified financing sources reducing dependence on any single channel; (2) guarantee mechanisms and interest subventions (totalling ₹6.73 crores) reducing lender and borrower risk in a landscape with limited formal credit history; (3) strong emphasis on community institutions including Pani Panchayats (76 covering 1,520 hectares), SHGs (1,059 women's SHGs), Bhoomgaadi Organic FPC (3,000 farmers), and Vana Sangrakshyana Samitees ensuring local ownership beyond project life; and (4) strategic convergence with ongoing government schemes including PKVY (500 hectares organic), Large Area Certification (110 villages certified), MGNREGA (10,000 to 11,000 job cards), National Livestock Mission, PMKSY, and the Godhan Nyay Yojana legacy providing ongoing support.

The investment plan positions Dantewada for transformation from a historically isolated, Maoist affected, subsistence based landscape to a model of tribal agroecological development in India's Eastern Ghats region that can achieve food security, nutritional improvement, livelihood diversification, and ecological restoration through carefully structured, community owned investments that respect cultural heritage while building economic resilience across a 570 sq. km landscape with 62,159 people across 287 villages.

CHAPTER 7

Potential Impact of Interventions

It is possible to connect the outcomes of interventions to their impacts on key focus areas relevant to agroecology, using multiple frameworks. At this stage, there is insufficient data to quantify the extent of the effects of these interventions using different frameworks. In the following sections, efforts have been made to connect the potential impacts of interventions, either in qualitative terms or in rough, directional estimates.

7.1. Interventions and Agroecological Principles

Table 7.1 presents the assessment of how each of the thirteen agroecological principles is currently reflected in the landscape, using a scoring scale of 0 to 4. These scores draw on discussions held through the TAPE tool in selected villages and are refined through the judgment of the anchor organisation based on its field experience. The accompanying rationale explains the basis for each current score.

For each principle, the table also identifies the interventions proposed in the landscape that are expected to strengthen its expression in practice. These interventions indicate pathways for strengthening the integration of each principle into farm systems and the broader food system.

Scoring Criteria - Scores to be given according to the following scale of integration/presence: 0 (Non-existent) - 1 (Very Low) - 2 (Low) - 3 (High) - 4 (Very High)				
S. No.	**Agroecological Principles**	**Current Assessment of the Landscape (Score based on TAPE Assessment)**	**Rationale for the current score**	**Interventions that potentially improve the integration of the agroecology principle**
1	**Recycling** - Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.	2	Basic recycling practices are present, such as leaving crop residues like paddy straw in the field to decompose or using them as animal feed. However, active efforts to close nutrient and biomass cycles are limited, and systematic composting or integration of waste streams is not visible. The absence of water harvesting structures or water-saving methods also points to low resource cycling, particularly in water management. Overall, recycling practices remain minimal and unstructured.	Setting up of Bio Resource Centre (BRC) for bio-inputs Establishment of composting units (NADEP COMPOST TANK) Soil improvement through green manuring Promotion of second and third cropping cycles Construction of Low-Cost Housing for Cattle Installation of Bio Gas Units Additional Soil and Water Conservation (SWC) interventions
2	**Input reduction** - Reduce or eliminate dependency on purchased inputs and increase self-sufficiency.	3	Across the Dantewada landscape, most farmers exhibit a strong reliance on internal and locally available resources for both crop cultivation and livestock rearing. During the Kharif season, practices such as the use of saved seeds, preparation of farmyard manure, and household-level bio-inputs (e.g., Jeevamrit, dung-based formulations) are widespread. Chemical fertilisers and pesticides are rarely used, and even where present, their use is minimal and restricted to a few households. In livestock systems, farmers largely rear local breeds using farm residues and do not depend on external veterinary services or commercial feed. Pest and disease management also relies on traditional, self-prepared solutions using plants like neem and salfi. However, limited instances of input purchase are observed — such as vegetable seed procurement during the Rabi season by some farmers — and water-saving or harvesting structures are largely absent.	Seed-related interventions Popularising Paddy Sowing practices (SRI, Line Transplanting & DSR) Setting up of Bio Resource Centre (BRC) for bio-inputs Establishment of composting units (NADEP COMPOST TANK) Organic certification of Dantewada block - Large Area Certification & Third Party Organic Certification Soil improvement through green manuring Installation of Bio Gas Units Improved Breed Management for Goats Establishing Mother Unit (hatchery) for indigenous poultry Crop Diversity Block- Conservation of Traditional Seed Varieties
3	**Soil health** - Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and	2	While most farmers avoid synthetic fertilizers and rely on organic inputs like farmyard manure, compost, and Jeevamrit, practices that actively build or protect soil health—such as crop rotation, intercropping with legumes, or cover cropping—are largely absent. Dominant paddy monocropping across land types, combined with heavy rains and exposed soils, contributes to erosion and limits biological enrichment. Soil-friendly input use exists, but broader practices to enhance soil functioning remain weak.	Popularising Paddy Sowing practices (SRI, Line Transplanting & DSR) Setting up of Bio Resource Centre (BRC) for bio-inputs Establishment of composting units (NADEP COMPOST TANK) Setting up of Custom Hiring Centre (CHC) Organic certification of Dantewada block - Large Area Certification & Third Party Organic Certification Soil improvement through green manuring Promotion of second and third cropping cycles Plantation of Mahua Trees and Provision of Net for mahua

	enhancing soil biological activity.			trees Forest area regeneration/Agroforestry in CFR and IFR land Ensuring the availability of water in kitchen gardens Installation of Bio Gas Units Improved Goat Rearing and Management Additional Soil and Water Conservation (SWC) interventions Micro-irrigation interventions Plantation of fruit-bearing trees in upland areas
4	**Animal health** - Ensure animal health and welfare.	1	Livestock often face challenges related to hunger, thirst, and stress, particularly during the Rabi and summer seasons when they are left to graze freely across fields. Limited access to government's veterinary services, irregular vaccination, and poor disease identification contribute to recurring health issues and increased mortality among animals, both within households and in open grazing areas. While Pashu Sakhis are present, their reach and capacity remain insufficient to address these systemic issues.	Construction of Low-Cost Housing for Cattle Improved Goat Rearing and Management Improved Breed Management for Goats Promotion of Back Yard Poultry (BYP) Development of biodiversity register
5	**Biodiversity** - Maintain and enhance diversity of species, functional diversity and genetic resources and thereby maintain overall agroecosystem biodiversity in time and space at field, farm and landscape scales.	2	While some on-farm biodiversity exists, such as cultivation of millets alongside paddy, rearing of multiple livestock species, and presence of diverse trees on homestead land, agrobiodiversity remains limited overall. The dominance of paddy monocropping and widespread fallowing during Rabi reduces crop diversity across seasons. Wild biodiversity use has also declined, with practices like tasar cocoon collection no longer followed. Overall, spatial and seasonal diversification is modest.	Seed-related interventions Organic certification of Dantewada block - Large Area Certification & Third Party Organic Certification Promotion of second and third cropping cycles Plantation of Mahua Trees and Provision of Net for mahua trees Forest area regeneration/Agroforestry in CFR and IFR land Vegetable cluster development Kitchen garden Improved Goat Rearing and Management Improved Breed Management for Goats Promotion of Back Yard Poultry (BYP) Establishing Mother Unit (hatchery) for indigenous poultry Fishery development Additional Soil and Water Conservation (SWC) interventions Micro-irrigation interventions Development of biodiversity register Crop Diversity Block- Conservation of Traditional Seed Varieties Plantation of fruit-bearing trees in upland areas
6	**Synergy** - Enhance positive ecological interaction, synergy, integration and complementarity amongst the	3	The Dantewada agroecosystem demonstrates a high degree of integration across crops, livestock, trees, and forests. Farmers feed cattle with paddy straw and prepare bio-inputs from dung and urine, linking livestock and soil health. Livestock graze across fallows and forest-adjacent pastures, forming silvopastoral systems. Trees are retained within farmlands and homesteads, and communities draw	Popularising Paddy Sowing practices (SRI, Line Transplanting & DSR) Establishment of composting units (NADEP COMPOST TANK) Soil improvement through green manuring Promotion of second and third cropping cycles Plantation of Mahua Trees and Provision of Net for mahua trees

	elements of agroecosystems (animals, crops, trees, soil and water).		on diverse forest resources. The agroecosystem is significantly connected with the surrounding landscape through the presence of trees, shrubs and open grazing pastures interspersed between crop plots. These ecological features act as compensation zones, supporting biodiversity, nutrient cycling, and soil health, and reinforcing the integration of natural and agricultural elements across the landscape.	Good Collection Practices (GCP) for NTFPs Forest area regeneration/Agroforestry in CFR and IFR land Kitchen gardens Construction of Low Cost Housing for Cattle Improved Goat Rearing and Management Promotion of Back Yard Poultry (BYP) Fishery development Additional Soil and Water Conservation (SWC) interventions Micro-irrigation interventions Plantation of Fruit bearing trees in upland areas
7	**Economic diversification** - Diversify on-farm incomes by ensuring that small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.	2	Farmers in the landscape draw on a mix of income sources including paddy, millets, vegetables, livestock, and NTFPs like mahua, tamarind, and mango products. Some households also engage in liquor production from forest produce and small-scale fish rearing. Livestock rearing includes a variety of species, and forest-linked incomes remain culturally embedded. A few youth earn income as Jaivik Karyakartas, providing agroecological services within their communities. However, most land lies fallow in Rabi, value addition is minimal, and structured market engagement is limited. While diversification exists, it remains modest in scale and reach.	Seed-related interventions Post-harvest Processing Interventions for major agri-produce (millets, pulses and oil) Establishing Warehouse Setting up of Custom Hiring Centre (CHC) Organic certification of Dantewada block - Large Area Certification & Third Party Organic Certification Promotion of second and third cropping cycles Plantation of Mahua Trees and Provision of Net for mahua trees Good Collection Practices (GCP) for NTFPs Improved tools for value addition of mango into amchur NTFP processing interventions (Drying Platform & Solar Dryers) Forest area regeneration/Agroforestry in CFR and IFR land Market development for NTFPs Vegetable cluster development Improved Goat Rearing and Management Improved Breed Management for Goats Promotion of Back Yard Poultry (BYP) Establishing Mother Unit (hatchery) for indigenous poultry Fishery development Micro-irrigation interventions Strengthening Local Markets (Weekly haat bazaar) Promotion of enterprise and entrepreneurship Promotion of agrotourism
8	**Co-creation of knowledge** - Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation,	1	Platforms like Bhoomgaadi FPC, Jaivik Karyakartas, and CG-SRLM's CRPs such as Krishi Sakhi and Pashu Sakhi exist to provide extension services and knowledge sharing through household visits and group meetings. These efforts focus on sustainable and organic practices linked to sustainable agriculture or Large Area Certification. However, agroecology as a formal concept remains largely unknown among producers, with limited structured dissemination. Traditional practices continue based on	Seed-related interventions Popularising Paddy Sowing practices (SRI, Line Transplanting & DSR) Setting up of Bio Resource Centre (BRC) for bio-inputs Establishment of composting units (NADEP COMPOST TANK) Post-harvest Processing Interventions for major agri-produce (millets, pulses and oil) Setting up of Custom Hiring Centre (CHC) Organic certification of Dantewada block - Large Area

	especially through farmer-to-farmer exchange.		generational knowledge, not scientific framing, and active pursuit of agroecological methods remains low. Gender-specific outreach is minimal, and women—despite their key role in agriculture—are often excluded from learning opportunities. Existing mechanisms are underutilised and not fully effective in enabling widespread and equitable knowledge exchange.	Certification & Third Party Organic Certification Digital Weather-Based Crop Advisory Services Soil improvement through green manuring Promotion of second and third cropping cycles Plantation of Mahua Trees and Provision of Net for mahua trees Good Collection Practices (GCP) for NTFPs Improved tools for value addition of mango into amchur Forest area regeneration/Agroforestry in CFR and IFR land Improved Goat Rearing and Management Improved Breed Management for Goats Promotion of Back Yard Poultry (BYP) Establishing Mother Unit (hatchery) for indigenous poultry Fishery development Development of biodiversity register Crop Diversity Block- Conservation of Traditional Seed Varieties Integrating agroecological interventions in GPDP Inducting new Community Cadre & Capacity Building of Community Cadre (existing and new) to facilitate implementation of intervention Building Capacities of Farmer Households Orientation of Government Line Departments and Relevant Agencies on Agroecological Practices Introducing agroecology in school curriculums Creation of ICT platforms Promotion of agroecology-oriented social events Nutrition-related interventions
9	**Social values and diets** - Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets	3	Traditional food systems remain central to household consumption, with meals prepared using locally grown crops like traditional paddy varieties, millets, and pulses. A wide range of uncultivated foods—such as wild mushrooms, leafy greens, and fruits—are collected from forest commons and contribute to seasonal diets. Food preparation practices are deeply rooted in cultural knowledge, with traditional cooking methods and recipes passed down generations. While dietary diversity is limited, and nutrition-related practices are not consistently followed, the community shows strong reliance on indigenous food resources and minimal consumption of processed foods, reflecting high cultural integrity in diets.	Seed-related interventions Post-harvest Processing Interventions for major agri-produce (millets, pulses and oil) Promotion of second and third cropping cycles Plantation of Mahua Trees and Provision of Net for mahua trees Good Collection Practices (GCP) for NTFPs Improved tools for value addition of mango into amchur NTFP processing interventions (Drying Platform & Solar Dryers) Vegetable cluster development Kitchen gardens Improved Goat Rearing and Management Improved Breed Management for Goats Promotion of Back Yard Poultry (BYP) Establishing Mother Unit (hatchery) for indigenous poultry Fishery development

				Building Capacities of Farmer Households Strengthening Local Markets (Weekly haat bazaar) Promotion of agrotourism Introducing agroecology in school curriculums Promotion of agroecology-oriented social events Nutrition-related interventions
10	**Fairness** - Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.	2	Small-scale producers in Dantewada meet most household food needs through own cultivation and collection of uncultivated forest produce. However, surplus production generates minimal cash income, typically limited to essential items like salt, oil, and clothing. Observable signs of wealth creation, such as asset accumulation or savings, are sparse, and debt levels remain insufficiently understood, though small SHG or informal loans are occasionally taken. Livelihoods are largely informal and family-based, with limited use of hired labour—when employed, it is under unregulated arrangements lacking fair wages or labour protections. While access to formal credit systems exists, many—particularly women—face challenges in navigating procedural requirements. Insurance and other financial safety nets are virtually absent, limiting resilience to shocks. Despite these constraints, community solidarity remains strong, and a sense of dignity in agricultural livelihoods is sustained through non-monetary support systems. Notably, youth are actively participating in agroecological work through roles such as Jaivik Karyakarta, Krishi Sakhi, and Pashu Sakhi, representing early steps towards fairer and more inclusive engagement in the food system. However, formal mechanisms to ensure fair trade practices, equitable employment, and recognition or protection of traditional knowledge are not in place.	Seed-related interventions Post-harvest Processing Interventions for major agri-produce (millets, pulses and oil) Establishing Warehouse Setting up of Custom Hiring Centre (CHC) Organic certification of Dantewada block - Large Area Certification & Third Party Organic Certification Strengthening of FPOs for market development for major crops marketed outside the landscape NTFP processing interventions (Drying Platform & Solar Dryers) Market development for NTFPs Vegetable cluster development Improved Goat Rearing and Management Improved Breed Management for Goats Promotion of Back Yard Poultry (BYP) Fishery development Additional Soil and Water Conservation (SWC) interventions Integrating agroecological interventions in GPDP Building access to entitlements & convergence platforms - Institutional strengthening and awareness building Inducting new Community Cadre & Capacity Building of Community Cadre (existing and new) to facilitate implementation of intervention Building Capacities of Farmer Households Strengthening Local Markets (Weekly haat bazaar) Promotion of enterprise and entrepreneurship Promotion of agrotourism
11	**Connectivity** - Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food	2	Agricultural, horticultural, and forest produce is largely sold in nearby weekly haat bazaars or through government and local institutions like LAMPS and Bhoomgaadi FPC. These channels reflect a degree of physical proximity between producers and markets, but direct connections between producers and end consumers remain limited, with local traders and intermediaries dominating transactions. While FPOs and SHGs are present, their market-facing capacities are still emerging, and local value addition or processing is minimal, weakening the potential for embedded local food systems. Exchange among producers is rare, and women's	Post-harvest Processing Interventions for major agri-produce (millets, pulses and oil) Establishing Warehouse Strengthening of FPOs for market development for major crops marketed outside the landscape Plantation of Mahua Trees and Provision of Net for mahua trees Good Collection Practices (GCP) for NTFPs Improved tools for value addition of mango into amchur NTFP processing interventions (Drying Platform & Solar Dryers)

	systems into local economies.		participation in marketing networks is also limited. Overall, the system shows some grounding in the local economy but lacks the dense webs of reciprocity, trust, and fair, direct relationships between producers and consumers that would indicate high connectivity.	Market development for NTFPs Vegetable cluster development Improved Goat Rearing and Management Improved Breed Management for Goats Promotion of Back Yard Poultry (BYP) Establishing Mother Unit (hatchery) for indigenous poultry Fishery development Strengthening Local Markets (Weekly haat bazaar) Promotion of enterprise and entrepreneurship Promotion of agrotourism
12	**Land and natural resource governance** - Strengthen institutional arrangements to improve, including the recognition and support of family farmers, smallholders and peasant food producers as sustainable managers of natural and genetic resources.	2	Farmers predominantly rely on self-saved or community-exchanged seeds and rear indigenous breeds, reflecting strong traditions of resource stewardship. However, their rights as managers of natural and genetic resources are not institutionally secured or consistently supported. Governance platforms like Forest Rights Committees and local bodies (e.g. Van Dhan Samiti, Van Suraksha Samiti) exist in form but remain weak in function. Producers, especially women, have limited voice and representation in decision-making processes, and mechanisms to uphold their access and control over land and resources are underdeveloped. Challenges in accessing markets, infrastructure, and capacity-building opportunities further constrain their role as autonomous resource managers. While community knowledge systems are present, the institutional environment does not yet enable robust, equitable governance of land and natural resources.	Seed-related interventions Organic certification of Dantewada block - Large Area Certification & Third Party Organic Certification Plantation of Mahua Trees and Provision of Net for mahua trees Good Collection Practices (GCP) for NTFPs Forest area regeneration/Agroforestry in CFR and IFR land Improved Goat Rearing and Management Improved Breed Management for Goats Establishing Mother Unit (hatchery) for indigenous poultry Fishery development Development of biodiversity register Crop Diversity Block- Conservation of Traditional Seed Varieties Integrating agroecological interventions in GPDP Building access to entitlements & convergence platforms - Institutional strengthening and awareness building Building Capacities of Farmer Households Orientation of Government Line Departments and Relevant Agencies on Agroecological Practices
13	**Participation** - Encourage social organisation and greater participation in decision-making by food producers and consumers to support decentralised governance and local adaptive management of agricultural and food systems.	2	While Dantewada demonstrates strong cultural identity and embedded indigenous knowledge systems, the extent and equity of participation in decentralised governance remain limited. Platforms like Bhoomgaadi FPC, Jaivik Karyakartas, and CG-SRLM's CRPs exist for extension and knowledge sharing, yet participation—especially by women—is not uniformly ensured. Women tend to engage more through SHGs, which are often under-resourced and not fully functional, limiting their influence in broader decision-making. Although there are efforts toward inclusion (e.g., CSOs like NIRMAAN and Bhoomgaadi promoting gender-equal access), systemic barriers such as traditional gender roles, lack of access to resources, and limited capacity-building	Seed-related interventions Setting up of Bio Resource Centre (BRC) for bio-inputs Post-harvest Processing Interventions for major agri produce (millets, pulses and oil) Establishing Warehouse Setting up of Custom Hiring Centre (CHC) Organic certification of Dantewada block - Large Area Certification & Third Party Organic Certification Digital Weather-Based Crop Advisory Services Forest area regeneration/Agroforestry in CFR and IFR land Development of biodiversity register Integrating agroecological interventions in GPDP Building access to entitlements & convergence platforms - Institutional strengthening and awareness building Inducting new Community Cadre & Capacity Building of

		persist. Women contribute significantly to household and livelihood decisions but seldom hold final authority, and their participation in larger governance or institutional spaces remains constrained. Even though some progress is visible—such as the District Collector's decision to retain paddy milling locally, prompted by producer engagement—these instances are not reflective of widespread participatory governance. On the whole, mechanisms are underutilized, and producers' voices—particularly women's—are not sufficiently embedded in decision-making structures.	Community Cadre (existing and new) to facilitate implementation of intervention Building Capacities of Farmer Households Orientation of Government Line Departments and Relevant Agencies on Agroecological Practices Strengthening Local Markets (Weekly haat bazaar) Promotion of agroecology-oriented social events

Table 7.1 – Integration of the 13 principles of agroecology

7.2. Response to the Climate Crisis

The response to the climate crisis can be seen as measures taken to mitigate, adapt, and build resilience. **Table 7.2** outlines the potential impacts of the intervention outcomes. E.g., Carbon sequestration and reduced emissions achieved through some interventions lead to climate change mitigation. An effort has been made to connect various interventions and their outputs to these desirable outcomes. At this stage, quantifying the extent of the interventions' effects is outside the current scope due to a lack of relevant data.

This framework is an adapted version of the approach and principles outlined in the FAO's 2020 report, 'The potential of agroecology to build climate-resilient livelihoods and food systems' (FAO, 2020). It draws on the core elements of agroecology, as well as the pathways and indicators for resilience identified in the FAO study. It contextualises them for block-level agroecological planning and intervention assessment.

Interventions Listed	Output	Outcomes										
		Mitigation		Adaptation			Resilience					
		Carbon Sequestration	Reduced Emissions	Diversification	Soil & Water Management	Knowledge & Capacity	Social Resilience	Ecological Resilience	Economic Resilience	Health & Nutrition Resilience	Traditional Knowledge	Reflective Learning
Establishing Community Seed Bank (CSB)- Local (desi) varieties of Millets (Kodo, Kutki, and Finger Millet (Ragi)), Oilseeds and Pulses	Seed and traditional crop conservation and improved cultural capital	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y
Establishing Commercial Seed Bank (CISB) production and sale model of Traditional Seed Varieties (Paddy, Vegetables)		Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y
Crop Diversity Block- Conservation of Traditional Seed Varieties (all crops- paddy, veg, oilseeds, pulses and millets)		Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y
Improved seed treatment practices	Improved practices, lower fertiliser/	N	Y	N	N	Y	Y	Y	Y	N	Y	Y

Interventions Listed	Output	Outcomes										
		Mitigation		Adaptation			Resilience					
		Carbon Sequestration	Reduced Emissions	Diversification	Soil & Water Management	Knowledge & Capacity	Social Resilience	Ecological Resilience	Economic Resilience	Health & Nutrition Resilience	Traditional Knowledge	Reflective Learning
Improved Sowing practices	pesticide use, and renewable energy adoption	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Setting up the Bio Resource Centre (BRC) for bio-inputs		N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Establishment of NADEP composting unit		N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Green Manuring	It acts as a cover crop and acts as organic matter in the soil, leading to improvement in soil organic carbon	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y
Providing Millet Mixie	Access to improved inputs and processing infra for value addition	N	N	N	N	N	N	N	Y	Y	N	N
Establishing a Common Processing Centre		N	N	Y	N	Y	Y	N	Y	Y	N	Y
Establishing Warehouse		N	N	N	N	Y	Y	N	Y	Y	N	Y
Setting up the Custom Hiring Centre (CHC) along with the Common Collection Centre		N	Y	Y	N	Y	Y	N	Y	N	N	Y
Ring Wells		N	N	N	Y	N	Y	Y	Y	Y	N	Y

Interventions Listed	Output	Outcomes										
		Mitigation		Adaptation			Resilience					
		Carbon Sequestration	Reduced Emissions	Diversification	Soil & Water Management	Knowledge & Capacity	Social Resilience	Ecological Resilience	Economic Resilience	Health & Nutrition Resilience	Traditional Knowledge	Reflective Learning
Lift Irrigation	Efficient use of water for irrigation leads to water conservation in the landscape	N	N	N	Y	N	Y	Y	Y	Y	N	Y
Portable Sprinkler		N	N	N	Y	N	Y	N	Y	Y	N	Y
Drip Irrigation		N	N	N	Y	N	Y	N	Y	Y	N	Y
Engaging identified AgTech for providing weather-based advisory, etc. (annual subscription cost)	Access to information and advisory services leading to better adaptation practices	N	N	N	Y	Y	N	N	N	N	N	Y
Plantation of Mahua trees in agricultural land (Revenue/ IFR)	Increased tree cover, soil organic matter, and agroforestry	Y	N	Y	N	Y	Y	Y	Y	Y	N	Y
Forest area regeneration in the CFR land		Y	N	Y	N	Y	Y	Y	Y	Y	N	Y
Agroforestry in IFR land		Y	N	Y	N	Y	Y	Y	Y	Y	N	Y
Improved tools for the value addition of local mango	Improved collection and processing of forest products	N	N	N	N	Y	Y	Y	Y	Y	Y	Y
Provision of Net for Mahua Trees		N	N	N	Y	Y	Y	Y	Y	Y	Y	Y

Interventions Listed	Output	Outcomes										
		Mitigation		Adaptation			Resilience					
		Carbon Sequestration	Reduced Emissions	Diversification	Soil & Water Management	Knowledge & Capacity	Social Resilience	Ecological Resilience	Economic Resilience	Health & Nutrition Resilience	Traditional Knowledge	Reflective Learning
Construction of Drying Platform		N	N	N	N	Y	Y	N	Y	Y	Y	Y
Installation of Solar Dryers		N	N	N	N	Y	Y	N	Y	Y	Y	Y
Vegetable Cluster Development	Crop/livestock/variety diversity increase, intercropping practices with increased income	N	N	Y	N	Y	Y	N	Y	Y	N	Y
Kitchen Garden		N	N	Y	N	Y	Y	Y	Y	Y	Y	Y
Plantation of fruit-bearing trees in upland areas		Y	N	Y	N	Y	Y	Y	Y	Y	N	Y
Construction of Low-Cost Housing for Cattle	Crop/livestock/variety diversity increase, intercropping practices with increased income	N	Y	Y	N	Y	Y	Y	Y	N	Y	Y
Installation of Bio Gas Units		N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Improved Goat Rearing and Management		N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Improved Breed Management for Goats		N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Promotion of Back Yard Desi Poultry (BYDP)		N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Establishing Parent Unit for indigenous (desi) poultry		N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y

Interventions Listed	Output	Outcomes										
		Mitigation		Adaptation			Resilience					
		Carbon Sequestration	Reduced Emissions	Diversification	Soil & Water Management	Knowledge & Capacity	Social Resilience	Ecological Resilience	Economic Resilience	Health & Nutrition Resilience	Traditional Knowledge	Reflective Learning
Fishery in water tanks/farm ponds		N	N	Y	Y	Y	Y	N	Y	Y	Y	Y
Setting up homestays as part of Agrotourism	Secured biodiversity, Better incomes	N	N	Y	N	Y	Y	N	Y	N	Y	Y
Strengthening of existing weekly haats as hubs to promote agroecology-centric production	Improved social resilience	N	N	Y	N	Y	Y	Y	Y	Y	N	Y
Soil Water Conservation (SWC) interventions	Reduced Soil Erosion, Water availability, consumption and quality	N	N	N	Y	Y	Y	Y	Y	N	Y	Y

Table 7.2 – Interventions and Their Contribution to Agroecology Outcomes

7.3. Increasing Incomes

Income estimates have many facets. For example, the production of commodities within the landscape, such as vegetables, will reduce imports from outside the landscape. On the other hand, the sale of commodities produced within the landscape and sold outside it will increase income. Increased production and/or productivity does not necessarily lead to increased incomes. Some interventions in the landscape aim to strengthen the landscape's self-reliance by increasing local production and consumption of items currently imported.

The tables below indicate that increased production, productivity, an enhanced resource base, and higher cropping intensity, among other factors, lead to higher outputs and incomes, under certain assumptions. These estimates have been made at the landscape level, rather than the household level.

Agriculture

S. No.	Crop/ Commodity Name	Output/ Yield Unit	Resource-based unit	Current Output or Yield per resource base unit (in q/acre)	Current Resource Base (acres under crop)	Resource base maintains status quo (acre)	Resource base brought under proposed interventions (acre)	Average State Output or Yield (q/acre)	Average National Output or Yield (q/acre)	New Output/ Yield Post-Intervention (q/acre)	Total quantity of commodity produced (current) in quintal	Total quantity of commodity available for sale (current) in quintal	Total additional quantity of commodity produced (post-intervention) in quintal	Total quantity of commodity available for sale (post-intervention) in quintal	Percentage change in the quantity of the commodity sold	MSP-Price per unit (Rs/q)	Current Income (Rs.)	Post intervention Income (Rs.)	Additional Income (Rs.)
1	Paddy	q per acre	acre	6.5	44460	22230	22230	7.15	9.78	7.8	288990	115596	28899	138715.2	20.0	3100	358347600	430017120	71669520
2	Kutki	q per acre	acre	2	5434	2717	2717	4.86	6.07	2.3	10868	9781.2	815.1	10514.8	7.5	3500	34234200	36801765	2567565
3	Kodo	q per acre	acre	3	494	247	247	3.44	4.6	3.45	1482	1333.8	111.15	1433.8	7.5	3200	4268160	4588272	320112
4	Amchur (mango)	q per annum	hh	3	8206.8	1641.36	6565.44	NA	NA	3.15	24620.4	23389.38	984.816	24325.0	4.0	8000	187115040	233519569.9	46404529.92

Table 7.3 – Agriculture – Crop-wise Production and Income Projections

Livestock

S. No.	Crop/ Commodity Name	Output/ Yield Unit	Resource-based unit	Current Output or Yield per resource base unit (in animals per hh)	Current Resource Base (animals)	Resource base maintains status quo (acre)	Resource base brought under proposed interventions (acre)	Average State Output or Yield (q/acre)	Average National Output or Yield (q/acre)	New Output/ Yield Post-Intervention (no. of animals per hh)	Total quantity of commodity produced (current) in animals	Total quantity of commodity available for sale (current) in animals	Total additional quantity of the commodity produced (post-intervention) in animals	Total quantity of the commodity available for sale (post-intervention) in animals	Percentage change in the quantity of the commodity sold	Market Price per unit (Rs./animal)	Current Income (Rs.)	Post intervention Income (Rs.)	Additional Income (Rs.)
1	Goat	no. of animals per annum	hh	3	13678	7565	6113	NA	NA	5	41034	20517	12226	26630.0	29.8	7000	143619000	186410000	42791000
2	Indigenous Poultry Birds	-do-	Hh	5	13678	7565	6113	NA	NA	10	68390	34195	30565	49477.5	44.7	500	17097500	24738750	7641250

Table 7.4 – Livestock – Production Enhancement and Income Impact

Net Mahua Trees

S. No.	Crop/ Commodity Name	Output/ Yield Unit	Resource-based unit	Current Output or Yield per resource base unit (in plant with mahua net per hh)	Current Resource Base (hh OR tree)	Resource base maintains status quo (hh OR tree)	Resource base brought under proposed interventions (hh OR tree)	Average Yield (q/tree)	Average price (q/tree in INR)	New Output/ Yield Post-Intervention (no. of hh with mahua net)	Total quantity of commodity produced (current) in q	Total quantity of commodity available for sale (current) in q	Total additional quantity of commodity produced post-intervention (in q)	Total quantity of the commodity available for sale (post-intervention) in animals	Percentage change in the quantity of the commodity sold	Market Price of food-grade Mahua (Rs/q)	Current Income (Rs.)	Post intervention Income (Rs.)	Additional Income (Rs.)
1	Mahua net	No. of hhs	hh	1	13678	13678	3420	1	3500	3420	3419.5	3419.5		1709.75		5200	11968250	14874825	2906575

Table 7.5 – Mahua Trees – Production and Income Potential Assessment

Other aspects/ interventions that would have an impact on income

1. Most agriculture and livestock interventions are expected to improve productivity or provide additional resources to farmers, and income has been estimated accordingly.
2. Some interventions—such as lift irrigation, ring wells, or soil and water conservation—may enable the cultivation of additional land for second or third-crop cultivation. However, these improvements will occur gradually, with varying crops and yields, and are therefore not quantified here.
3. Similarly, plantation activities on common or individual lands may enhance household income once the plants start fruiting. Since the benefits will materialise over a longer timeline, they have not been included in the current income calculations.

7.4. Enhanced Biodiversity

As outlined in Chapter 5, Section 5.1, the agrobiodiversity plan will be developed by Technical Experts during the implementation phase.

#	Interventions
1	Establishing Community Seed Bank (CSB)- Local (desi) varieties of Millets (Kodo, Kutki, and Finger Millet (Ragi)), Oilseeds and Pulses
2	Establishing Commercial Seed Bank (CISB) production and sale model of Traditional Seed Varieties (Paddy, Vegetables)
3	Crop Diversity Block- Conservation of Traditional Seed Varieties (all crops- paddy, veg, oilseeds, pulses and millets)
4	Plantation of Mahua trees in agricultural land (Revenue/ IFR)
5	Restoration of the CFR land
6	Agroforestry in IFR land
7	Kitchen Garden
8	Plantation of fruit-bearing trees in upland areas
9	Construction of Low-Cost Housing for Cattle (indigenous breed)
10	Improved Goat (indigenous breed) Rearing and Management
11	Promotion of Back Yard Desi Poultry (BYDP)
12	Establishing Parent Unit for indigenous (desi) poultry
13	Fishery in water tanks
14	Supporting Fishery in Farm Ponds
15	Setting up homestays as part of Agro Tourism
16	Strengthening of existing weekly haats as hubs to promote agroecology-centric production
17	Soil Water Conservation (SWC) interventions

7.5. Improving the Quality of Natural Resources

The following interventions are designed to enhance the natural resources, specifically land, water, forests, and commons.

#	Interventions
1	Green Manuring
2	Plantation of Mahua trees in agricultural land (Revenue/ IFR)
3	Provision of Net for Mahua Trees
4	Installation of Solar Dryers
5	Forest area regeneration in the CFR land
6	Agroforestry in IFR land
7	Kitchen Garden
8	Plantation of fruit-bearing trees in upland areas
9	Installation of Bio Gas Units
10	Fishery in water tanks
11	Fishery in Farm Ponds

#	Interventions
12	Strengthening of existing weekly haats as hubs to promote agroecology-centric production
13	Soil Water Conservation (SWC) interventions

The following interventions are intended to rebuild or repair prior landscape work related to the management of natural resources.

#	Interventions
1	Setting up of Bio Resource Centre (BRC) for bio-inputs (including repurposing of Gauthan infrastructure)
2	Forest area regeneration in the CFR land
3	Agroforestry in IFR land
4	Kitchen Garden
5	Plantation of fruit-bearing trees in upland areas
6	Soil Water Conservation (SWC) interventions

The following interventions aim to manage demand for natural resources, primarily water.

#	Interventions
1	Lift Irrigation
2	Portable Sprinkler
3	Drip Irrigation
4	Ring Wells
5	Soil Water Conservation (SWC) interventions

7.6. Enhancing Food and Nutrition Security

The diet quality observed in Dantewada reflect a food system dominated by grains and pulses, with commendably low reliance on ultra-processed foods. However, diversity across nutrient-dense food groups, particularly dairy, eggs, nuts and seeds, and vitamin A-rich fruits and vegetables, remains limited, and persistently low fruit intake and minimal animal-source food consumption highlight the risk of ongoing micronutrient deficiencies. Addressing these gaps requires strategies that preserve the healthy food system and enhance dietary diversity to meet nutritional needs.

The goal of this project is to ensure local availability of all food groups, preferably grown locally. Efforts will also be made to revive traditional cooking and consumption practices, which are expected to enhance the bioavailability of nutrients in food. This will be accomplished through nutrition education interventions.

7.7. Ensuring Well-Being of Women Farmers, Small and Marginal Farmers

Efforts will be made to enrol women as members and directors in various community-based organisations (CBOs), such as cooperatives and Farmer Producer Companies (FPCs). The accompanying report on policy changes at the landscape level will outline further measures.

In most interventions, initial grants, in-kind support, and demonstration units will be made available to small and marginal farmers and landless labourers.

7.8. Sustainable Development Goals

The following table illustrates the output of different interventions and their connection to the Sustainable Development Goals.

	Note: 'Y' has been stated if the SDG is impacted, and 'N' has been indicated in case of no impact.													
	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
Domain/Sector-wise Interventions	No Poverty	Zero Hunger	Good Health and Well-being	Quality Education	Gender Equality	Clean Water and Sanitation	Affordable and Clean Energy	Decent Work and Economic Growth	Responsible Consumption and Production	Climate Action	Life Under Water	Life on Land	Peace, Justice & Strong Institutions	Partnership for the Goals
Crops														
Seed-related interventions	Y	Y	Y	Y	Y	N	N	Y	N	Y	N	N	N	Y
Popularising Paddy Sowing practices (SRI, Line Transplanting & DSR)	Y	Y	N	N	N	Y	N	N	Y	Y	N	N	N	N
Setting up of Bio Resource Centre (BRC) for bio-inputs	Y	Y	Y	Y	N	N	N	Y	Y	Y	N	N	N	N
Establishment of composting units (NADEP COMPOST TANK)	Y	Y	Y	N	Y	N	N	Y	Y	Y	N	N	N	N
Post-harvest Processing Interventions for major agri produce (millets, pulses and oil)	Y	Y	Y	N	Y	N	N	Y	Y	N	N	N	N	Y
Establishing Warehouse	Y	Y	N	N	N	N	N	Y	Y	N	N	N	Y	N
Setting up of Custom Hiring Centre (CHC)	Y	Y	N	N	Y	N	N	Y	N	N	N	Y	N	Y
Organic certification of Dantewada block - Large Area Certification & Third Party Organic Certification	Y	Y	Y	N	N	N	N	Y	N	Y	N	N	Y	Y
Digital Weather-Based Crop Advisory Services	N	N	N	N	N	N	N	N	N	Y	N	N	N	N
Green Manuring	N	Y	Y	N	N	N	N	Y	N	Y	N	Y	N	N
Strengthening of FPOs for market development for major	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	Y

crops marketted outside the landscape														
Promotion of second and third cropping cycles	Y	Y	N	N	N	Y	N	Y	N	Y	N	N	N	N
Agroforestry, Forest/Commons, NTFP														
Plantation of Mahua Trees and Provision of Net for mahua trees	Y	Y	N	N	Y	N	N	Y	Y	Y	N	Y	N	N
Good Collection Practices (GCP) for NTFPs	Y	Y	N	Y	N	N	N	Y	Y	N	N	Y	N	N
Improved tools for value addition of mango into amchur	Y	Y	N	N	Y	N	N	Y	Y	N	N	N	N	N
Construction of Drying Platform	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N
Installation of Solar Dryers	Y	Y	N	N	Y	N	Y	Y	Y	Y	N	N	N	N
Forest area regeneration in CFR land	Y	Y	N	N	N	N	N	Y	N	Y	N	Y	Y	N
Agroforestry in IFR land	Y	Y	N	N	N	N	N	Y	N	Y	N	Y	Y	N
Market development for NTFPs	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	Y
Horticulture											N			
Vegetable cluster development	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N
Ensuring availability of water in kitchen gardens	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N
Animal husbandry														
Construction of Low Cost Housing for Cattle	N	Y	N	N	N	N	N	N	Y	Y	N	N	N	N
Installation of Bio Gas Units	N	Y	Y	N	Y	N	Y	N	Y	Y	N	Y	N	N
Improved Goat Rearing and Management	Y	Y	N	Y	N	N	N	Y	Y	N	N	N	N	N
Improved Breed Management for Goats	Y	Y	N	N	N	N	N	N	N	Y	N	N	N	N
Promotion of Back Yard Poultry (BYP)	Y	Y	N	Y	N	N	N	Y	Y	N	N	N	N	N
Establishing Mother Unit (hatchery) for indigenous poultry	Y	Y	N	Y	N	N	N	Y	N	N	N	N	N	N

Fisheries														
Fishery development	**Y**	**Y**	N	N	N	**Y**	N	**Y**	N	N	**Y**	N	N	N
Natural Resource Management														
Additional Soil and Water Conservation (SWC) interventions	N	**Y**	N	N	N	**Y**	N	N	N	**Y**	N	**Y**	N	N
Micro-irrigation interventions (lift irrigation, ring wells)	N	**Y**	N	N	N	**Y**	N	**Y**	N	**Y**	N	N	N	N
Development of biodiversity register	N	N	N	**Y**	N	N	N	N	N	**Y**	**Y**	**Y**	N	**Y**
Biodiversity blocks for conservation of crop varieties	N	**Y**	N	**Y**	N	N	N	N	N	**Y**	**Y**	**Y**	N	**Y**
GPDP including MgNREGA														
Integrating agroecological interventions in GPDP	N	**Y**	N	**Y**	**Y**	**Y**	N	**Y**	N	**Y**	N	N	**Y**	**Y**
Institutions/Convergence of Govt Programmes														
Building access to entitlements & convergence platforms - Institutional strengthening and awareness building	N	N	N	N	N	N	N	N	N	N	N	N	**Y**	**Y**
Others														
Inducting new Community Cadre & Capacity Building	**Y**	**Y**	N	**Y**	N	N	N	**Y**	N	N	N	N	N	**Y**
Building Capacities of Farmer Households	N	**Y**	N	**Y**	N	N	N	N	N	N	N	N	N	**Y**
Orientation of Government Line Departments and Relevant Agencies on Agroecological Practices	N	**Y**	N	N	N	N	N	N	N	N	N	N	**Y**	**Y**
Strengthening Local Markets (Weekly haat bazaar)	N	**Y**	N	N	N	N	N	**Y**	**Y**	N	N	N	N	**Y**
~~*Buffer strip plantations*~~	N	N	N	N	N	N	N	N	N	**Y**	N	**Y**	N	N
Promotion of enterprise and entrepreneurship	N	**Y**	N	N	N	N	N	**Y**	N	N	N	N	N	N
Promotion of agrotourism	N	N	N	N	N	N	N	**Y**	N	N	N	N	N	N

Introducing agroecology in school curriculums	N	N	N	**Y**	N	N	N	N	N	N	N	N	N	N
Creation of ICT platforms	N	**Y**	N	N	N	N	N	N	N	N	N	N	N	**Y**
Promotion of agroecology-oriented social events	N	N	N	N	N	N	N	N	N	N	N	N	**Y**	**Y**
Nutrition-related Intervention	N	**Y**	**Y**	**Y**	**Y**	N	N	N	**Y**	N	N	N	**Y**	**Y**

Table 7.6 – Interventions and the Sustainable Development Goals

Annexures

Annexure 1: Performance of Minimum Support Price (MSP) Scheme for Minor Forest Produce

#	Name of MFP	Minimum Support Price as Govt. of India (Rs. per Kg.)	Incentive (Bonus) Wages given by State Govt. along with MSP Collection Rate (Rs. per Kg.)	Minimum Support Price + Incentive (Bonus) Wages (Rs. per Kg.)
1	Malkangani Seed (Dry)	100.00	--	100.00
2	Bibiding (Vaayvidang)	94.00	6.00	100.00
3	Kalmegh/Bhuineem (Dry)	35.00	--	35.00
4	Amla (Seedless) (Dry)	52.00	5.00	57.00
5	Rangeeni Lac/Chhili Lac (Dry)	200.00	20.00	220.00
6	Reetha Fruit (Dry)	14.00	1.00	15.00
7	Van Jeera Seed	70.00	7.00	63.00
8	Satavar Root (Dry)	107.00	7.00	100.00
9	Charota Seed	16.00	1.50	17.50
10	Honey	225.00	--	225.00
11	Nagarmotha (Dry)	30.00	3.00	33.00
12	Mahul Leaf	15.00	--	15.00
13	Harra Sabut (Dry)	15.00	--	15.00
14	Harra Kachariya	25.00	--	25.00
15	Baheda Sabut (Dry)	17.00	--	17.00
16	Baheda Kachariya	20.00	--	20.00
17	Giloy (Dry)	40.00	--	40.00
18	Kusumi Lac/Chhili Lac (Dry)	275.00	25.00	300.00
19	Van Tulsi Seed	16.00	1.50	14.50
20	Bhelwa (Bhilwa)	9.00	0.75	9.75
21	Shikakai Phalli (Pod) (Dry)	50.00	5.00	55.00
22	Tamarind (With Seeds)	36.00	--	36.00
23	Tamarind (Seedless)	69.00	--	69.00
24	Tamarind Seed	11.00	1.00	12.00
25	Mahua flower (dry)	30.00	3.00	33.00
26	Mahua Seed	29.00	2.50	31.50
27	Broom Flower (grass)	50.00	--	50.00
28	Kaunch Seed	21.00	--	21.00
29	Dhawai Flower (Dry)	37.00	--	37.00
30	Chironji Guthli	126.00	12.00	138.00
31	Karanja seeds	22.00	2.00	24.00
32	Bael Pulp (Dry)	30.00	--	30.00
33	Kullu Gum	125.00	--	125.00
34	Kaju Guthli (Raw)	90.00	9.00	99.00
35	Saal Seed	20.00	--	20.00

#	Name of MFP	Minimum Support Price as Govt. of India (Rs. per Kg.)	Incentive (Bonus) Wages given by State Govt. along with MSP Collection Rate (Rs. per Kg.)	Minimum Support Price + Incentive (Bonus) Wages (Rs. per Kg.)
36	Kusum Seed	23.00	--	23.00
37	Neem Seed	27.00	2.00	29.00
38	Jamun Seed (Dry)	42.00	--	42.00

Procurement Plan and Financial Assistance under the MSP for MFP Scheme

Procurement Plan Preparation:

The **State Procurement Agency (SPA)** prepares a comprehensive **procurement plan** for MFPs proposed under this scheme. The plan includes:

- Estimated quantity of each MFP likely to be purchased.
- Arrangements for **storage, transportation, and maintenance** until disposal.
- Planning for **workforce and fund requirements**.
- The procurement plan is then submitted to the **State Nodal Department** well in advance.

Approval and Fund Allocation:

The **State Nodal Department** forwards the procurement plan to **MoTA** for budget approval under this scheme.

- **MoTA examines** the proposal and releases the requisite **working capital** to the state. **Funding Structure: MoTA provides 75%** of the required working capital and covers any incurred losses; **the State Government contributes 25%**.

Progress of the scheme is as follows:

Details of Fund Received

#	Year	75% Allotment from MoTA GOI (Rs. in crores)	25% Allotment from State Govt. (Rs. in crores)	Total (Rs. in crores)
1.	2014-15	80.16	13.22	93.38
2.	2015-16	73.50	15.22	88.72
3.	2016-17	---	15.00	15.00
4.	2017-18	---	7.81	7.81
	Total	**153.66**	**51.25**	**204.91**

Performance of MSP Scheme (From 2014-15 to 2024-25)

MFP purchased under the MSP scheme: Year 2014-15				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
1.	Sal Seed	1,25,000	1,25,676	16.29
2.	Harra	30,000	34,646	4.85
3.	Imli	85,000	35,446	8.99

MFP purchased under the MSP scheme: Year 2015-16				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
1.	Sal Seed	1,96,655	1,11,983	14.51
2.	Harra	60,000	57,127	8.00
3.	Imli	55,000	894	0.23
4.	Chironjee Guthli	18,700	6,329	6.97
5.	Mahua Seed	25,000	4,856	1.17
6.	Kusumi Lac	2,000	3,337	11.50
7.	Rangini Lac	3,000	1,400	3.48

MFP purchased under the MSP scheme: Year 2016-17				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
1.	Sal Seed	1,50,000	2,808	0.36
2.	Harra	60,000	3,088	0.34
3.	Chironjee Guthli	10,000	7,754	8.55
4.	Mahua Seed	15,000	51	0.12
5.	Kusumi Lac	3,000	3,506	12.08
6.	Rangini Lac	2,000	1,011	2.51

MFP purchased under the MSP scheme: Year 2017-18				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
1.	Sal Seed	1,50,000	1,23,126	14.36
2.	Harra	50,000	279	0.03
3.	Chironjee Guthli	10,000	136	0.10
4.	Mahua Seed	20,000	1,490	0.33
5.	Kusumi Lac	5,000	23	0.04
6.	Rangini Lac	2,500	156	0.18

MFP purchased under MSP scheme: Year 2018-19 (As on 30.09.2018)				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
1.	Sal Seed	2,25,000	1,224.68	0.16
2.	Chironjee Guthli	7,000	1472.71	1.70
3.	Mahua Seed	11,000	4.50	0.001
4.	Kusumi Lac	5,000	851.83	1.91
5.	Rangini Lac	1,500	365.021	0.54

MFP purchased under the MSP scheme: Year 2020-21				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
1	Saal Seed	3,00,278	3,50,719.98	70.144
2	Tamarind (Seedless)	2,99,070	1,31,059.73	44.0615
3	Baheda	5,040	45,507.50	7.7363
4	Mahua flower (dry)	2,70,531	28,247.74	8.4743
5	Harra	13,489	23,071.56	3.4607
6	Giloy	1,039.70	12,068.53	4.8274
7	Kalmegh	8,868	7,434.88	2.6022
8	Kaju Guthli	6,660	5,869.73	5.2828
9	Dhawai Flower (Dry)	6,908	2,380.59	0.8082
10	Bhelwa (Bhilwa)	4,618	2,351.76	0.225
11	Mahul Leaf	27,860	2,234.76	0.3352
12	Tamarind (Seedless)	2,207	1,257.77	0.7088
13	Broom flower (grass)	5,028	1,228.24	0.5902
14	Nagarmotha (Dry)	5,845	1,178.08	0.3534
15	Tamarind Seed	5,404	1,150.74	0.1496
16	Baheda Kachariya	14,319	800.434	0.1601
17	Bael Pulp (Dry)	5,408	653.716	0.1881
18	Chironji Guthli	35,316	624.219	0.7334
19	Karanja seeds	4,811	514.695	0.0979
20	Mahua Seed	74,403	449.94	0.1279
21	Harra Kachariya	24,850	336.219	0.0841
22	Honey	2,230	323.25	0.7273
23	Charota	39,442	264.957	0.0424
24	Satavar (Dry)	255.5	182.57	0.1953
25	Kusum Seed	4,415	166.46	0.0383

MFP purchased under the MSP scheme: Year 2020-21				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
26	Rangeeni Lac	11,356	138.31	0.3043
27	Jamun Seed (Dry)	1,375	126.94	0.0518
28	Van Tulsi	5,402	125.73	0.0201
29	Neem Seed	320	106.62	0.0117
30	Van Jeera	722	23.83	0.0167
31	Amla (Seedless)	2,180	13.65	0.0071
32	Kusumi Lac	9,256	12.193	0.0366
33	Kullu Gum	154	3.5	0.0043
34	Shikakai	40	3.32	0.0017
35	Kaunch Seed	760	2.75	0.0005
36	Bibiding	886.5	0	0
37	Malkangani	1,095	0	0

MFP purchased under the MSP scheme: Year 2021-22				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
1	Amla (Seedless) (Dry)	1,000	2.35	0.0012
2	Tamarind Aati (Seedless)	1,10,000	1,51,596.2960	53.5424
3	Tamarind Phool (Seedless)	5,000	7,382.29	5.0938
4	Tamarind Seed	1,500	897.926	0.0988
5	Karanja seeds	1,000	55.11	0.0121
6	Kaju Guthli	600	1,081.74	0.9224
7	Kalmegh	3,300	2,174.80	0.6894
8	Kullu Gum	100	0.6	0.0008
9	Kusum Seed	500	4.71	0.0011
10	Kusumi Lac	2,000	0.5	0.0015
11	Kaunch Seed	750	0	0
12	Giloy (Dry)	400	645.3455	0.2402
13	Charota Seed	20,000	81.161	0.0125
14	Chironji Guthli	4,300	2,275.13	2.7564
15	Jamun Seed (Dry)	100	505.07	0.2121
16	broom flower (grass)	4,000	763.41	0.3817
17	Dhawai Flower (Dry)	4,000	1,135.05	0.4141
18	Nagarmotha (Dry)	5,000	351.19	0.1054
19	Neem Seed	400	36.04	0.0097
20	Baheda Kachariya	2,000	684.38	0.1369
21	Baheda Sabut (Dry)	1,000	17,619.63	2.8996
22	Bibiding	500	2.39	0.0022
23	Bael Pulp (Dry)	400	765.796	0.2294
24	Bhelwa	6,000	1,383.17	0.1343
25	Mahua flower (dry)	2,000	241.17	0.0724
26	Mahua Seed	500	5.4	0.0016
27	Malkangani seed (Dry)	1,000	2.026	0.002
28	Mahul Leaf	5,000	556.51	0.0835
29	Rangeeni Lac	4,000	60.63	0.1334
30	Reetha Phal (Dry)	50	0.11	0
31	Van Jeera Seed	500	5.44	0.0038
32	Van Tulsi Seed	2,000	6.65	0.0011
33	Honey	1,500	348.81	0.7848
34	Shikakai Phalli	100	0.6	0.0003
35	Satavar (Dry)	500	13.56	0.0145
36	Saal Seed	1,60,000	1,56,323.9050	31.2648
37	Harra Kachariya	2,500	3,231.78	0.8079

MFP purchased under the MSP scheme: Year 2021-22				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
38	Harra Sabut (Dry)	2,000	6,212.16	0.8462

MFP purchased under the MSP scheme: Year 2022-23				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
1	Amla (Seedless) (Dry)	2,000	0.33	0.0002
2	Bael Pulp (Dry)	1,500	584.09	0.1577
3	Baheda Kachariya	3,000	347.73	0.0695
4	Baheda Sabut (Dry)	1,000	125.13	0.0193
5	Bhelwa (Bhilwa)	10,000	146.44	0.0143
6	Charota Seed	30,000	3.47	0.0005
7	Chironji Guthli	3,000	311.88	0.3587
8	Dhawai Flower (Dry)	6,000	279.15	0.0935
9	Giloy (Dry)	600	2.6	0.0009
10	Harra Kachariya	3,300	331.9	0.083
11	Harra Sabut (Dry)	2,000	28.77	0.0039
12	Honey	2,000	264.93	0.5961
13	Kaju Guthli	2,500	571.12	0.4626
14	Kalmegh	5,000	131.58	0.0414
15	Karanja seeds	5,000	21.45	0.0051
16	Kusum Seed	1,500	13.1	0.0027
17	Mahua flower (dry)	60,000	24,999.05	7.4997
18	Mahua Seed	12,000	31.56	0.0092
19	Mahul Leaf	8,000	291.23	0.0437
20	Nagarmotha (Dry)	8,000	31.46	0.0094
21	Neem Seed	3,000	7.04	0.0019
22	Rangeeni Brood Lac (with insects)	1,000	28.16	0.0774
23	Saal Seed	3,00,000	10,470.82	2.0849
24	Tamarind Aati (Seedless)	90,000	83,545.71	27.6046
25	Tamarind Flower (w/o seed)	23,000	12,344.54	8.5177
26	Tamarind Seed	10,000	444.91	0.0489
27	Van Tulsi Seed	3,000	4	0.0006

MFP purchased under the MSP scheme: Year 2023-24				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
1	Charota Seed (Dry)	14,295	1	0.0002
2	Nagarmotha (Dry)	1,475	30.01	0.009
3	Amla (Seedless) (Dry)	980	1.68	0.001
4	Mahul Patta	1,060	199.07	0.0299
5	Van Tulsi Seed (Dry)	610	0	0
6	Honey	1,220	256.32	0.5767
7	Bael Guda (Dry)	1,275	92.84	0.0251
8	Dhawai Phool (Dry)	4,380	4.43	0.0015
9	Harra Kachariya	3,900	376.89	0.0942
10	Kaju Guthli (Dry)	9,300	1,165.74	0.9563
11	Saal Seed (Dry)	1,87,900	2,24,240.12	40.5923
12	Baheda Kachariya	3,250	170.59	0.0341
13	Giloy (Dry)	190	6.41	0.0023
14	Kusumi Chhili Lac (Dry)	520	7.34	0.022
15	Imli Aati (With Seed)	1,31,950	2,001.29	0.6624

MFP purchased under the MSP scheme: Year 2023-24				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. in crores)
16	Imli Phool (Seedless)	20,060	51.9	0.0358
17	Imli Seed	10,470	1.55	0.0002
18	Mahua Phool (Dry)	52,190	1,677.38	0.5032
19	Mahua Seed	1,600	82.1	0.0238
20	Kalmegh / Bhuineem (Dry)	4,150	2.42	0.0008
21	Jhadu Phool (Grass)	1,760	178.97	0.0895

MFP purchased under MSP scheme: Year 2024-25 (As on 31.12.2024)				
#	Name of MFP	Estimated Quantity (in q)	Actual Collected Quantity (in q)	Expenditure (Rs. crores)
1	Bael Guda (Dry)	1,200	2.7	0.0007
2	Baheda Kachariya	5,000	5.95	0.0012
3	Chironji Guthli (Dry)	30,500	895.07	2.9213
4	Harra Kachariya	5,000	215.185	0.0538
5	Honey	1,400	278.34	0.8449
6	Kaju Guthli (Dry)	8,500	80.33	0.084
7	Kalmegh/Bhuineem (Dry)	800	40	0.014
8	Kusumi Chhili Lac (Dry)	500	6.642	0.0199
9	Mahua Phool (Dry)	52,000	521.453	0.1564
10	Mahua Seed	1,700	164.47	0.052
11	Mahul Patta	1,150	1.57	0.0002
12	Nagarmotha (Dry)	1,100	5.4	0.0016
13	Saal Seed (Dry)	1,60,000	2,333.74	0.42
14	Shikakai Phalli (Dry)	50	1.5	0.0008

Source: Chhattisgarh State Minor Forest Produce (Trading & Development) Co-operative Federation Limited

Annexure 2: Chhattisgarh's NGGB, Rural Industrial Parks Initiative & Godhan Nyay Yojana

Chhattisgarh is one of the Indian states that has taken a focused approach to reviving rural livelihoods and establishing an institutional framework for revitalising the rural economy. The initiative, known as the Rural Industrial Parks Initiative (RIPA), began in 2019 as the Narwa Garuwa Ghuruwa Badi (NGGB) program. NGGB is an integrated and multidimensional model of village development that addresses a range of issues, including water resources, agriculture, and nutrition.

In the rural economy, a farmer is not just a cultivator; they are also workers, artists, and artisans (Kisan, Kaarigar, and Kalakaar). The program is designed to improve the lives of rural residents by providing them with access to clean water for drinking and irrigation, supporting livestock, and promoting the production of more nutritious food. It also aims to create jobs and boost the local economy.

Narwa: The Narwa component of the program focuses on the revival of the rivulets. This involves cleaning up and repairing nalas (small streams), which are essential sources of water for irrigation and drinking.

- This led to a 28 cm/yr rise in groundwater levels.
- 300% (from 58,000 ha to 1.46 lakh ha) increase in area under millets, and the state also announced MSP for small grains and procured them.

Garuwa: The Garuwa component of the program focuses on cattle conservation. This involves building Gauthans (cattle shelters), providing free veterinary care, and distributing fodder. The cow dung is composted with biomass from crop residues left over in farmers' fields and purchased from farmers. The compost is made available for farmers at a nominal price.

- Of the 10426 sanctioned, 10,206 are completed, and 188 are under construction.
- 3,2100 Tons of organic fertiliser sequestrated
- 4500 Women SHG are linked with this program
- Many new products, such as 'gobarkadiya' and 'gauriganeshis', were developed and sold.
- Additional livelihood opportunities are also created for Gauthans.
- Approximately 5,536 Gauthans reside in forest areas and utilise mobile grazing units.
- 5 lakh litres of additional milk were produced.

Ghuruwa: The Ghuruwa component of the program focuses on composting. This involves building biogas plants and composting pits, which help to reduce the use of chemical fertilisers, improve soil quality and provide access to renewable energy.

- Garuwa and Ghuruwa, together, have supplied compost to farmers at affordable prices, leading to a reduction of over 13% in the use of chemical fertilisers during the last Kharif season.

Badi: The Badi component of the program focuses on backyard gardening. This involves providing seeds, training, and support to help rural residents grow their own fruits and vegetables.

- 1,75000 Nutrition Badis rejuvenated

The NGGB program has been implemented in over 10,000 gram panchayats in Chhattisgarh. The results have been impressive. Watershed regeneration has increased water availability, thereby improving agricultural productivity. Cattle conservation has improved livestock health, increasing the availability of milk and other dairy products. Composting has helped reduce the use of chemical fertilisers, improving soil quality and crop yields. Backyard gardening has increased the availability of fresh fruits and vegetables, thereby improving the nutritional status of rural residents.

The NGGB program has been a success because it employs a holistic approach to rural development, addressing the needs of the entire community. It is a model that can be replicated in other parts of India and the world. The NGGB program is funded by the Chhattisgarh government and implemented by the state's Department of Rural Development. Experts have praised the program for its innovative approach to rural development and its potential to improve the lives of millions of people.

The success of NGGB led to its expansion and institutionalisation as RIPA. RIPA builds on the principles of NGGB and takes a holistic approach to rural development. It aims to create self-reliant villages that are economically prosperous and environmentally sustainable.

Foundational Principles for RIPA[39]

Community participation: RIPA is a community-driven initiative. The government provides support and resources, but the villagers are responsible for planning and implementing the projects.
Sustainability: RIPA is designed to be sustainable in the long term. The project's focus is on developing local resources and creating jobs that benefit the community.
Holistic development: RIPA addresses a range of issues, including water resources, agriculture, and nutrition. This ensures that the village's growth is balanced and sustainable.

RIPA has been successful in reviving livelihoods and creating jobs in rural areas. It has also helped to improve the environment and the quality of life for villagers. The key to success lies in 'Gram Swaraj', the concept proposed by Mahatma Gandhi for revitalising the rural economy and later strengthened by individuals like JC Kumarappa, which emphasises an approach that respects and preserves the rhythmic, harmonious ecosystem of villages.

The RIPA has created opportunities to revive rural livelihoods, and the products are linked to exclusive markets, C-Marts. Currently, 54 such shops are established. Currently, over 300 RIPAs are operational, each covering over 6-7 villages. The RIPAs focus on reviving the rural economy. Most of the funds (over 90%) are mobilised through convergence, and the State has spent an additional Rs. 600 Crore.

To incubate and support RIPAs in block-level rural economic zones, at the district level Gandhigrams, and at the state level Nawa Sewagram Society, with a hundred-acre campus, is established.

Challenges

Several challenges must be addressed if these models are to be replicated. These include:

- **Scaling up:** RIPA has been successful in a few villages in tribal areas, but it needs to be scaled up to reach more villages in the plains and other states.
- **Sustainability:** RIPA needs to be sustainable in the long term. This means the government needs to provide ongoing support and resources, and help RIPAs focus on generating sufficient resources to sustain themselves.
- **Participation:** The success of RIPA depends on the involvement of the villagers. The government needs to ensure that the villagers are engaged in the planning and implementation of the projects.

The **Godhan Nyay Yojana** was launched in July 2020 to incentivise organic practices of the state's farmers. Under this scheme, the government used to purchase cattle dung from farmers and cattle rearers at **Rs. 2 per kg**, which was then processed into **vermicompost** and sold to farmers at a subsidised rate of **Rs. 8 per kg**. This initiative not only supported the availability of organic agri inputs but also generated income opportunities, especially for **landless farmers and women's self-help groups** involved in dung collection and compost preparation.

[39] **Source:** Reviving Rural Economy: Learnings from the NGGB Initiative - Krishna Sudha Academy of Agroecology

Annexure 3: Modernisation of Haat Bazaar/Small Godown under MSP for MFP scheme

Almost 60-70% income of the forest dwellers depends on the collection and sale of minor forest produce (MFP), which is part of their subsistence-level income. The MFP collected is traded over approximately. 5,000 village markets or the "haat bazars" deep inside forest areas. These are weekly markets held on open grounds. Haat Bazars play an essential role in aggregating MFP for forward linkages, facilitating tribal MFP gatherers in the direct sale of their produce to consumers/bulk consumers, and reducing intermediaries.

Recent estimates by TRIFED indicate that the trade value is approximately Rs 20,000 Crores for 55 economically significant MFPs. Tribal commerce is conducted at the haat bazaars, and tribal-centric intervention must therefore begin here. A tribal-centric micro-market reform for the Haat Bazars located deep inside the forest is needed. The majority of existing Haat bazaars, however, remain largely unorganised. These lack proper oversight systems and institutional mechanisms for the orderly sale and purchase of MFP produce.

The context encourages unfair trade practices, as a result of which the middleman gains, whereas the tribal MFP gatherer has to be content with less than 20% the value of their produce. The Haat Bazars located at the village level will initiate and service transactions at terminal destinations, and with other primary and secondary markets. There is a need for the Gram Panchayat/ Gram Sabha to carry out their mandated functions under PESA, 1996. This will efficiently and effectively link the production and consumption centres, maximising returns to the MFP gatherers.

Enactment of Provisions of the Panchayats (Extension of the Scheduled Areas) Act, 1996 (PESA 1996), inter alia, empowers Gram Panchayats and Sabhas in Scheduled Areas to own minor forest produce, manage village markets, and exercise control over local plans and resources for such plans.

Further development in this direction is the enactment of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which has vested the Scheduled Tribes and Other Traditional Forest Dwellers with the right of ownership, access to collect, use and dispose of minor forest produce.

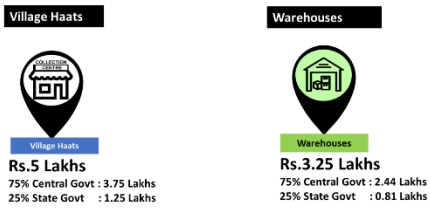
MSP for MFP Scheme guidelines explicitly mention the following two components with respect to Haat Bazaar and Storage Facilities:

Modernisations of Haats

The identified MFPs will be procured from the gatherers at village/haat-level centres, where they bring their produce after collection, drying, cleaning & grading for sale. State agencies have to establish an adequate number of such procurement centres. In some States, governments have already taken measures to provide facilities such as platforms and shades. However, in many other States, the purchase & sale of commodities (MFP/SAP, etc.) in haats is done openly, and buyers and sellers face many problems during the rainy & hot summer season. To improve the condition of these places and establish a formal structure for systematic trading, Haats shall be modernised. State agencies will carry out the modernisation of haats in consultation with the Gram Sabha/Panchayat and the District Administration.

Creation of storage facilities at aggregation points

The stocks procured by State-designated agencies in each haat bazaar may be too small and therefore need to be transported to the aggregation centres, from where bulk quantities will be transported to the centrally located godown/cold storage that exists or will be provided. Therefore, it is essential to establish a godown of 50 MT at the block level to aggregate the stocks procured at each haat. The respective State agencies will meet the cost of land and recurring expenses.
The idea is to establish an infrastructure that creates livelihoods through value addition. Such examples shall be replicated elsewhere on their success.



Source: Infrastructure - Haats and Warehouses | TRIFED - Tribes India | PMVDY

Annexure 4: Haat Bazaar Sanchika- Guidelines for Operation and Management of Haats

- Notification of Minimum Support Price (MSP) and ensure tribals are not forced to sell below this as a resolution of the Gram Sabha.
- Set up watchdog committees to oversee and regularly review in Gram Sabha meetings the implementation of the Scheme "The Mechanism for Marketing of Minor Forest Produce through Minimum Support Price and Development of Value Chain" as a permanent agenda.
- Facilitate selection of SHGs for procurement, training and value addition activities by the District Implementing Units. Registration of Primary Procurement Agencies such as Cooperative Societies/ LAMPS/ Mahila Samities/VDCs/JFMCs/ self-help groups (SHGs) formed in the State, including those formed under the National Rural Livelihood Mission, etc., with provision for advance & commission payments as per MoU at the rate not exceeding 7.5% of the value of MFP procured through them.
- Allotment of space to SHGs for procurement at Haat Bazaar and value addition in the catchment area in available Panchayat / Government buildings/sheds.
- Facilitate the hiring of dry and cold storage (short- and long-term) to increase shelf-life and holding capacity.
- Facilitate a strong logistics network for the transportation of procured items to godowns/ markets.
- Ensure establishment of linkages for value addition activities
- Supervise fair weighment practices through the use of certified electronic weighing machines, certified manual weighing machines, and certified standard weights and measures.
- Ensure proper accounting procedures by buyers and SHGs to provide a fair deal to the tribals for their produce; prevent cheating by wily intermediaries.
- Ban exchange of goods through barter or manual/volume measures of weighment (e.g. barter of 1 kg of salt for 1 kg of tribal produce of chironjee). Such malpractices lead to grave discrepancies in payments to the tribals/gatherers.
- Ensure prompt and proper payment to tribal gatherers by SHGs and other traders for their minor forest products, ensuring MSP to gatherers at all costs.
- Planning advocacy and Information, Education & Communication (IEC) for awareness generation and enforcement of Minimum Support Price
- Strive to promote fewer cash transactions
- Review by Gram Sabha and Social Audit
- Facilitate the setup of an IT-enabled communication, information, and monitoring system, as well as a mobile app-based platform to link haat bazaars with the District, State, and National networks.
- Time-bound dispute resolution mechanism at Gram Panchayat / Gram Sabha
- Provisioning of basic infrastructure and amenities for hygiene, sanitation and drinking water.

Setting up of Infrastructure at the Haat Bazar

For Haat Bazar to become operational and deliver the intended services, it will require basic infrastructure

Illustrative list of On-market facilities to aid trade activities at Haat bazaars

Core Facilities Basic & Support Infrastructure

- Electronic/manual weighing scales
- Auction Platforms
- Assaying laboratory
- Packaging & Labelling Equipment
- Drying Yards
- Bagging and stitching machines and facilities
- Loading, Unloading & Dispatch facilities
- Pre-conditioning- cleaning, sorting, grading, washing, waxing, etc. – unit of minimum capacity
- Integrated Pack-house of reasonable capacity
- Appropriate storage capacity to stage the produce for forward linkage.
- Standardization facilities
- Appropriate transport capacity – reefer vehicles, ordinary trucks, etc.

- Primary processing and value addition facilities – mini oil expeller/ de-shelling machines, etc.
- Information Display on Minimum Support Prices, transport availability, storage availability and other services on offer
- IT infrastructure to integrate with other market information
- Storage (dry/ cold)
- Public Address System
- Extension and Training to Farmers
- Boundary Wall
- Internal roads & and drainage network
- Water Supply
- Power Supply and back-up system
- Veterinary Services
- Sanitary Facilities
- Posts & Telephones
- Banking
- Input Supply and Necessity Outlets
- Repair / Maintenance Service
- Office
- Computerized systems
- Rain Proofing Other Service Infrastructure Maintenance Infrastructure
- Rest Rooms
- Parking
- Sheds for Animals
- Market Education
- Cleaning and Sanitation
- Garbage Collection & Disposal
- Waste Utilization

3. Off-market Infrastructure

- This category primarily includes efficient road and transport infrastructure that connects minor forest produce from the near forest area to the haat and, from there, to wholesale markets like APMCs or other consumption centres.
- While road connectivity may be upgraded/strengthened by tapping budgetary allocations under ongoing schemes like MGNREGS, PMGSY, PWD works (state & district roads), the transport system will need strengthening by mostly promoting the private sector, including aiding the youth to become transport-entrepreneurs (e.g., owner-driven carriage transport of varied capacities).
- However, in the case of cold transport systems like reefer vehicles, larger investments will be necessary for setting up the preliminary pre-conditioning facilities at the Haat, for which convergence may be sought under various existing schemes of the centre focused on cold chain development, such as Mission on integrated horticulture development, Pradhan Mantri Krishi Sampada Yojana, etc.

4. Funding the Infrastructure at the Haat Bazar

- To build the haat bazar modernisation infrastructure, allocations available under the Scheme on 'Mechanism for Marketing of Minor Forest Produce through Minimum Support Price and Development of Value Chain.'
- Some facilities, such as godowns (freezing storage), may have to be hired or funded under DAC&FW schemes, such as MIDH, AMI, AMIF, RKVYRAFTAR, etc. Likewise, electricity will require specific allocations, and states may arrange them.
- Supplementary funds may also come from the Ministry of Food Processing Industries (MoFPI), the AMIF-Corpus Fund, MIDH, the AMI sub-scheme, RKVY-RAFTAR, etc., which are schemes of DAC&FW, apart from the state's own allocations.

5. Management Structure and Institutional Support

5.1. At the grassroots level, the Haat Bazar is proposed to be managed by the Market Level Management Committee, which shall be responsible for the smooth operation and management of the Haat Bazar. In consonance with PESA, 1996, Haat Bazar market shall be owned by the local rural body, i.e., the Gram Panchayat, with the Head of the concerned local body, or his nominee, as the Chairman. Besides, markets may also be owned by para-statal agencies such as APMCs/RMCs, other juristic persons, private individuals, and trusts.

5.2. Role and responsibility of market-level management committees

- To establish and maintain an office with minimal staff (Accountant, Computer Operator, Manager) to take care of the Operation & Management (O&M) functions of Haat Bazar.
- To mobilise funds from different sources to build, strengthen and upgrade the needed infrastructure.
- To facilitate both direct sale-purchase and aggregation of small produce lots.
- To facilitate both physical & online modes of transactions.
- To onboard the market on any of the online trade platforms, including e-NAM.
- To maintain and update the list of all market participants – traders, the federation of SHGS, MFP gatherers, etc.
- To maintain accounts in the prescribed format and in accordance with the prescribed financial norms & procedures.
- To set up a grievance redressal and dispute resolution mechanism.

5.3. In addition, a three-tier management structure proposed under the Scheme on 'Mechanism for Marketing of Minor Forest Produce through Minimum Support Price and Development of Value Chain' at the National, State and District levels shall also be responsible for coordinating, supporting and guiding the modernisation of Haat Bazar Infrastructure under the Scheme.

6. Mode of Procurement at the Haat Bazar

- Procurement of MFP at MSP at the Haat Bazar level shall be facilitated through the Procurement Centres of District Level Implementing Agency under the Scheme on 'Mechanism for Marketing of Minor Forest Produce through Minimum Support Price and Development of Value Chain'
- The Cooperative Societies/ LAMPS/ Mahila Samities/VDCs/JFMCs/ self-help groups (SHGs) formed in the State, including those formed under the National Rural Livelihood Mission, Forest Samities, other tribal SHGs (i.e. SHGs with a majority tribal population), et, appointed as Primary Procuring Agencies by the District Level Implementing Agency as primary procurement centre or the existing set of the state/ district shall facilitate procurement of stock from MFP gatherers.
- The Primary Procuring Agencies shall be paid commission at a rate not exceeding 7.5% of the value of MFP procured through them as per the Scheme guidelines.

7. Professional Support, Training and Orientation

- At the District level, a professional project management unit shall be appointed under the ambit of the overall Scheme on MSP for MFP, which would work in sync with the Gram Panchayat/local rural bodies for the development of the Haat Bazar.
- The State may seek assistance from National-level Institutes such as MANAGE, NIAM, State Agriculture Universities, and KVKs to address the training and orientation needs of management and executive functionaries at different levels.

Source: Infrastructure - Haats and Warehouses | TRIFED - Tribes India | PMVDY

Consortium for Agroecological Transformations

Cultivating Sustainable Food & Farming Transformations

The Consortium for Agroecological Transformations (CAT) is a national ecosystem orchestrator advancing community-led, regenerative transitions across India's rural landscapes to strengthen both societal and ecological well-being. CAT brings together civil society organisations, technical experts, and farming communities to design and implement landscape-driven agroecological transformation. Its work focuses on generating evidence to inform policy change, enabling blended-finance pathways, and strengthening consumer demand for chemical-free food—advancing resilient, equitable, and sustainable food futures.

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