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TOOLKIT FOR DEVELOPMENT OF

GOAT BASED LIVELIHOODS

Exploring pathways for strengthening goat value chain through Mahatma Gandhi NREGA in convergence with other Government programmes, private sector and other stakeholders

ENHANCING RURAL RESILIENCE THROUGH APPROPRIATE DEVELOPMENT ACTIONS

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Registered offices:
Bonn and Eschborn, Germany
Enhancing Rural Resilience through Appropriate Development Actions
A2/18, Safdarjung Enclave, New Delhi 110 029 India
T: +91 11 4949 5353
F :+91 11 4949 5391
E: info@giz.de
I: www.giz.de/india

Responsible:
Rajeev Ahal, Director, Natural Resource Management and Agroecology
Environment, Climate Change and Natural Resource Cluster, GIZ India
E: rajeev.ahal@giz.de

Author:
Abdus Sabur Sheikh, Senior Program Manager - Livestock Technology and One Health, Passing Gifts Private Limited (PGPL)

Content Review:
Vivek Anand, Rural Development Advisor, Project ERADA, GIZ India
Meekha Hannah Paul, Project Manager, Project ERADA, GIZ India
Ritu Tiwari, Rural Development Advisor, Project ERADA, GIZ India
Sharat Singh, Rural Development Advisor, Project ERADA, GIZ India
Kumar Ujjwal, Rural Development Advisor, Project ERADA, GIZ India

Editors:
Nisha Singh, Knowledge Management Advisor, Project ERADA, GIZ India
Sonmani Choudhary, Program Director - Patna, Passing Gifts Private Limited
Anamika Priyadarshani, Director: Knowledge Management, Research & Design, Passing Gifts Private Limited

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Conceptualization & Designing:
Amit Kumar, Manager, Communication & Knowledge Management, Passing Gifts Private Limited
The Visual House Private Limited

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PREFACE

This "Toolkit for Goat-Based Livelihood" aims to offer technical inputs for promoting goat-based livelihood in low-income rural households, especially in the context of Enhancing Rural Resilience through Appropriate Development Actions (ERADA) project. The ERADA project is operational at a national level and has been implemented in eight districts across four Indian states, namely, Bihar, Jharkhand, Madhya Pradesh, and Rajasthan. The objective of ERADA is to strengthen the livelihoods of vulnerable households based on locally available resources and development support programmes, with a focus on goat-based livelihoods as one of the key components. ERADA recognizes goat-based livelihood as one of the most promising development actions for enhancing rural resilience, especially in low-income states like Bihar, Madhya Pradesh, Rajasthan, and Jharkhand. This toolkit is a compilation of required knowledge and technical inputs for effective management and promotion of goat-based livelihood. The toolkit includes a set of three elemental documents on goat-based livelihood:

i. Toolkit for Development of Goat-Based Livelihood: Exploring Mahatma Gandhi NREGA's Greater-Scope of Contributions Towards Improvement of Goat Value Chain in Convergence with Other Government and Private Stakeholders
ii. Training Manual on Goat Rearing Including MGNREGA Interventions
iii. Farmer's Handbook on Goat Rearing

The first document (Toolkit for Development of Goat-based Livelihood) also includes a brief analysis of the ERADA project and review of relevant literature. These documents are designed to offer technical inputs on how to establish, manage and enhance goat-based livelihoods for improving financial as well as health and nutritional well-being of farmers living in low-income settings of rural India, especially in the ERADA project states.

One of the important objectives of ERADA is leveraging the MGNREGS to augment natural resources by developing innovative green livelihood opportunities and increasing wage work for vulnerable communities, including women, youth, migrant households, etc. The abovementioned documents also aim at leveraging (Mahatma Gandhi National Rural Employment Guarantee Schemes (MGNREGS) for improving the incomes of low-income households. Leveraging MGNREGS, as the ERADA project envisions, would pave pathways for scaling up goat-based livelihoods for such households.

In sum, this toolkit is a compilation of comprehensive knowledge on goat-based livelihoods that would serve as a guide on goat-based livelihood promotion among vulnerable rural communities. Moreover, it offers the required information for leveraging MGNREGS' support and goat value-chain activities to enhance prospects of sustainable income through goatery. The toolkit could be referred as a guide to envision and develop a sustainable income generation model that could be scaled up nationally to enhance the income of vulnerable communities in rural India.

MESSAGES

The publication of the "Toolkit for Goat Based Livellhoods," comprehensive guide developed through the collaborative efforts of MGNRECS, Jeevika, Indo-German Cooperation Project ERADA and Passing Gifts Private Limited (PCPL) gives me great satisfaction. This toolkit is a testament to our commitment to enhancing the livelihoods of vulnereble households. Goat rearing is one of the common activities among the beneficiaries of MGNREGS.

Goat-based livelihood has emerged as a vital and common activity for many vulnerable households across the states among manual casual workers, providing a sustainable source of income and improving their quality of life.

MGNREGS response in this regard has been commendable in Bihar. Approximately 46000 household were identified by "Satat Jeevikoparjan Yojna (SJY)" of Jeevika for livestock-based livelihoods. Most of these were related to goat rearing. 18000 households out of 26000 eligible (with land) households have successfully constructed goat sheds under MGNREGS. The technical support on practice management comes from Jeevika and other technical institutions.

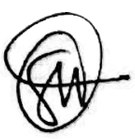
This demonstrates the effectiveness of our integrated approach. However, our role extends far beyond the construction of goat sheds. We are committed to supporting fodder plantations, bamboo plantations for goat shed construction and Azola pits for nutritious fodder.

The success of goat-based livelihoods hinges on the convergence of efforts from various government departments, civil society organizations, and industry partners. This toolkit encapsulates the collective knowledge and innovative approaches that have been demonstrated on the ground. It serves as a valuable resource for practitioners and stakeholders working towards the development of goat-based livelihoods in a mission mode.

1 extend my heartfelt gratitude to all the practitioners, government officials, and non-government agencies who have contributed to this endeavour. Together, we are making significant strides in empowering vulnerable households and fostering sustainable development.

Let us continue to work collaboratively to ensure the success of goat-based livelihoods and create a brighter future for our communities.

Best wishes,



Sanjay Kumar
Commissioner - MGNREGS
Government of Bihar

MESSAGES

During Covid-19 pandemic, the phenomenon of high return migration towards rural areas had underscored the need for resilient and sustainable livelihoods in source (rural) locations. The Indo-German Development Cooperation Project "Enhancing Rural Resilience through Appropriate Development Action (ERADA)" was commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and supports their Corona Immediate Programme. The project was in cooperation with the Ministry of Rural Development, India and was implemented by GIZ India during September 2021 – August 2024.

As a service provider in the field of international cooperation for sustainable development and international education work, GIZ is the German Government's implementing agency for technical cooperation and is present in more than 100 countries. For over 64 years, GIZ has been working jointly with partners in India for sustainable economic, ecological, and social development. The Government of India has launched numerous important initiatives to address the country's economic, environmental, and social challenges, and GIZ is contributing to some of the most significant ones.

The ERADA project focussed on strengthening the livelihoods of vulnerable households in rural areas based on locally available natural resources and developmental support programmes. The project implementation was done through the Mahatma Gandhi NREGA programme in convergence with the National Rural Livelihood Mission (NRLM) and other rural development programmes in four states namely Bihar, Jharkhand, Madhya Pradesh and Rajasthan. _e ERADA project has made remarkable progress and an unwavering commitment to its primary goal: enhancing the sustainable incomes of vulnerable households in rural areas.

Goat based livelihoods emerged as one of the key livelihood interventions among most of the vulnerable households across all project states, and mainly in Bihar. Goats play a crucial role in rural economies especially for most vulnerable groups, offering a dependable source of income, nutrition, and social stability. Their ability to thrive in diverse environments and their relatively low maintenance requirements make them an ideal asset for rural communities. Therefore, it became a common intervention area in all the project locations under ERADA.

Goat-based livelihoods under the project included a set of activities; developing and strengthening the goat management practices, breed improvement programme, piloting goat management practices through Interactive Voice Response System (IVRS), building cadre of entrepreneurs in the value chain, integration of goat based livelihoods in the MGNREGS planning process for construction of goat specific individual and public assets, and linking the interested populations with the respective government and non-government programmes.

The need for a toolkit consolidating the practices, policies and best practices for strengthening of goat-based livelihoods through collective action was realised during the project implementation. Heifer International is an expert on this topic, and we express our sincere thanks to the team led by Ms. Rina Soni for joining hands with us and co-developing this toolkit. We also thank the officials of Government programmes mainly Mahatma Gandhi NREGS, Jeevika among others who have contributed their inputs in making the toolkit holistic.

The toolkit presents practical strategies and innovative approaches to goat-based livelihoods that can be easily adopted by rural households, and used by community resource persons, technical staff of Mahatma Gandhi NREGA, NRLM, Jeevika and other SRLMs, livestock and animal husbandry programmes among others to improve the incomes of the most vulnerable households. It integrates scientific research and technical innovations, traditional knowledge, and community-driven practices mainly led by women Self-Help Groups.

We have aimed to create a robust framework that contributes to strengthening resilience. Congratulations to Team ERADA, colleagues at Heifer International and everyone involved in making this toolkit happen. We hope this toolkit will serve as a valuable resource, guiding efforts to build sustainable goat-based livelihoods and fostering a resilient rural economy. Together, we can support communities in navigating the challenges of distress migration and achieving long-term prosperity.

Best wishes,

Rajeev Ahal
Director, Natural Resource Management and Agroecology
GIZ India

MESSAGES

It is with great pride that we present this Goat Value Chain Toolkit, developed in collaboration with GIZ as part of the ERADA project. At Passing Gifts, a subsidiary of Heifer International, our focus has always been on supporting creation of sustainable, scalable models that empower smallholder farmers, enhance livelihoods, and build resilient food systems.

Almost 90 percent of these small holder farmers are owning less than one hectare of land. Goat rearing is one such allied agriculture activity that help these small holders and landless farmers to enhance their income, evade debt trap, and enhance nutritional value of their food. We recognize scarcity of good quality resource materials on goat farming as one of the most daunting challenges of the goat farming sector. Goat farmers mostly rely on unscientific approach of goat rearing and often miss to leverage from relevant policies and programs. This toolkit is an attempt to address this challenge and culmination of our expertise in designing robust agricultural and livestock value chains, particularly goat-based livelihoods, which have emerged as a key intervention to uplift vulnerable rural communities under ERADA.

An important aspect of ERADA was its efforts around leveraging MGNREGS for goat rearing related infrastructure development and enhancing the overall goat value chain. This toolkit also shows how by converging with other government programs and private initiatives, MGNREGA can be leveraged to scale up goat farming activities, providing the rural poor with the necessary resources, training, and market access to make goat rearing a sustainable and profitable livelihood option.

With the right support and investment, we believe goat-based livelihoods have the potential to transform the lives of millions of rural households, providing them with a source of income, food security, and resilience in the face of economic and environmental challenges. We at GIZ and Passing Gifts are confident that this "Toolkit for Goat-Based Livelihood" will serve as a valuable resource for policymakers, development practitioners, and farmers, offering practical solutions for promoting goat farming as a pathway to rural prosperity.

We extend our heartfelt gratitude to GIZ and all our partners for their unwavering support and commitment.

Rina Soni
Executive Director Passing Gifts Pvt. Ltd.
(A Wholly Owned Subsidiary of Heifer International)

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ABBREVIATIONS & DEFINITIONS

AHD	:	Animal Husbandry Department
AI	:	Artificial Insemination
BPL	:	Below Poverty Line
Buck	:	A male adult goat for breeding purpose
CEGC	:	Centra Employment Guarantee Council
CSOs	:	Civil Society Organizations
DAY-NRLM	:	Deendayal Antyodaya Yojana - National Rural Livelihoods Mission
Doe	:	A female adult goat for breeding purpose
DPC	:	District Program Coordinator (for MGNREGA)
DPO	:	District Program Officer
ERADA	:	Enhancing Rural Resilience Through Appropriate Development Action
FPC	:	Farmer Producer Company
FPOs	:	Farmer Producer Organizations
GHG	:	Green House Gas
GIS	:	Geographic Information System
GoI	:	Government of India
GVA	:	Gross Value Added
HORECA	:	Hotels, Restaurants, and Caterings
INRM	:	Integrated Natural Resources Management
IVR	:	Interactive Voice Response
JOHAR	:	Jharkhand Opportunity for Harnessing Rural Growth, a World Bank Funded Project in Jharkhand
JSLPS	:	Jharkhand State Livelihood Promotion Society

KVK	:	Krishi Vigyan Kendra
MIS	:	Management Information Systems
MoRD	:	Ministry of Rural Development
MGNREGA	:	Mahatma Gandhi National Rural Employment Guarantee Act
MGNREGS	:	Mahatma Gandhi National Rural Employment Guarantee Scheme
MPSRLM	:	Madhya Pradesh State Rural Livelihood Mission
NABARD	:	National Bank for Agriculture and Rural Development
NRLM	:	National Rural Livelihoods Mission
NRM	:	Natural Resource Management
NADEP	:	Narayan Deotao Pandharipande
PMAY	:	Pradhan Mantri Awas Yojana
PMGSY	:	Pradhan Mantri Gram Sadak Yojana
PPR	:	Peste des Petits Ruminants
PRI	:	Panchayati Raj Institutions
RSETI	:	Rural Self Employment Training Institutes
SC/ST	:	Schedule Caste/Schedule Tribes
SEGC	:	State Employment Guarantee Council
SHGs	:	Self-Help Groups
SJY	:	Satat Jeevikoparjan Yojana
SRLM	:	State Rural Livelihood Mission
VLRPs	:	Village Level Resource Persons

EXECUTIVE SUMMARY

Goat rearing is recognized as an important income-generating activity that contributes to poverty alleviation in our country. This activity is largely associated with poor and vulnerable farmers due to its distinct characteristics in rearing and economics. Unlike dairy, piggery, and poultry, goat rearing has not yet seen significant commercial intervention despite the premium prices commanded by goat meat and milk. Goat-based products, particularly meat, are in high demand (India is second in the world in goat meat production), and this demand is increasing every year.

Several studies and on-ground observations show that the goat sector has not attracted large-scale efforts like "Operation Flood" or the "Blue Revolution" at the central level, even though it is recognised as a fallback option for poor and landless people. Goats are known to be the best climate-resilient animals compared to other domestic animals, and their per-unit weight contribution to methane emissions is lower. The goat farming sector is at risk due to poor nutrition from underfeeding, disease outbreaks, lower immunity and stress, and an unorganized marketing system that disadvantages rearers in many ways. A systematic and comprehensive approach is needed to benefit poor farmers. Goat rearing should evolve from an ancillary agricultural activity to a sustainable livelihood.

MGNREGA, the largest employment generation program for the rural poor, offers a promising platform to promote goat farming as an initiative to enhance poor households' income. MGNREGA has positively influenced household food consumption, dietary patterns, and nutritional security, thus contributing to enhanced human capital. The program recognizes the potential of goat farming for increasing the income of rural women, and it has been taking specific measures to promote goat farming among rural women in India. Leveraging MGNREGS for the effective implementation of these policies or scaling successful models of goat farming can significantly raise the income of poor populations, especially those living below the poverty line. Special measures are required to ensure the implementation of existing policies and leveraging programmes like MGNREGS in states with a relatively higher proportion of the BPL population. This toolkit explores the inclusion of goat-based livelihoods in the MGNREGA framework through systematic planning. As reiterated in the literature review chapter of this report, MGNREGA has ample space to accommodate goat requirements and is already benefiting the sector, despite varied responses from different states. Through this toolkit, we also intend to examine the various dimensions of goat-based livelihoods and how they can be strengthened through government and non-government efforts.

THE ERADA CONTEXT & GOAT-BASED LIVELIHOOD

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1. THE ERADA CONTEXT & GOAT-BASED LIVELIHOOD

1.1. ERADA Project

The project 'Enhancing Rural Resilience Through Appropriate Development Action (ERADA)' is an Indo-German development cooperation project commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmBH, India, is implementing the project in partnership with the Ministry of Rural Development (MoRD), Government of India (GOI) for three years, September 2021 – August 2024.

The objective of the ERADA project was to strengthen the livelihoods of vulnerable households in selected rural areas based on locally available natural resources and developmental support programs, especially Mahatma Gandhi NREGS. This achievement of the objective of the project is envisaged through the following approaches:

i. Increasing Mahatma Gandhi NREGA performance in terms of effectiveness and efficiency by enhancing the implementation modalities and performance and

ii. Promoting policy convergence by aligning policies in terms of their objective and instruments so that different policy areas are coherent and reinforce each other.

Three output areas of the project are given below:

1. Improving the wage work potential of vulnerable households and enhancing the natural resource base through government support programs especially Mahatma Gandhi NREGA.
2. Long-term green livelihood development in convergence with the National Rural Livelihood Mission (NRLM) and other relevant national and state-level programs.
3. Improving convergence and strengthening multi-stakeholder platforms to provide better access to vulnerable households.

GIZ India implements the project at the national level and in eight districts of four states, namely, Bihar, Jharkhand, Madhya Pradesh, and Rajasthan. The project supports BMZ's Corona Immediate Programme and aims to strengthen the livelihoods of vulnerable communities in selected rural areas based on locally available natural resources and development programmes.

The pilot project areas of the ERADA project are mentioned in the following table:

Table 1: ERADA Project Area

	State	District	Block
1	Bihar	Gaya	Mohanpur
		Araria	Raniganj
2	Jharkhand	Ramgarh	Gola
		Dumka	Masalia
3	Madhya Pradesh	Guna	Bamori
		Khandwa	Khalwa
4	Rajasthan	Baran	Shahbad
		Sirohi	Pindwara

The project provided technical support to improve the Mahatma Gandhi NREGA planning processes and supported the identification of works mostly related to natural resource management for livelihood enhancement. The project has envisaged improving sustainable livelihood generation opportunities for 40,000 vulnerable households in the pilot locations and achieved the same successfully. The activities ranged from plantations, horticulture gardens, aquaculture, goat and cattle rearing, biogas construction, vermicomposting, mushroom cultivation, beekeeping, makhana, peanut, and agriculture and allied activities, among others. It worked with multiple departments/ programmes in tandem to achieve the objectives, therefore not reinventing the wheel or duplicating efforts.

1.2. Goat-Based Livelihood & ERADA

Goat-based livelihoods prominently emerged as a common denominator in all the locations under ERADA project interventions. Most vulnerable groups are engaged with goat rearing as a common activity across the districts of project states. This is also a common group that engages with MGNREGS for wage work. ERADA project covered around 7,500 households with goat-based livelihoods and a substantial number of goat shed construction under Mahatma Gandhi NREGS.

The interventions ranged from working with civil society partners, farmer producer groups, and companies, enterprise development programme on goat-based activities, training of services providers on goat management services that included deworming, vaccinations, shed construction, fodder management, weighing machine, breed improvement/conservation, etc., as part of the value chain activities. While it worked with MGNREGS to get them 100 days wage employment, shed constructions, fodder plantations, infrastructure development for water facilities for goats and other livestock, development of local market facilities for selling and buying animals and other resources.

The project has accumulated and shared learning on a concurrent basis with the stakeholders in all four ERADA implementation states, including decision-makers in the government at various levels. MGNREGS is the anchor programme with which all the perspectives on goat-based livelihoods have been applied apart from the value chain activities. The project covered a substantial number of poor and vulnerable households who not only rear goats and their livelihoods depend on goat rearing but also the households that engage with MGNREGS for wage work.

All these experiences needed to be documented in a format that would help MGNREGS programme division at the national level to scale up its support for goat-based livelihoods. This process has triggered the idea of developing a toolkit for goat-based livelihoods, which various stakeholders can use for strengthening the interventions on goat-based livelihoods by creating the larger scope of work for goat-based infrastructural development under Mahatma Gandhi NREGS as well as convergence with other government schemes and programs at national and state levels.

THE GLOBAL & INDIAN LANDSCAPE OF GOAT-BASED LIVELIHOODS

2. THE GLOBAL & INDIAN LANDSCAPE OF GOAT-BASED LIVELIHOODS

2.1. Domestication of Goat and the Global Goat Population

The domestication of animals by humans marked the beginning of civilization in most societies across the world. As Friedrich Engels argues in "The Origin of the Family, Private Property, and the State," domesticated animals were possibly the first assets that humans owned, and this ownership eventually prompted the concept of property (Engels, 2010). One of the most common animals domesticated by humans in the early stages of civilization was the goat. Evidence suggests goats were first domesticated about 10,000-11,000 years ago in the Middle East, marking a pivotal moment in human civilization (Zeuner, 1963; Mason, 1984). Goats became integral to society's food production and settlement support and continue to be one of the most popular domesticated animals even today. Now, goats are found on almost all continents except Antarctica (Lu, 2019). As per the FAO Stat (2011), nearly 93.4% of the 1.2 billion global goat population resides in Asia (60%) and Africa (33.4%) (WPR, 2024). Only 5% of the global goat population is classified as milk types, while the rest are meat types.

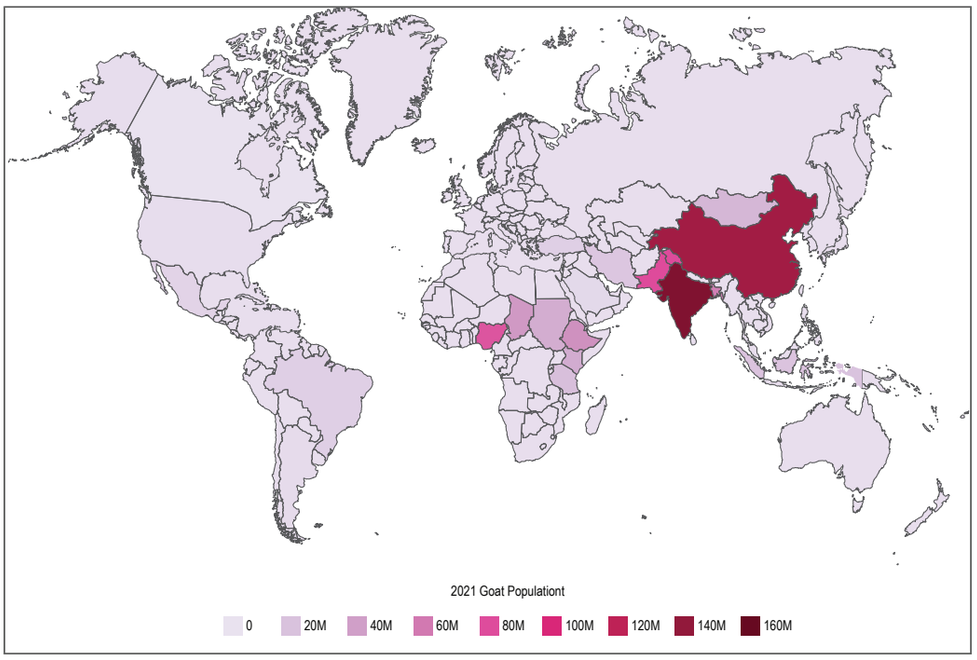

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Figure 1: Concentration of Goats in World (Source: https://worldpopulationreview.com/)

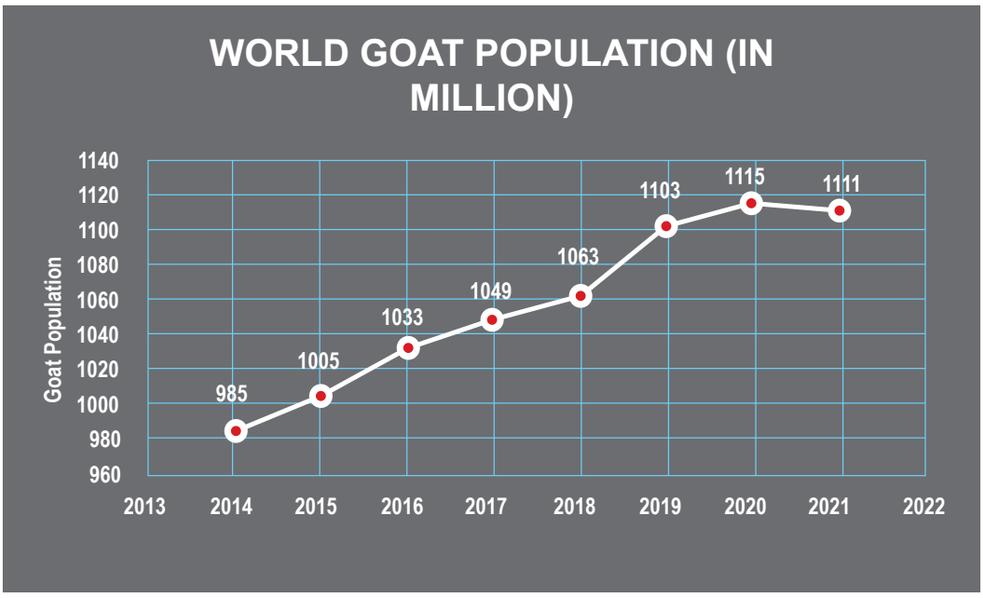

Chart 1: World Goat Population (Source: FAOSTAT production data, www.faostat.org)

2.2. Goat-Based Production

Although about 94% of goats are concentrated in Asian and African countries, European countries like France, Greece, and Spain lead in dairy goat production. These three countries produce 83% of the goat milk in the European Union. Spain holds the second-highest number of goats and has the largest share in milk production. Goat production systems vary globally, with intensive systems predominantly in Europe and America and extensive or semi-intensive systems distributed among smallholder households in Asian and African countries. Within Asia, China holds a leading position in both goat meat and milk production, followed by Japan. Pakistan and India rely heavily on goat production for meat and hides. However, limited veterinary support and market fragmentation in these countries are major hurdles for goat-based livelihoods.

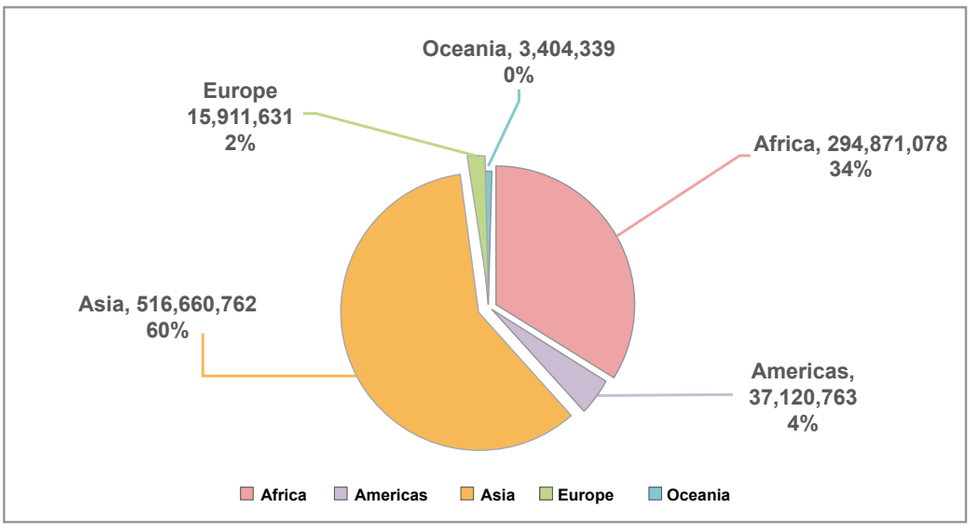

Chart 2: Goat-distribution by continent (FAO Stat)

2.3. Goat Scenario in India

Approximately 72% of India's population resides in 638,000 villages, relying heavily on agriculture and livestock for their livelihoods. Nearly 1 billion people in rural areas live on less than 1.25 dollars a day. with 80% dependent on agricultural activities. Smallholder farmers, who manage 66% of global agriculture and produce 80% of the developing world's food, make up the majority of the world's hungry and poor. Goat farming is very relevant and important in India, not only economically but also socially, religiously, and culturally. It influences income, nutrition, women empowerment, and festivities.

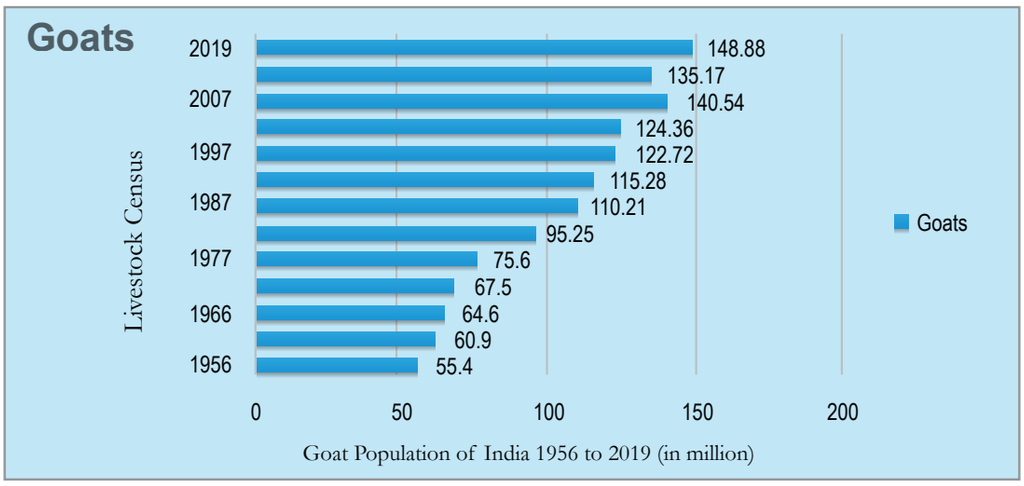

Chart 3: Goat Population in India, from 1950 to 2019
(Source: Basic Animal Husbandry Statistics 2023.pdf (dahd.nic.in)

Marginal and smallholder farmers, owning less than 2 hectares of land, manage over 76% of India's goat population. For many such farmers, goats provide income, employment, nutrition, crop production support, and serve as a risk buffer against crop failure. Often managed by rural women, goats offer cash, autonomy, and decision-making power as well (GIZ, 2022). About 24% (approx. 33 million) of rural households in India keep goats.

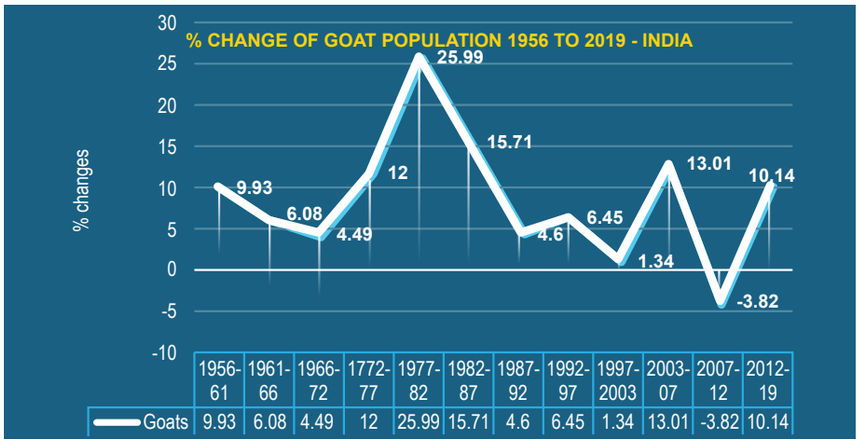

Chart 4: Percentage Change of Goats Population in India-1956 to 2019
[Source: BasicAnimalHusbandryStatistics2023.pdf (dahd.nic.in)]

As per the 2019 Livestock Census, India's livestock population is 536.76 million, marking about a 5% increase from 2012. Goat population was 148.88 million in 2019, showing about a 10.14% increase from the previous census . Historically, goat population in India has experienced fluctuations, with significant growth between 1966-72 and 1972-77, followed by declines between 1977-82 and 1982-87. After witnessing about a 4% decline during 2007-12, there was a notable 10.14% growth during 2012-19.

2.4. India's Goat Development Programmes: A Timeline

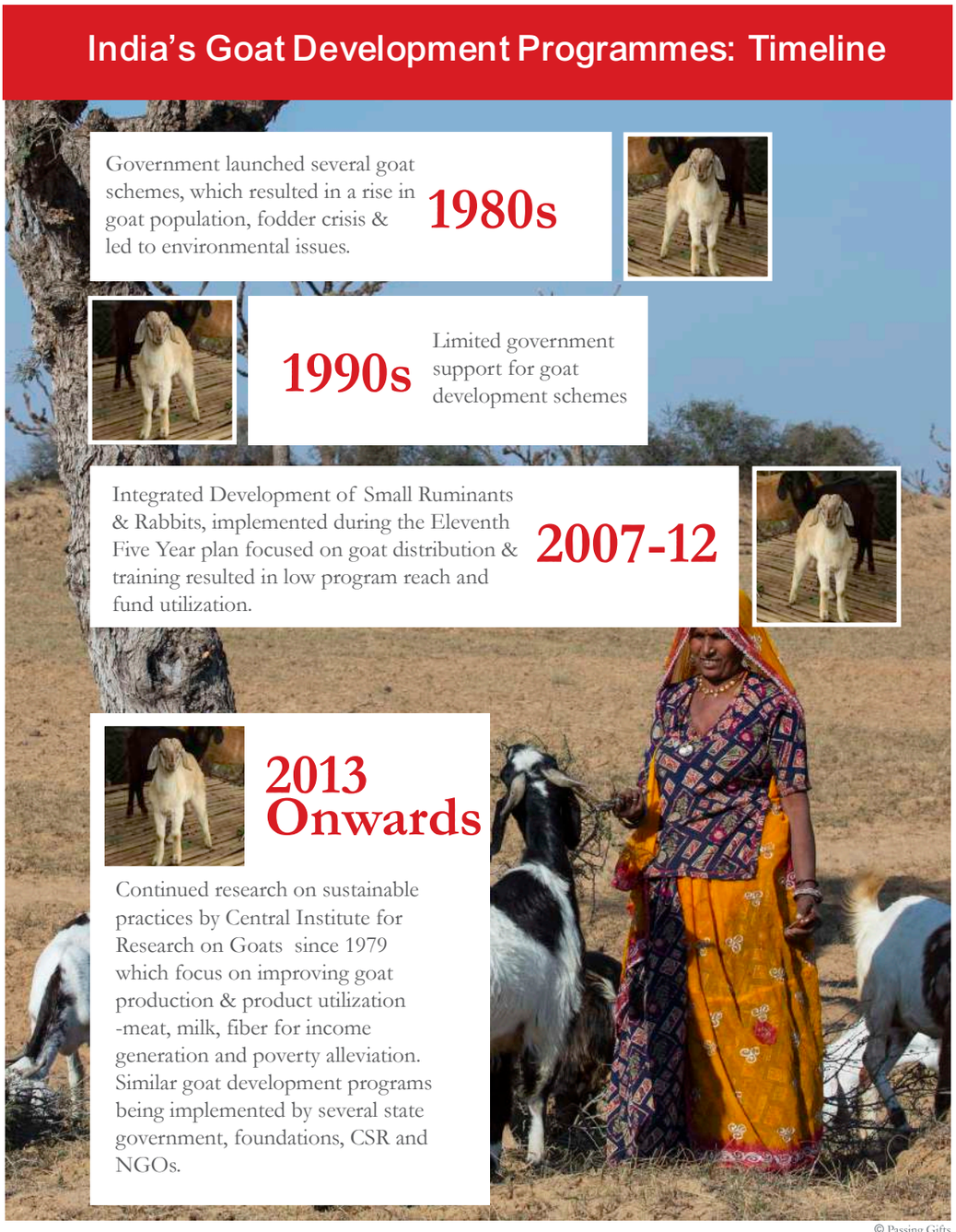

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Figure 2: Timeline of Goat Development Programmes in India

2.5. Scope for Goat-Based Livelihood Promotion in MGNREGA

MGNREGA programs, implemented with other government departments, have created multi-use structures at the gram panchayat level, along with unskilled employment. Promoting goat-based livelihoods among poor rural women is vital. Historically, women have engaged in goat rearing, a profitable activity they can do near their homes. MGNREGA recognizes goat farming's potential for increasing rural women's income and has taken measures to promote it. Effective leveraging of

MGNREGA can help goat farmers enhance their units. Poor women often sell goats at low prices during distress, but with more than 10-12 goats, their income improves, reducing distress sales. MGNREGA and other programs can enhance goats' health and help women farmers avoid distress selling. MGNREGA impacts job security, reduces migration, protects the environment, improves land and water management, and empowers rural women (Bhaskar, 2015; Narayanan et al., 2014; Rao and Madhusudan, 2013; Agarwal et al., 2012). Assets created under MGNREGA enhance land quality and productivity, increasing income for beneficiaries and supporting small farmers in diversifying crops and creating alternative livelihoods (Kumar and Joshi, 2013; Ravi and Engler, 2015).

2.6. Goat Value Chain: Major Convergence Players

Table 2: Goat Value Chain and its Potential Convergence with Mahatma Gandhi MNREGA and Other Stakeholders

Components of Goat value chain /Goat-based livelihoods	Mahatma Gandhi NREGA	National/State Rural Livelihood Missions (N/SRLM)	National Livestock Mission (NLM)	Departments/Institutions
1. Inputs				
Goats		NRLM/ SRLM	NLM	Department of Animal Husbandry and Dairying; NABARD
Feed & fodder (includingPastureland/Silvi-pasture development)	MGNREGA Supports	NRLM/ SRLM	NLM (Submission II)	Department of Animal Husbandry and Dairying, Ministry of Agriculture and Farmers' Welfare (MoA&FW) IGFRI CAZRI CIRG
2. Infrastructure development				
Housing/Goat Sheds	MGNREGA Provisions	NRLM/ SRLM	NLM	Department of Animal Husbandry and Dairying, NABARD CIRG (develops models)
Water troughs	MGNREGA Provisions			
Azolla tanks	MGNREGA Provisions	NRLM/ SRLM		Department of Animal Husbandry and Dairying, CIRG (pilots)
Marketing (village bakri bazar/haat development)	MGNREGA Provisions	NRLM/ SRLM organize at local levels		Department of Animal Husbandry and Dairying
3. Service Provisions				
Development of Pashusakhis		NRLM/ SRLM		NDBD NABARD

INTRODUCTION TO GOATS AS LIVELIHOOD

3. INTRODUCTION TO GOATS AS LIVELIHOOD

3.1. Goat Rearing as a Livelihood for Low-Income Households

Goat rearing is an important alternative livelihood for poor, smallholder, and landless farmers. Live goats are sold for income, and the milk produced is usually consumed at home. There is a wide variation across the country in the size of herds kept by farmers, with income proportional to herd size. The rearing system is predominantly based on grazing (extensive system). In states like Jammu and Kashmir, Punjab, Rajasthan, Madhya Pradesh, Gujarat, and the southern states, there is a tradition of keeping larger herds (more than 50 goats). However, in eastern states like Odisha, Jharkhand, Bihar, West Bengal, and the northeastern states, farmers typically keep a few goats along with other domestic animals.

Goats play a crucial role in the family economy, as they are sold when there is a high need for cash or during emergencies such as health issues or debt repayment. Evidence suggests health emergencies (i.e., treatment) are an important reason that pushes poor households into a debt trap. In such cases, goats offer a reliable and immediate source of cash. Goats are even called ATM or any-time money. Goat income also contributes to planning important family expenditures like social functions, children's education, agricultural expenses, loan payments, house repairs, etc. While large herders (big goat farmers) regularly visit the market to sell their animals for income, small farmers rarely consider goat rearing as a regular source of income.

In India, goats are associated with poor, small, and marginal farmers, with significant involvement from women. Therefore, any increase in earnings through goats directly impacts the family economy. Interventions and support in goat rearing are identified as important tools for poverty alleviation in India.

Livestock-Based Livelihoods in India & Goat

Over two-thirds (nearly 65%) of the total population live in rural areas, with over 47% dependent on agriculture for their livelihood (Economic Survey 2022-23). The contribution of agriculture to the GVA is 15% (2022-23), and 30.87% (5.73% of the total) is contributed by livestock. The important livestock sectors contributing to the GVA are dairy, poultry, piggery, and goat rearing.

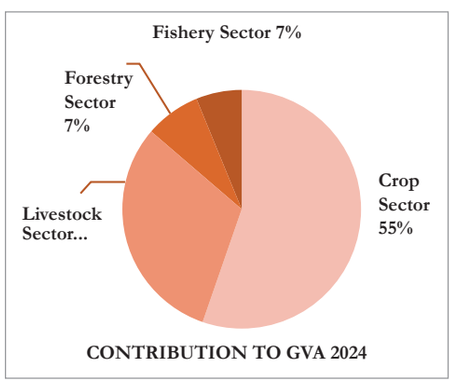

Figure 3: Contribution to GVA 2024 (www.statista.com)

The contribution of goats to the national livestock GVA is Rupees 897,680 million (2020-21), which is 13.7% of total livestock GVA (Vikaspedia, 2024). India has a livestock population of 535.78 million, of which 148.8 million are goats (27.8%). The sector employs nearly 8.8% (123.2 million) of the total population. The goat sector engages nearly 33 million people (19th Livestock Census 2019), and it is the backbone of the economy, especially in poor households of the country.

3.2. Goat Rearing: Contribution in Economy & Challenges

The contribution of goats in the rural economy are:

- Employs nearly 33 million people.
- About 14% of family income is contributed by goats.
- Provides cash for immediate emergency and planned expenditures.
- Provides an economic opportunity for the not-so-physically-fit segments of the population, such as the elderly, differently abled, sick, etc.
- Regular income and engagement as compared to other seasonal livelihood options.
- The goats provide meat and milk to the farmers, thus contributing to nutrition.
- Provides social security through liquid asset ownership and reduces the vulnerability of goat farmer families.

The country has the highest number of livestock in the world and the second highest number of goats in the world (after China) and stands second in the world for goat meat production. The goat meat in India is priced at a premium over the other permissible meat sold in the market. The demand for goat meat is also increasing every year. Despite high demand throughout the year and premium prices, the farmers are unable to make goatery a dependable and sustainable livelihood.

Some of the key challenges of the goat sector are:

- High mortality of goat kids (up to 40%) as well as among adults (up to 20%): Farmers are usually unable to sell the required number of goats, which may help them in making goatery a source of sustainable living income. Most smallholder or landless farmers sell the stocks at a very young stage and at very low prices due to fear of mortality.
- Poor growth rate due to traditional grazing-based feeding practices and lack of nutritious fodder in the forest area. There is also a round-the-year variation in the quantity of fodders/forages available in the grazing area. Farmers need to rear them for a longer duration.
- Lack of routine veterinary and health care services for goats like vaccination and deworming, etc., to save goats from preventable diseases.
- Low level of awareness on breed and breeding of goats to improve their health and growth.
- Negligible fodder cultivation for goats and dependence on grass, bushes, and tree leaves.
- Poor availability and accessibility of reliable treatment facilities.
- Dependence on visiting traders for goat transactions. The traders always try to maximize their profit on the cost of poor farmers.
- Low participation/involvement of government experts/advisers for goat health and management.
- Unorganized and unhygienic slaughtering of goats: Since most of the animals are slaughtered on the roadside unhygienically, nearly 40% of the non-edible part of meat gets wasted. If the slaughtering is done at a common place, the waste can be used for biogas and manure production. The organized slaughtering and sale will improve the income from meat and earnings of farmers (NABARAD 2023).

[1]Doubling rural farmers' income through goat farming in India: prospects and potential

3.3. Gaps in Goat Farming and Goat Value Chain

Some of the critical gaps in goat farming are mentioned in the table below.

Table 3: Gaps in Goat Farming & Value Chain

	State	Gap (%)	Normal value	Base value
1	Goat stocking rate (goat/ha)	>400%	10	>50
2	Bucks' availability (No)	150	1:40	1:100
3	Pure bred pedigreed bucks' availability	450	1:40	1:300
4	Kids (< 3 months) mortality (%)	250	1:40	35
5	Adult mortality (%)	166	7.5	20
6	Fodder (lopped, cultivated, etc.) availability (g/goat/day)	233	1000	300
7	Concentrate availability (g/goat/day)	400-500	200-300	25-50
8	Body weight at 12 months (kg)	25-55	-	-
9	Reproductive efficiency	40-65%		
10	Profit/adult female goat per year with (zero input) and strategic input	100	5,000	2,500

Source: CIRG, Makhdoom, Mathura

Meat and milk are the major products from the goats. A typical example of a live goat value chain mentioned below:

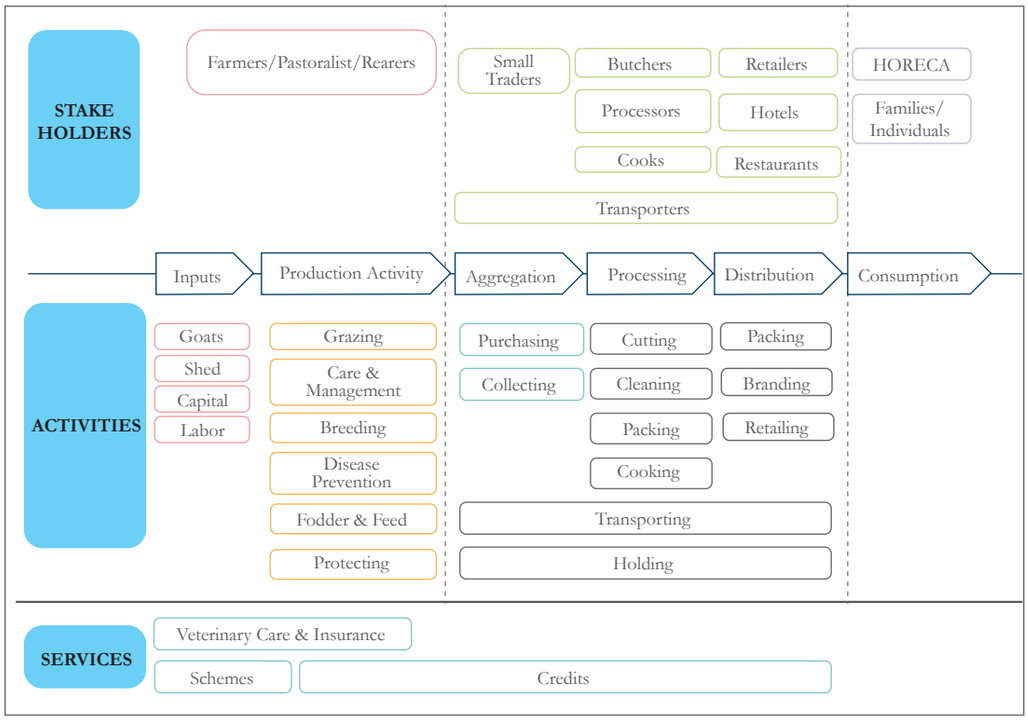

Figure 4: Goat Meat value Chain.
(HORECA: Hotels, Restaurant, and Catering)

3.4. Stakeholders of Goat Value Chain

The various stakeholders involved in the goat-based livelihood are-

Table 4: Stakeholders of Goat Value Chain

Stakeholders	Interest	Contribution/influence/support to goat business
Farmers	• Income generation/ livelihood • Employment • Nutrition • Social Security	• Puts labor and resources for rearing • Take/absorbs risk
Small & Large Goat Traders/Meat Retailers	• Income generation/ livelihood • Employment	• Put capital in trading • Labor • Take risk
Animal Husbandry Departments	• Increase food production • Protection of interest of consumers • Protection of livelihood of farmers	• Provide routine veterinary, and preventive services • Insurance support • Assets improvement through schemes implementation • Training/awareness
Civil Society Organizations	• Enhancement of livelihood of farmers • Poverty alleviation	• Awareness & capacity building • Handholding support • Innovative approach
Private Input suppliers	• Income generation/ livelihood • Employment	• Capital investment for input availability • Awareness
Consumers	• Nutrition	• Purchasing the product
Export Agencies	• Income	• Exploring market beyond the country
Research institutions	• Mandate of livelihood improvement	• New product development • New innovations
Business Enterprises (Meat packaging/leather industry, etc.)	• Income and profit	• Investment in processing and marketing • Consumer identification
Central Government & State Governments	• Goats are important contributors to the GDP of the country and state • Provide nutritional and financial security • Provide employment	• Disease prevention schemes • Investments in services delivery, research, human resource development • Policy developments

KEY REQUIREMENTS FOR ESTABLISHING A GOAT-BASED LIVELIHOOD

4. KEY REQUIREMENTS FOR ESTABLISHING A GOAT-BASED LIVELIHOOD

4.1. Basic Requirements for Starting Goat-Based Livelihood

Goat rearing is very easy to start and requires very little resources and that is the main reason behind high popularity of goat farming among poor. It does not require any specific or complex skill and is opted by poor people from various castes and religion. Goats have the advantage of thriving on both best nutrient-rich fodder to dry fodder with low nutrients. Besides, goats can survive in limited space and harsh climatic conditions as well.

Basic Requirements to Start Goat Rearing:

- Few goats: Locally purchased or gifted.
- Shed space: A small separate shed for more than 5/6 adult goats.
- Labor: Limited labor and time required for grazing goats.
- Fodder: Grazing area in the vicinity with grasses, bushes, trees, etc.
- Market: For selling of goats.
- Services: First aids, vaccination, and deworming services.
- Inputs: Instruments, supplements, and feeds.

When to Start Goat Rearing?

- Can be started any time of the year, but it's good to avoid the rainy season for the induction of new animals.
- Extra care is required in very cold and hot seasons for induction of new animals.
- The best season to start the goat farm is Feb-March and Sept-Nov, when the temperature is moderate, with low or no rain, and plenty of lush green fodder to eat.

Where to get Goats to Start?

- In India, it's advised to get goats from known sources or established breeder farms.
- Goats should be purchased from a nearby place which should not be more than 40 km away, so that goats reach the new shed in 1 to 2 hrs.
- Considering the high prevalence of disease transmission, new goats for rearing should not be purchased from animal markets.

What Quality of Goats to be Purchased for Production?

- The new farms need female goats (Does) and male goats (bucks).
- The preferred ratio of male to female in the herd should be 1:10 to 1:20. It is advised to purchase one buck if there are 5-7 female goats for good productivity and prevent disease transmission.
- The age of goats should be 12-14 months (2 pairs of incisor teeth).
- The purchased goats should be active, with shining eyes and no discharge from eyes, nose, etc.
- The purchased goats must be dewormed (within 1-2 months) and vaccinated against PPR (within 6-9 months).

How to Transport Goats to Farm?

The goats must be transported with utmost care to avoid stress to the animals. Poor transport is a punishable offence under the act "Prevention of Cruelty to Animals, 1960" and the central government has made some rules for the transport of animals, which are listed in "Transport of Animals, Rules, 1978 Chapter-VI for Sheep and Goats, Rules 65-75".

© Passing Gifts

Figure 5: Existing goat transport in Bihar.

- The transportation causes high stress in goats and leads to the emergence of diseases like shipping fever and PPR.
- Usually, goats are transported by roads and rarely by railways.
- The vehicle must be comfortable and should have five-inch bedding material on the floor, and a vehicle of four-five tons capacity must carry maximum 40 goats.
- The goats must reach the new farm within one-two hours (as early as possible).
- The transport of animals must be done during cold hours of the days.
- If there is long duration of transport, the goats must be fed, watered, rested at certain intervals (four hours maximum).
- Any transport of goats for long distance must have a valid health certificate.

Receiving Goats on Farm & Quarantine

The new goats get a new environment and new owner, which cause stress and reduces their immunity. The goats get susceptible to diseases in this transition period. The following actions are required while receiving the goats and doing quarantine:

- The new goats should receive clean potable water after rest of 30-40 minutes on arrival at new farm and the goats can be fed with green leaves after that.
- The new goats must be separated from the older goats for at least 14 days (two weeks). After that the new goats are mixed with the old goats only if there are no diseases in any of the goats.
- The first three days are very critical for the new goats, if they are unattended, they may elope to seek the old owner, or they will be lost.
- The new goats must be fed and watered separately and allowed for grazing under supervision.
- If the goats are not dewormed and vaccinated before purchasing, the goats should be first dewormed after seven-eight days of purchase and vaccinated after 14 days (before mixing).

4.2. Economics of a Small Goat Farm

The small farmers keep three to seven goats in their sheds and take them to graze for a few hours in neighboring fields or grazing areas. Goats are usually fed with homemade or easily available products like brans, pulses hulls, kitchen waste, rice water, etc. Poor farmers usually do not spend on treatment and vaccination of their livestock, including goats.

The chart mentioned below shows the economics of farming seven goats (Black Bengal) in an extensive system with scientific management care:

3.1 Economics of a 7 (6 +1) Goat Farm

Capital Investment

The major capital investment on purchasing goats and constructing the required shed.

Cost of 6 Black Bengal Goats of age 14-15 months 4500/per goat-	₹ 27,000/-
Cost of 1 Black Bengal Buck of age14-15 months 8000/per goat-	₹ 8,000/-
Cost of constructing 120 sq. ft low cost shed to keep the goats & Kids-	₹ 36,000/-
Total Capital Expenditure	**₹ 71,000/-**

Assumptions

- The Black Bengal goats are small stature goats, so they are priced less.
- There is no practice of rearing bucks, so the demand and price will be high.
- The space required for an adult goat with kids is 15 sq. ft.
- The construction of semi-pucca sheds is taken at 300/sq. ft.

Recurring Cost

The farmers incur recurring cost on feeding and treatment only and invest their own daily labor for grazing and management. However, for scientific rearing some expenditure on deworming, vaccination, and supplements to get better production and reduce mortality would be required.

Cost of feeding 7 Black Bengal adult goats for 12 months.	₹ 1,890/-
Cost of Supplements like mineral lick blocks or powder for 1 year-	₹ 1,000/-
Cost of vaccination and deworming of 7 goats and kids -	₹ 840/-
Total Recurring Expenditure per year	**₹ 3,730/-**

Assumptions

- The feed required for an adult goat is 100g per day for at least 90 days in a year. So, the total feed requirement will be 63 kg. The price of feed is around 30 rupees/kg.
- The supplements will be required for at least 150 days a year, @5g per goat, so nearly 5 kg of supplements will be consumed in a year.
- The cost of vaccination and deworming is around 40 rupees/goat. There are three vaccines to be given and three times deworming to be done.

Production

The Black Bengal goats are highly prolific and usually give birth to twins and triplets. These goats attain puberty at 8-10 months and start kidding at 14-15 months. They attain the market weight of 15 kg at the age of ten months, if fed and managed well.

No of kids born in a period of 12 months from 6 goats -	14
Mortality of kids 10%	2
Kids available for sale	12

Assumptions

- The average number of kids born from Black Bengal goats per kidding is 1.5
- The gestation period of goats is five months and five days (155 days). In general, there are three kidding in two years, i.e., 1.5 kidding per year. Thus, the total no of kids born should be 6 x 1.5 x 1.5=13.5 (round off is 14).
- The mortality of kids is usually 10% in a year.

Income

The income in goat farming is usually earned by selling live goats, both male and female goats. The ratio of male and female birth in a herd is usually 1:1. The table mentioned below shows the price as well as economics of goats rearing and selling:

Table 5: Economics of Goat Rearing & Selling						
SN			**1st year**		**2nd year**	
	Particulars	Rate (₹)	No	Amount (₹)	No	Amount (₹)
1	Male goats	320			6	28,800
2	Female Goats	180			6	12,960
Total income						41,760
Subtracting expenditure						3,730
Gross income						38,030
Subtracting depreciation						9000
Net income			-	-		**29,030**
Net income per goat per year						4,838

Note: Kids produced in 1st year are sold in 2nd year and so on.

Assumptions

- The mature body weight of male goats after ten months will be 15kg, and for female goats will be twelve kg.
- The price of live male goats is around 320 rupees per kg and female goats around 180 rupees per kg.

4.3. Requirements to Scale up a Small Goat Rearing to an Enterprise

- The goat rearing can be established as an enterprise to generate sufficient income and provide employment. The conditions which favor the establishment of goat enterprise are:
- The goat rearing does not require any expertise or specified skill so anyone can start it.
- The challenges of disease management are overcome through better feeding, healthcare management, and insurance.
- Marketing facility is easily available.
- Preventive and veterinary care services are available even in remote rural areas.
- There are institutions like KVK, RSETI, Agriculture and Veterinary Colleges, and Animal Husbandry Departments provide trainings.
- There are schemes of NABARD and Animal Husbandry Departments to support.

The Risks & their mitigation plan for a Goat Enterprise

- There is a risk of fodder availability around the year, so a contingency plan needs to be prepared to feed the goats in lean seasons.
- The risk of disease can be prevented and managed through nutrition, strict biosecurity, medicines, vaccination, etc.
- Risk around price fluctuation, which can be controlled by better planning of selling livestock in festivals/functions.

The Inputs Requirements to Establish a Goat Enterprise

- Credits/capital requirements to establish a goat shed and purchase animals.
- Skills for primary veterinary care, marketing, and fodder production.
- Accounting and business skills

4.4. Understanding Scientific Goat Management

Goat rearing is an age-old practice, in which goats were usually dependent on grazing in forest areas and around agriculture fields. The availability of nutrient-rich fodder trees in the forest and leguminous and non-leguminous crops by-products help the goats to grow fast.

The changing climatic conditions, decreasing forest coverage, and transboundary movement of animals have made goats susceptible to numerous diseases. The decrease in fodder quality and limited grazing has also affected the nutritional status of goats thus lowering their immunity. The poor nutritional status and lower immunity has led to the infestation of parasites and microbes leading to emergence of many diseases. The poor nutritional status has also lowered the fertility rates of goats.

The factors responsible for the decline in income from goat farming are:

- Poor fertility,
- Mortality in both adults and kids due to disease outbreaks and
- Poor growth rate/poor weight gain

The scientific rearing of goats is targeted to overcome the above challenges. The various reasons and their possible remedial measures are:

Table 6: Possible Reasons of Low Productivity of Goat

Factors for lower productivity	Possible reasons
Poor Fertility	• Poor nutrition • Low space in shed/overcrowding • Higher male and female ratio (more than 1:20) • Inferior/poor/weak bucks used for breeding
Mortality in Adults and Kids	• Disease outbreaks • Parasitic infestations • Poor immunity and weakness • Poor space in shed • Management and care issues
Poor Growth Rate of Kids	• Lack of proteins in the diet/poor nutrition • Parasitic load in animals • Fluctuation in fodder availability • Lack of space in shed • Management and care issues

It's evident here that nutrition and space play important roles in the productivity and production of the goats.

The Various Dimensions of Scientific Goat Rearing are mentioned below:

i. Knowing a goat farmer
ii. Know your goat.
iii. Breeds and types of goats
iv. Housing/shed requirement of goats.
v. Feeding and nutritional requirements of goats
vi. Daily or routine care of goats
vii. When and how to breed the goat
viii. Knowledge about important disease conditions in goats
ix. Measures for disease prevention among goats
x. Knowledge of the right time to sell goats.

UNDERSTANDING GOATS & THEIR HOUSING, FEED & HEALTHCARE REQUIREMENTS

5. UNDERSTANDING GOATS & THEIR HOUSING, FEED & HEALTHCARE REUIREMENTS

5.1. Knowing the Goat Farmer

It's very important to understand the supportive ecosystem and condition of a goat farmer, before prescribing a scientific management practice of goat rearing.

Challenges for Goat Farmers

Table 7: Challenges for Goat Farmers & Possible Solutions

SN	Challenges for Goat Farmers	Possible Solutions
1.	Landlessness- to support shed and fodder cultivations	• The village should develop the common lands for fodder/feed. • The village panchayat can develop common hostels for animals, which can be rented to landless. • The goat shed/animal shed should be part of PMAY, to have sustainable livelihood along with better dwelling.
2.	Illiteracy to read and write	• Communication materials for goats must be designed in vernacular language with audio-visual contents.
3.	Less time for attending any planning, training on goats	• The actual goat rearers should be targeted for any interventions. Compulsory attendance on request or doorstep programs needs to be planned. • The training should be done at comfortable time for all and not in agriculture seasons.
4.	High engagement of women in goat rearing	• The goat rearing is a tool to strengthen the women financially.
5.	Low cash flow at home to pay for the services and supplements for goats.	• The cost of services must be monitored to keep them low. • There must be wall paintings and mechanisms for delivery of free services to farmers from governments.
6.	Lack of capital to reinvest in case of death/sell/new start-up.	• Sensitization of people is required to finance the people to Importance must be given to

5.2. Know Your Goats

Goats are small ruminant animals, which thrive on green leaves, grasses, and dry fodder. Goats are habitually browsing animals, who prefer to eat what is up high rather than anything on the ground. They usually directly swallow and store grass and leaves in their multi-compartment stomach. While resting they regurgitate the swallowed grasses and leaves and again chew it multiple times (rumination) for digestion.

The goats attain puberty in eight-ten months and have the first kidding at 13-14 months (early maturity). The gestation period is 150 ± 5 days. After attaining the market weight, goats are slaughtered to harvest the edible meat. The percentage of meat varies from 50-55% of the live body weight. The large breeds also give milk for human consumption. In hilly states the goats also yield fine wool fiber.

Breeds of Goat and its Relevance to Production

The breed is group of animals, which have similar body configuration, size, features, and general appearance. The animals are related due to decent from common pool of animals, which has evolved in thousand years living under climatic condition and geography.

In India, there are 37 registered breeds of goats, and they are classified as:

Table 8: Registered Breeds of Goats & Their Classifications

Meat Breed		Milk Breed		Dual Purpose (Meat and Milk)		Wool/Fiber Breed	
Black Bengal	Bihar, Odisha, Bengal, Jharkhand	Beetal	Punjab	Barbari	Uttar Pradesh	Changthangi	Laddakh
Teresa	Andaman	Jamunapari	Uttar Pradesh	Rohil khandi	Uttar Pradesh	Chegu	Kashmir
Ganjam	Odisha	Jhakrana	Rajasthan	Sirohi	Rajasthan	Bhakrawal	Laddakh
Assam Hill	Assam	Surti	Gujarat	Marwari	Rajasthan	Gaddi	Jammu
Sumi-ne	Nagalan	Zalawadi	Gujarat	Kutchi	Gujarat		
Kodi-Adu	Tamil Nadu	Gohilwadi	Gujarat	Mehsana	Gujarat		
Kana-Adu	Tamil Nadu			Kahmi	Gujarat		
Salem Black	Tamil Nadu			Sangamneri	Maharashtra		
Konkan Kanyal	Maharashtra			Osmanabadi	Maharashtra		
Nandi-Durga	Karnataka			Malabari	Maharashtra		

Source: (Manoj Kumar Singh, 2019)

Relevance of Goat Breeds in Production and Income

- The country has 37 registered breeds of goats. Goats usually adapt the climate and fodder conditions of their native area, so crossbreeding or rearing in different states require careful selection.
- The larger breeds like Jamunapari, Beetal, Sirohi, etc. require large forest area or barren lands for grazing.
- The small breeds like Black Bengal are highly prolific and give birth to multiple kids at a time, but they have less milk production to feed their kids.

5.3. Housing/Shed Requirement of Goats

The sheds are important component in goat livelihood to provide clean comfortable environment and protect the loses from predation and theft. The goats spend 50% of the time outside the shed in grazing and ruminating.

a Why is a Shed Required for Goats?

- The goats need to be protected from harsh weather conditions like cold, heat, and rain.
- The goats prefer laying and sitting in proximity to their family members.
- The shed protects goats from predation, theft, and diseases.
- Properly constructed and managed sheds also provide clean and comfortable social space for resting.

b. Basic Requirements of a Goat Shed

- The goats do not require very complex sheds, rather simple sheds with good ventilation.
- The floor should be plain with water absorbent capacity and thatched roof, which is normally sufficient for goats.
- The walls should be free from cracks and the shed should be easy to clean,
- The shed should have an open area for daytime resting.
- It must have a feeding and watering facility in one corner.
- If there is large herd, the shed must have separate space for pregnant, lactating goats.

c. How to Construct and Manage Comfortable Low-Cost House for Goats?

- The length of the house should be oriented in East-West direction.
- There is no restriction on the length of the house, but the width should be less than 8 meters.
- The side height can be eight ft. and above and ridge height should be 11.5 ft.
- The side wall can be 3.5 ft. above the ground, and above that chain mesh or bamboo mesh can be used.

d. Goat Housing Requirements – Key Points

While constructing goat sheds, the following points need to be kept in mind -

- Goat house should be constructed in well drained elevated plan area.
- The long axis of the shed should be in an East-West direction.
- Floor space for one adult goat is generally recommended in goat sheds in 1-1.5 m2 inside the shed. However, for 0-3, 3-6, 6-9- and 6-12-months old kids, the floor space of 0.25, 0.5, 0.75 and 1 m2 per kid, respectively is recommended. The lactating females and adult males require 1.5-2.0 and 2.0 m2 floor space. The floor space in open paddocks should be double that of area inside the shed.
- The width of the house should not be more than 20 feet (six meters) and there is no restriction in the length of shed; however, partitions may be made preferably at every 30 feet (nine meters) or as per the requirement of the flock.
- Height of the shed should be at least twelve feet at the centre and eight-nine feet at sides for double sloped (Gable) roof. The overhang of three feet should be given on both sides.

[2]Goat shelter layout plan and requirements. ICAR – Central Institute for Research on Goats (CIRG), Makhdoom, Farah, Mathura (UP)

- Side walls along the length of the shed should be four feet with the remaining height kept open for fixing iron mesh for free air circulation. The walls across the width of the house on both sides need to be closed to roof height.
- The roof of the goat house may be made of thatch, tiles, corrugated cemented sheets, or thermal insulated GI sheets depending upon availability as well as durability required.
- Separate provision of waterers and feeders of fixed or movable type should be provided in each paddock. To reduce the cost of housing, lean-to type shelters can be constructed if flock size is low i.e., 10+1 goat unit.

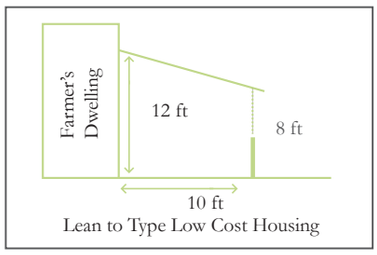

Figure 6: Lean-to Type shelter for goats.

e. Housing Requirements for 10 Females + 1 Male with Kids

Assuming out of ten goats, eight is kidding every year with twinning rate of 1.5, a total of twelve kids will be bornin each year. So, housing needs to be given to ten adult females, twelve kids of different ages and one adult male. The possible layout plan is given as below for this unit.

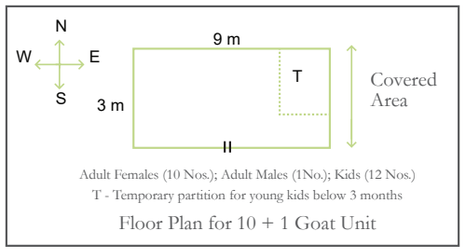

Figure 7: Floor plan for 10 + 1 goats

f. Floor Space Requirement for Goats

Table 9: Floor Space Requirement for Goats		
Age	**Covered Space (Sq. m)**	**Open Space (Sq. m)**
Up to 3 months	0.2 - 0.25	0.4 - 0.5
3 months to 6 months	0.5 - 0.75	1.0 - 1.5
6 months to 12 months	0.75 - 1.0	1.5 - 2.0
Adult Animals	1.5	3.0
Male bucks, pregnant & mother goats	1.5 - 2.0	3.0 - 4.0

- The adult goat needs a feeding space of 50 cm, and equivalent watering space, while the kids need feeding space of 30-35 cm.
- If slated wood is used for flooring it must be 7.5 to 10 cm wide and 2.5 cm thick, with a space of 1 cm space in between the planks.
- A shed of 100 sq. ft. can house five adult goats and their kids.

g. Feeding and Watering Space Requirement.

Table 10: Feeding & Watering Space Requirement for Goats				
Type of animal	Space per animal (cm)	Width of manger/ water trough (cm)	Depth of manger/ water trough (cm)	Height of inner wall of manger/water trough (cm)
Goat	40-50	50	30	35
Kid	30-35	50	20	25

h. Precautions to be Taken While Constructing Goat Sheds

- The new sheds must be constructed at high place of clean air ventilation.
- It's good to have at least 200m of distance from the adjacent sheds.
- Dry cool shady place is good, and a swampy wet place is hazardous for the goats.
- The goat sheds must have raised floors in heavy rainfall areas.
- There must be stairs for goats to easily climbing on to the raised floor (Machan).

i. How to know the Present Shed is Good for Goats or Not?

- The farmers may construct a goat shed based on the resources available with them. They must be guided to improve the present shed conditions based on the tool given in Annexure 7.

5.4. Feeding and Nutritional Requirement of Goats for Production

The goats are solely dependent on grazing or rather browsing to meet their food requirements. Some of the physiological and behavioral characteristics of goats feeding are:

- Goats prefer browsing (90%) overgrazing (10%).
- They spent 7-8 hours in browsing/grazing if given time.
- They spent an initial 2-3 hours in searching for best leaves.
- They have a prehensile tongue and mobile lips to pluck the smallest leaf between the thorns.
- They are well tolerant to tannins and some of the toxic plants in the vicinity.
- They always take the best fodder leaf option first then the poorest.
- If the good quality fodder is not available, they can thrive well on any kind of dry fodders.
- They need a good resting place to ruminate and digest the fodder after 7-8 hours of browsing/grazing.

How to Manage Scientific Feeding in Goats?

The goats are solely dependent on grazing, the fodder quality in the grazing area is solely responsible to meet the nutritional demand. The better nutrition helps in-

- Attain their desirable or healthy growth rate.
- Produce healthy kids.
- Have immunity to fight against diseases.

The goat needs supplement at the shed with some concentrate feed to meet the requirement and have proper growth. There are four periods when goats need extra ration. Ration required for these periods are depicted in the following diagram:

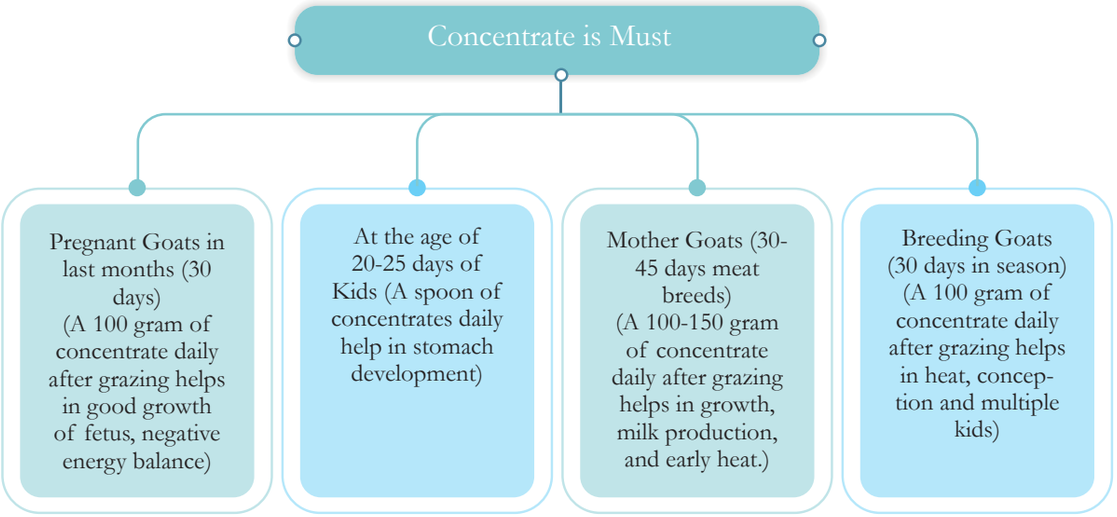

Chart 5: Periods When Goats Require Extra Ration

How to Prepare Good Concentrate Ration for Goats?

- In the market, only few branded feeds are available for goats due to low demand, and due to their high cost.
- In house, the goat concentrate can be prepared by grinding and mixing following items: -

Table 11: Ingredients for Concentrate Ration for Goats		
SN	**Ingredients**	**Percentage (%)**
1	Maize (max)	30
2	Ground nut cake (GNC)	12
3	Pulses hulls	20
4	Wheat bran	21
5	Rice bran	16
6	Mineral mixture	2
7	Salt	1
	Total	100

- **Mineral and salt supplementation to goats** - The goats respond well to mineral and salt supplementation with improve growth rate, good immunity and increased percentage of twinning and triplets.
- **Growing fodder trees for goats -** The goats like different variety of fodder leaves in the same day. The farmers can plan growing Jackfruit, Guava, Moringa, Mulberry (Sahtoot) trees for goats.

Table 12: Fodder Yield and Cultivation Practices of Different Fodder Shrubs on Farm Boundaries			
Fodder shrubs/crop on boundary	First cutting after sowing	Space between rows (cm)	Average fodder yield (kg/ meter running length cutting) after well established
Shevari (Sesbania sesban)	6 months	40	8
Dashrath grass (Desmanthus leptophyllous)	2.5 months	30	1.2
Perennial Pigeon pea (Cajanus cajan)	4 months	40	9
Hybrid Napier (Pennisetum purpureum	3 months	40	3.5

© Shutterstock

Figure 8: Boundary plantation of different fodder shrubs for fodder production for goats

Fodder Yield

Table 13: Fodder Yield	
Fodder Name	Fodder yield (kg/sq. m)
Mulberry (Morus spp.)	6.5
Subabool (Leucaena leucocephla)	8.4
Shevari (Sesbania aegyptiaca)	8.6
Drumstick (Moringa oleifera) + Dashrath (Desmanthus Virgatus)	1.8

[3]Self-sustaining goat farming model for livelihood improvement of small and marginal farmers. ICAR-National Institute of Abiotic Stress Management Baramati, Pune, Maharashtra 413115

Figure 9: Fodder Shrubs for Feeding of Goats

Formula for Calculating Fodder Requirement

- An adult goat eats around 150 gram of green fodder (80% moisture) per kg of body weight per day.
- Total Fodder Requirement Per day = No. of goats x average weight of goats x 0.15 (kg)
- Approximately one tree of medium size canopy (five m diameter) is sufficient to feed one goat per day.

5.5. Care and Management of Goats

The care and management of goats varies with the age and physiological conditions. The pregnant and lactating goats require special care to avoid any losses. Care and management include housing, feeding, supplementation, and first aid. Some of the important points to consider are:

a. Care and Management of Kids

- There is highest mortality noted in the first 15 days of birth, so special attention is required for newborn kids.
- Provide naval treatment with antiseptics immediately after birth.
- The kids must receive the colostrum within 30 mins of birth and every 1.5 -2 hrs. for next 2 days.
- In winter season, warm environment, or support is required to maintain temperature in which newborn kids live.
- In case there is less or no milk from the mother goat, the kids can be reared on milk replacers.
- The kids should receive first concentrate mixture at 25 days.
- Goat kids should be first dewormed at 30 days of age.
- The castration of male kids to be done at 60-65 days of age.

b. Care and Management of Pregnant Goats

- The pregnant goat must be separated from the herd and allowed for grazing under supervision.
- The sharp objects and corners in shed to be avoided on the way of goats.
- The pregnant goats must be supplemented with feed 100-150 gram per day (250 gram for large breeds) in shed.

c. Care and Management of Mother Goats

- The mother goat should be kept indoor for 15-20 days after kidding and feed and fodder to be supplied at shed.
- The kids of two goats should not be mixed.
- The kids can be weaned at 8-10 weeks age, and the goat can come to heat after that.

d. Herding of Young Ones

- The male & female grower kids can be reared together after weaning (more than 2.5-3 months).
- Both male and female grower kids should be reared separately after 6 months.
- They can be supplemented with 30-50 gram of feed for better growth.
- Goat kids need to be dewormed every 3 months and vaccinated after 4 months.

e. Management of Goats in Different Seasons

Goats tolerate wide range of temperature if they are on good nutritional status.

- Summers- The goats must be supplied with clean potable water, and shade area for resting during daytime. The grazing is to be done in morning and evening hours.
- Rainy Season- The goats need to be protected from wetting in rainy season.
- Winters- The newborn kids should be reared on warm environment and protected from cold shock & stress.

5.6. Breeding of Goats How and When to Breed My Goats?

The breeding of goats is important management practice for herd growth and harvest the surplus goats for sale.

The important points to be considered while breeding: -

- The breeding starts with selection of good mother goats and buck for breeding.
- The home-grown bucks are to be avoided and bucks with history of disease resistance, high twinning & triplets, and vigor are considered.
- The bucks must be changed/exchanged in every 18 months.
- The female goats breed after coming to estrous (heat), they show typical signs of heat like bleating, seeking male, frequent urination, avoiding feeding, running and restlessness.
- The goats can be bred with elite bucks after 12 hours. of onset of heat for better production.

a. Simplified Open Nucleus Breeding System

- In goats few farmers can be promoted to rear elite males and females and their progeny is further used for breeding.
- The bucks produced from that herd is to be used in other household goats.
- The system brings rapid change in the area on quality of goats.
- The male goats produced in other households is be castrated to avoid inbreeding.
- The farmers can also sell/donate their good quality goats to the nucleus maintained by the farmers

b. Selection and Rearing of Elite Bucks

The production of bucks is very important, and it fetches better price than meat if reared well. The kids selected for breeding must have the following characteristics.

- Born from history of healthy does and bucks in their lifetime.
- There must be history of multiple births in their parents.
- The kids with highest body weight are to be selected for buck development.
- It requires proper care and feeding since birth.
- The selected kids should not be castrated and reared separately from its siblings.
- The elite buck must not be retained in same herd.

5.7. Know the Important Disease Conditions in Goats

The diseases are the greatest concern of the farmers, and they are the reasons for highest mortality and losses in goats across the country. The disease conditions are usually tough to be managed in the rural area due to limited resources and knowledge. The preventions methods are required to minimize the losses.

a. The different types of disease in goats are:

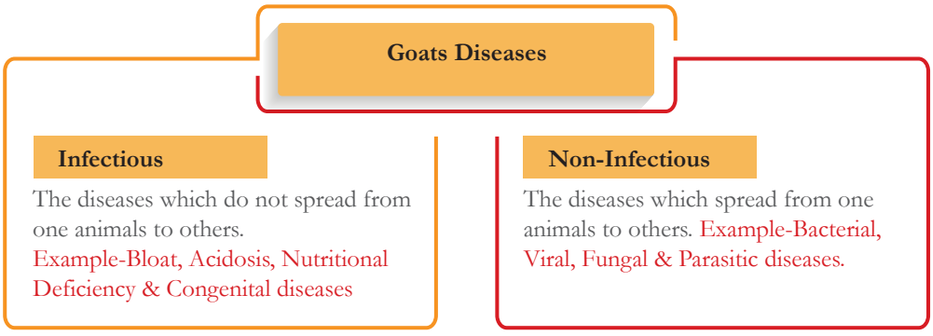

Chart 6: Types of Goat Disease

b. Conditions which favor occurrences of diseases in goats are -

- Poor owner and unhygienic sheds
- Stressful shed conditions
- Goat on poor plan of nutrition
- Large number of goats in small space (overcrowding)
- Any type of social or physical stress
- Failure in care and management

c. What are the Effects of Bad Health of Goats on Production and Income?

- The growth of goat kids is delayed.
- Poor immunity makes the goat susceptible to diseases.
- Poor fertility rates and pregnancy is delayed (longer kidding interval).
- Low birth weight of kids, mortality, and abortions.

d. How to Know My Goats are Sick?

- The goats exhibit behavioral and physical signs of various diseases like:
- The sick goats sit separately from the herd, look dull, and head down.
- Low feed intake and decreased/stopped rumination.
- Nasal/oral discharge of fluids.
- The eyes are dull with presence of any fluid or lacrimation.
- Limping or unable to walk due to weakness.
- Wound lesions in mouth and body in some diseases.
- Sometimes diarrhea and constipations.
- On examination the pulse is slow/fast, temperature may be high/low.

e. What are the Important Diseases in Goats?

Table 14: Goat Diseases- Symptoms, Treatment & Preventions

SI.	Name of the diseases	Important Symptoms	Treatment and Preventions
	Viral Diseases		
1.	PPR (Cause highest mortality in goats)	• Very dangerous disease of goats, cause high morality. • There are necrotic lesions, on mouth dental pads, and lips. • High temperature. • Discharge from eyes and diarrhea.	• Require treatment by vets. • Vaccinate the kids at 4 month of age and repeat annually.
2.	Goat Pox	• Round popular lesions on body, diarrhea, animals become weak, and death happens	• See a vet for treatment. • Vaccinate the kids are 3 months of age and repeat annually in endemic area.
3.	Orf	• Oral lip lesions and spread to whole mouth area.	• Clean and apply antiseptics till healing.
	Bacterial Diseases		
4.	Enterotoxemia	• Sudden death of healthy young animals on grazing area, high temperature before death.	• No treatment • Vaccination annually before rainy season.
5.	Tetanus	• Upward Stretching of neck, erect ears, lock jaw, temperature.	• Vaccination (Tetanus Toxoids) is to be done at birth with booster at 4 weeks. • Vaccination (Tetanus Toxoids) before parturition.
6.	Anthrax	• Sudden death of large number of animals in village with oozing of un-clotted blood from eyes, ears, nose, and other orifices.	• No treatment is available. • Report the disease to vets. • Vaccination in endemic area is done.

	Internal Parasitic diseases		
7.	Worm infestations	• Weak, stunted, anemic, poor fertility, hair loss.	• Deworm the adult goats every 3 months. • Do not repeat same medicine every time.
	External Parasitic Infections		
8.	Skin infections	• Dry hairless skin, rubbing wounds, restlessness.	• Apply medicine on advice of vets.
	External Parasitic Infections		
9.	Nutritional Vitamin & Mineral	• Stunted growth, skin discoloration, bending of bones, weakness, lower fertility	• Supplement with mineral mixture powder regularly (5g/goat)
	Managemental Diseases		
10.	Bloat	• Enlargement of left stomach with gas. • Restless, and depression, pain, bleating.	• Use of oil, and anti-bloat medicines
11.	Acidosis	• Due to high carbohydrate diet intake like rice, wheat, etc. • Bloating, water movement in stomach, off-feed, rumination is stopped, depression.	• Must see a veterinary doctor soon. • In initial period banking powder can be used orally (1g/kg body weight) for 3-4 times.
12.	Dog Bite	• Dog bite lesions • Observation & complain by the farmers.	• Require veterinary care and Post bite vaccination.

5.8. How to Prevent Diseases?

Disease prevention in goats is a combination of various activities performed on the farm. The compromise in any of these activities/steps may lead to the occurrence of diseases. The important considerations to prevent diseases in goats are:

- **Selection of disease-resistant animals on farm** - The farmers should purchase animals with a history of less or no diseases. The diseased and old animals in the farms is to be culled before breeding season.
- **Good shed & shed hygiene** - The good airy shed provides stress-free environment for goats and regular cleaning of sheds prevents infections.
- **Feeding for disease prevention** - The balanced diet helps building immunity and prevents many nutritional diseases. The goats usually do not need external vitamin supplementation except in disease conditions.
- **General management and biosecurity** - The bio-security means to prevent the entry of disease-causing/carrying agents in the farm from all sources. It requires the netting of farms to prevent the entry of birds, cleaning outside the shed to prevent the breeding of insects, preventing entry of visitors on the farm, and disallowing the mixing of old and new animals.
- **Prevention through vaccination and deworming** - The goats need to be dewormed every three months with proper selection of anthelmintics. The correct dosing of medicine is required to have the desired effects. The kids need to be vaccinated after 4th month as per the schedule.

- **Control of external parasites** - The external parasites need to be controlled through dipping or pour-on applications.

5.9. How and When to Sell Goats and its Products for Income?

The live goats should be sold to get the maximum benefit at the proper age. The growth of goats gets slower after attaining a mature body weight and there is high demand at certain ages and body weight. Usually, farmers hold the animals in anticipation of getting higher prices.

The price of goat increases on certain occasions such as:

- Festivals like Eid, Bakri eid, Dusshera, Holi, Mansa Puja, and New Year time.
- Marriage seasons
- Winter seasons

The sale of goats also declines in several months or weeks considered auspicious by Hindus, such as the month of Sawan (July or August) or Navaratra festival, etc.

a. Time to Sell Live Goats and Goat Products

Although goats can be sold at any age and any weight, the appropriate age and time to sell the goats are:

- Selling of live goats - The live goats need to be sold at the age of 10-15 months when they attain a mature body weight of 18-22 kg (Black Bengal). There is a loss in selling goats below that age or above that age as well.
- Selling of milk - It should be sold immediately after milking.

b. Culling and Exchange of Bucks

- The adult female, after an age of 8 years of productive life, should be evaluated and sold/culled.
- The bucks in the shed should be exchanged after 18 months to avoid inbreeding in the herd.

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Figure 10: A goat market in Purnia (Bihar)

c. Indicators of Improved Goat Husbandry

The goat must perform to gain the proper market weight in the appropriate time. The various indicators to understand the performance of goat husbandry are mentioned below:

Table 15: Indicators to Measure Goat Performance		
SN	Performance Parameter	Value
1	Mortality in kids	Below 5% in a year
2	Mortality in adults	Below 5% in a year
3	Kidding rate	Twice in 14 months
4	No. of kids born	Twins/triplets
5	Per day weight gain in kids (Black Bengal)	60 -70 grams

5.10. Ecosystem & Climate Requirement for Goat Rearing

Goat rearing requires dry and arid climate with lots of vegetation on fallow land. The availability of labour for grazing goats is very important for goat-based livelihood. The goat rearing is directly related to the poverty and unavailability of other engaging livelihood options in rural areas. As the following points reiterate, other factors like demand for meat in local areas, availability of fodder, etc. are secondary.

The state of Rajasthan has 25% of the non-vegetarian population but has the highest number of goats due to the dry-arid environment and the unavailability of other livelihood options in the rural area.

- The state of Bihar has third largest population of goats, but there is an absolute lack of fodder and feed due to the high intensity of cultivation.
- In Bihar, most of the poor households' rear goats and keep the goats in one corner of their houses. They usually don't have dedicated space for goats.
- There is a high density of goats in Jharkhand, Odisha, Chhattisgarh, and Madhya Pradesh due to the availability of forest areas for grazing. Besides these states have a substantial tribal population who have traditionally been engaged in goat rearing.
- The NE states have a high consumption of meat, but goat rearing is less due to high humidity.
- The hilly area of the country has good feed and fodder for goats, but low density due to the unavailability of labour to graze the goats.

The Supporting Ecosystem to Promote Goat Rearing

- Dry and arid climate to semi-arid area.
- Availability of grazing area, forest area, etc.
- Availability of people at home for grazing the goats.
- Available market to sell goats.

Climate Requirement for Goat Rearing

The goats are known for their climate-resilient trait and can easily adapt to wide variations in the climate. They also adapt to the effects of climate on the feed, fodder, and water availability.

- **Temperature** – The goats can survive and live in a varied range of temperatures, and hence are found in hot deserts as well as chilly mountains. The ideal temperature range for goats is 10^0C to 24^0C, but with proper feeding and care goats can tolerate up to 0^0C (32^0F) to a maximum 41^0C. There is breed adaptation to the local climate and the movement of breeds from cold regions to hot climates is challenging. The long-haired and long-legged breeds tolerate the radiant heat well (R.M. Acharya, 1995)
- **Rainfall** - The goats are less tolerant to heavy rainfall and long duration of rainfall. The high humidity with rising temperatures causes stress among goats.
- **Humidity** - The goats can tolerate 75% of relative humidity at temperatures below 30^0C. At temperatures above 35^0C, the relative humidity of 45% is also intolerable.

- **Wind speed** - Moderate wind speed at high temperatures produces heat stress.

The goats tolerate well the hot and dry conditions but find the hot and humid (coastal) environment very stressful. The Temperature-Humidity Index (THI) models of temperature and humidity index for goats should be considered to understand the level of heat stress.

The higher range of temperature and humidity causes heat stress in animals which will further reduce the feed intake, and increase water consumption, immunity is compromised, and reproductive efficiency will be affected. Water is one of the very important nutrients for the goats, as the water quality decreases the intake of water reduces.

Skills and Human Resources

Rearing goats is regarded as an unskilled job but providing treatment, vaccination, and castration requires appropriate skillsets and knowledge. The grazing and feeding of goats are the only intensive work, which requires conveniently available or cheap labour engagement. The availability of human resources in the family is a prerequisite for adopting the goats. The youths rarely participate in the goats, as they are dependent on immediate cash-earning jobs. So, the grazing falls in the responsibilities of members staying back in the family especially women and older members. The children also contribute to this family's livelihood on the cost of their education.

Availability of Fodder

The availability of fodder, fodder trees, and fallow lands with vegetation is required for goat feeding. The availability of pastureland, common land for grazing, and silvo-pasture are the enabling factors for viable and sustainable goat rearing. In the absence of fodders and free grazing land in the vicinity, rearing goats at a large scale is challenging.

Market Facility

The goat rearing is driven by the market demand irrespective of other factors. So, tracking and managing the market is one of the most important aspects of goat rearing. The availability and access to sell the goats in nearby markets or visiting traders is the important driving factor for adoption.

Availability of Disease Management Services

The availability of veterinary services like primary treatment along with preventive measures is essential for the adoption of goat rearing.

STRENGTHENING GOAT-BASED LIVELIHOODS THROUGH MGNREGA

6. STRENGTHENING GOAT-BASED LIVELIHOODS THROUGH MGNREGA

STRENGTHENING GOAT-BASED LIVELIHOODS THROUGH MGNREGA

The MGNREGA and goat-based livelihood both have common target beneficiaries, goat rearing offers work opportunities to the elderly and specially-abled personnel, who are not physically fit to take up hard physical work. Besides, both MGNREGA and goat rearing contribute to raising the income of poor households and promote economic empowerment of women. Goat rearing provides cash to manage emergency, unplanned as well as planned expenditures like education of children, family functions and agriculture. It is evident from the field data that the earnings from goats are either reinvested, spent on family development, or used to manage the risk, and income of MGNREGA is mostly used on consumption. Any support in the goat-based livelihood has a significant impact on the social status, owning of assets and well-being of families.

The MGNREGA schemes have ample scope to augment and stabilize the goat production. Of the current 266 types of works listed in the Annual Master Circular 2022-23, 182 (68%) are related to Natural Resource Management. Of 182 works, 85 are water-related work, and 166 works out of 266 are related to agriculture and allied activity.

6.1 Goat Rearing and MGNREGA: Reasons of Synergy

The various reasons to bring synergy in goat-based livelihood and MGNREGA are:

Table 16: Scope for Synergy Between Goat-Based Livelihood & MGNREGA

Area	How is synergy established?
Target Beneficiaries	• Both have unskilled people living in rural area as target beneficiaries. • Both are associated with SC, ST, vulnerable community, & women with special provisions.
Objective	• Both programmes address the poverty and unemployment in rural area.
Reach to Rural Area	• The MGNREGA has reached to most of the rural districts (625 out of 797), where goat is an important alternative livelihood. • There are trained and skilled human resource engaged by MGNREGA till its last mile with clear objective.
Complementing Activity	• The income from MGNREGA and goat rearing complement each other in asset creation and improving consumption in the poor families. • The plantation efforts in MGNREGA provides feeding to goats. • There is provision for goat shed for SC/ST and vulnerable communities.
Schemes & NRM Works	• The works in MGNREGA support goat rearing through improving the green coverage utilized as fodder, water availability, and shed.
Need to Compensate	• The goat population is increasing due to efforts on decreasing mortality, (10.1% increase in 20th livestock census). • The rising goat population require fodder to sustain, which can be compensated through MGNREGA efforts.

Places for Synergy in Current Activities/Schemes

There are provisions in MGNREGA to support goat-based activities, with fodder availability, and improving the quality of water, and sheds. The sensitivity and quality of the efforts vary from state to state. It requires a professional, technical, and empathetic approach to improve the support of the goat-rearing farmers.

Salient Features of the Act in favor of Goat-based Livelihood

- 'DPC shall ensure 60% of the district cost must be used for the creation of productive assets directly linked to agriculture and allied activities through development of land, water, and trees' (Sub Para-(2) of Para 4 of Schedule-1)
- 'The cost of materials including wages of skilled and semi-skilled workers shall not exceed 40% at district level.' (Para 20 of Schedule-1)
- 'Gram panchayat has the right to implement 50% of the works as implementing agency'
- 'It's mandated in Annual Master Circular 2022-23, that works taken in MGNREGS should change from taking up individual, standalone works in a typical relief work mode to an INRM perspective'
- A special focus on water conservation works.
- Special focus on individual asset creation for sustainable income like animal sheds, farm ponds, plantations, vermi/NADEP composting pits, dug wells, fish drying yard, land development, bamboo plantation, pastureland, etc.

Supportive Schemes for Goat Rearing

Various schemes from the Schedule-1 of the act in favor of goat rearing are mentioned below:

A. Goat Sheds

- The provision of cattle, goat and pig sheds falls under works of individual asset creation on land or homestead owned by households belonging to SC, ST, Nomadic tribes, BPL families, women-headed households, physically handicapped, PMAY beneficiaries, SECC 2011 deprived families.
- The upper limit for individual assets is two lakhs as decided by the states.

6.2. Structural Requirements of Scientific Goat Sheds

The ideal goat shed should be:

- Open shed from sides.
- Space requirement per goats is 12 sq. ft. (small goats).
- The floor should be elevated above the ground (3 ft.).
- Protected from predators and theft.
- Easy to clean, feed & drinking.
- Easy to collect manure.

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Figure 11: An ideal goat shed.

Existing Goat Sheds in the Community:

The existing goat sheds in the community are -

- A part of house extended to make arrangement for goats.
- Floor is kuccha and wet (invite infections).
- Poorly ventilated, and doors are small.
- Space for goat is less (overcrowding).
- It is only a night shelter and no space for feeding and watering.

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Figure 12: A goat shed in Karnataka.

- Goats are reared along with other animals.
- There is no provision for kids, pregnant goats, and mothers.
- The collection of manure is not priority.

Low-Cost Sheds Demonstrated by CSOs:

- The goat sheds are priority intervention for the CSOs as the poor-quality sheds are reasons for high mortality.
- The creation of sheds by CSOs gives a durable asset for goats to goat farming households.
- The availability of grant funds limits their reach to a maximum number of households.
- The construction of a raised floor (Machan) is a preference for all the CSOs.
- The sheds created by CSOs also prioritize space for feeding and watering.
- The size of sheds was mostly governed by the availability of funds, land available, and interest of farmers rather than the number of goats to be reared. There is poor maintenance and cleaning of sheds observed across the locations.
- The durability of low-cost sheds is maximum up to six to seven years with proper yearly maintenance.
- The sheds were used by goats only in all cases.

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Figure 13: Goat sheds of Johar project in Jharkhand.

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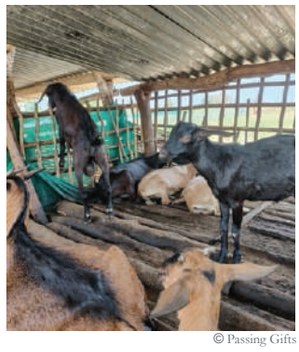

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Figure 14: Low-cost sheds of Harsha Trust (Odisha) & 4S, Gaya (Bihar)

6.3. Sheds Constructed Under MGNREGA

MGNREGA has the provision for constructing goat sheds. The proposal and request of the shed is generated from the Gram Sabha, based on selection criteria set by MGNREGA. The shed design varies from state to state. The expenditure on goat shed varies from Rupees 60,000 to Rupees 69,000. The modality of implementation is a challenge in some states due to high material costs. The use of sheds in some of the states is not as per as the intent created.

A. Cases of MGNREGA Goat Sheds Constructed in Karnataka & Kerala

Goat shed of Sharanappa Talavara, a farmer from Hirebannigola village, Kushtagi, Taluk, Koppal district (Karnataka) (Model Estimate in Annexure-11)

'Constructing shed under MGNREGS has helped me to protect the goats as well as to maintain hygiene. I am rearing more than 20 goats & earning around 2.5 to 3 lakhs annually'
Says Sharanappa Talavara, a farmer from Hirebannigola village, Kushtagi, Taluk, Koppal district (Karnataka)


Figure 15: Goat Farmer from Koppal (Karnataka) & his Goat ShedSource: https://x.com

2. Shri Kiran Chalavadi, a young farmer from Mangenakoppa, Khanapura Taluk, Belagavi district (Karnataka)

Shri Kiran Chalavadi, a young farmer from Mangenakoppa, Khanapura Taluk, Belagavi district has constructed a sheep shed under MGNREGS. "Along with Sheep and Goat, I am also rearing poultry. I am expecting a good income." he says hopefully.

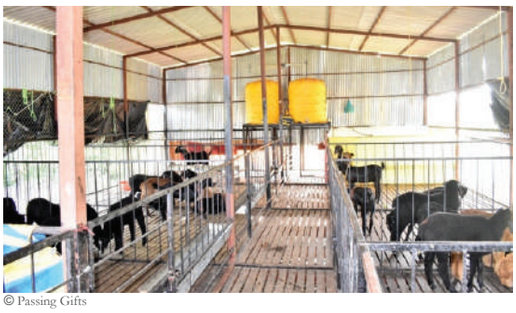
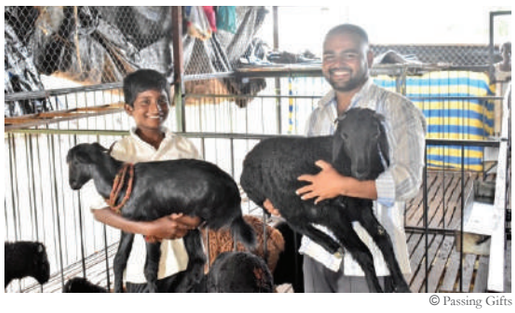

Figure 16: Goat Farmers, Goats and their Sheep & Goat Shed Constructed Under MGNREGA in Karnataka, Source: https://x.com

3. Goat shed of Smt. Ratnamma, a resident of Hosalli Villgae, Hanchuru Gram Panchayat, Hassan district (Karnataka)

Smt. Ratnamma, a resident of Hosalli Villgae, Hanchuru Gram Panchayat, Alur Taluk Hasan district has constructed a goat shed under MGNREGS.

'I have sold 40 goats till now and earned around 3 lakhs', she says happily.

Figure 17: A Woman Goat Farmer With her Goats in the Goat Shed in Hanchuru, Karnataka
Source: https://x.com

4. Goat shed in Panamaram Grama Panchayat of Wayanad district (Kerala)

Goat shed constructed under Mahatma Gandhi NREGS in Panamaram Grama Panchayat of Wayanad district.

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Figure 18: Woman Goat Farmer in Her Goat Shed Constructed under MGNREGA in Panamaram, Kerala, © Source: https://x.com

5. Goat shed in Agali grama panchayat of Attappadi block in Palakkad district (Kerala)

Goat shed constructed under Mahatma Gandhi NREGS in Agali Grama Panchayat of Attappadi block in Palakkad district.

© Passing Gifts

Figure 19: Goat Shed Constructed Under MGNREGA in Attappadi, Kerala © Source: https://x.com

Construction of goat sheds under Mahatma Gandhi NREGS: Specific Examples from State Mission-Kerala 2019-20[4]

6. Goat Shed - Alappuzha District, Kerala

As a flagship social security scheme, Mahatma Gandhi NREGS aims to provide wage employment as well as public assets and individual assets for livelihood. As part of the scheme, providing livelihood assets was taken up as a priority activity in the state. Various beneficiaries in Kanjikuzhy grama panchayath of Kanjikuzhy Block Panchayath in Alappuzha district were provided with goat sheds under the scheme. Providing better infrastructure for livelihood has resulted in increased income to the beneficiaries. Now, the beneficiaries have gained a better livelihood opportunity and an eco-friendly mode of sustenance.

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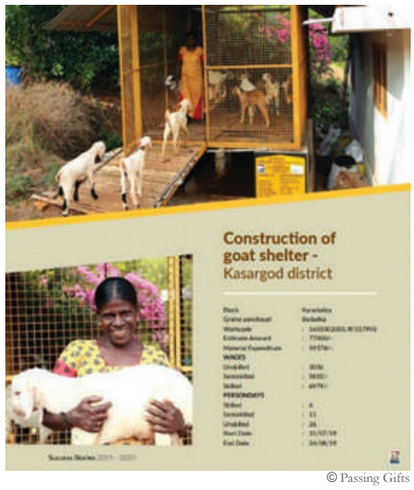
Figure 20: Goat shed constructed – Alappuzh,

7. Goat Shelter - Kasargod District, Kerala

Block	: Karadukka
Grama panchayat	: Bedadka
Work code.	: 1601002001/If/357993
Estimate Amount:	: 77,000/-
Material Expenditure Wages	: 59,578/-
Unskilled	: 3,036
Semiskilled	: 5,855/-
Skilled	: 6,979/-
Person days Skilled	: 6
Semiskilled	: 11
Unskilled	: 26
Start Date	: 31/07/19
End Date	: 24/08/19



© Passing Gifts

Figure 21: Goat Shelter, Kasargod, Kerala

[4] Success-Stories.pdf (kerala.gov.in)

8. Goat Shed - Pathanamthitta district, Kerala

Name of Asset	: Construction of Goat shed.
Work code	: IF/433739
District	: Pathanamthitta
Block Panchayath	: Konni
Grama Panchayat Ward	: Vallicode
Name of beneficiary (for individual Asset)	: 5
Estimated cost	: Subha S Nair
Actual cost	: 74,000/-
Financial year	: 56821.76/-2019-20

© Passing Gifts

Figure 22: Goat Shed - Pathanamthitta district, Kerala

B. Cases of MGNREGA Goat Sheds Constructed in Odisha & Bihar

9. Goat Shed Odisha -Jharshuguda

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Figure 23: Goat sheds under MGNREGA at Jharsuguda (Odisha)

10. Goat Sheds in Bihar

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Figure 24: Goat sheds in Bihar (ERADA project)

6.4. Learnings and Recommendations from MGNREGA Sheds

- The construction of goat sheds in MGNREGA have increased the farmers' trust on goat husbandry and there are cases where the numbers of goats have increased significantly.
- Technically approved and ideal sheds for goats have been constructed in Karnataka and Kerela.
- These sheds are material-intensive but are used as goat sheds or for the purpose it has been created.
- These sheds are durable and farmers in goat husbandry may keep these sheds for longer duration.
- Need for planning at district level (DPC) to analyze and prioritize goat and other cattle sheds. The DPC can estimate the material cost to keep it at 40%.
- The sheds should be comfortable for goats, with space for feeding, watering, and resting.
- The sheds must be constructed to meet the space requirement of number of goats. The farmers must be trained to keep the number low in sheds as per the space available.

Fencing of Goat Sheds and Creation of Open Space (Bara)

- The goat requires both close space and free open space for daytime resting.
- The enclosed fenced space frees the goats with the neck rope, which gives a stress-free living.
- The goats like to rest in open areas in daytime, with their families.
- This open space adds to stress-free living and goats can express their social behaviour.

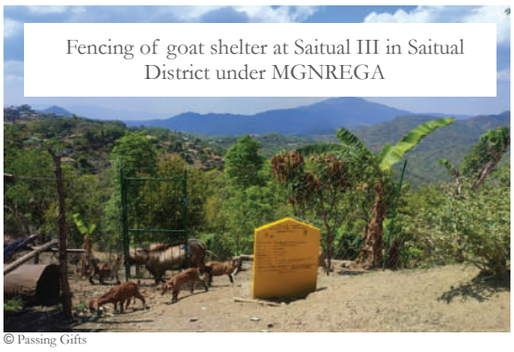

Figure 25: Goat shed fencing created under MGNREGA (Source: https://x.com)

Figure 26: A comfortable goat enclosure in winter in Lohardaga (Jharkhand)

WATER, OPEN SPACE & NUTRITION: ENABLING ECOFRIENDLY & HEALTHY GOAT FARMING PRACTICES UNDER MGNREGA

7. WATER, OPEN SPACE & NUTRITION: ENABLING ECOFRIENDLY & HEALTHY GOAT FARMING PRACTICES UNDER MGNREGA

7.1. A Quick Fix: How Ponds Built Under MGNREGA Turned Lives Around

"This place is like an oasis for my goats," says a goat farmer from Ramadurga village in Karnataka's Chitradurga district, one of the driest districts in the country. Before 2006, people here mostly depended on borewells. They still do as the gokatte built under MGNREGA in 2006 holds water for only six months a year. Still, residents say, the programme has improved their lives.

© Passing Gifts

Figure 27: Pond Built Under MGNREGA in Ramadurga, Karnataka, Source: www.downtoearth.org

The different schemes for improving water storage and availability like water harvesting tanks, check dams, etc., for drinking, agriculture or plantation have impacted the water availability for animals as well. MGNREGA, in particular, has helped in ensuring provision of clean drinking water to goats. Needless to note that water is a vital requirement for living beings and in case of goats, access to clean drinking water helps in digestion and releasing heat stress. It also helps in reducing worm's infestation and other diseases.

Goats are Quenching Their Thirst in Water Harvesting Tank

ಕಲಬುರ್ಗಿ ತಾಲೂಕಿನ ಕವಲಗಾ.ಬಿ ಗ್ರಾಮ ಪಂಚಾಯತಿಯಲ್ಲಿ ಮಹಾತ್ಮ ಗಾಂಧಿ ನರೇಗಾ ಯೋಜನೆಯಡಿ ನಿರ್ಮಾಣಗೊಂಡಿರುವ ಗೋಕಟ್ಟೆಯಲ್ಲಿ ಜಾನುವಾರುಗಳು ಬೇಸಿಗೆಯ ದಾಹವನ್ನು ನೀಗಿಸಿಕೊಳ್ಳುತ್ತಿರುವುದು.

The gokatta constructed under the Mahatma Gandhi NREGA scheme in Kavalaga. B gram panchayat of Kalaburagi taluk is being used by cattle to quench their summer thirst.

© Passing Gifts

Figure 28: Goats Quenching their Thirst in Water Harvesting Tank Constructed under MGNREGA in Kavalaga, Karnataka. Source: https://x.com

7.2. Land Development & Nutri-Gardens

Land Development

The land development work is also an important component of MGNREGA to support the goat's livelihood. Although there is a decrease in fallow due to conversion to agricultural land. The land development work can be beneficial for goats if:

- The land development works for individuals or communities have fodder trees (not bushes) at the bunds.
- The plot can be used for animal grazing for one year to improve fertility by bio-fertilizers or animal manures.
- A small space of developed land should be used for fodder production.

Scope of Work in Nutri-Garden for Individuals and Communities

- There is a provision for Nutri-Garden in MGNREGA under convergence with DAY-NRLM.
- The nutri-garden supports the vegetable requirement of the families, the leftovers or the failed crops are fed to livestock/goats.
- The plantation of fruit fodder trees like Moringa, Guava, and Jackfruit will be beneficial for both humans and goats. [5]

Fencing with Perineal tree for goats like Subabbul, Moringa, Ber, Jack fruit
Nursery Beds for Seasonal and Perennial Fodder plants
Imigation Channel

S.No	Name of Plants	No of Trees
1	Moringa Trees	6
2	Jack Fruit	4
3	Sesbania	6
4	Ber Trees	4
5	Others	4
6	Total	24

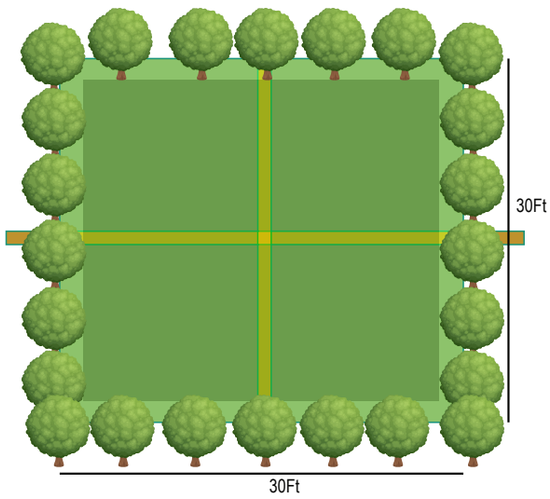

Figure 29: A Model of Backyard Nutri-Garden

Inclusion of Goat Requirements in Afforestation Activities

The MGNREGA has opened a wide scope of work for the plantation of activity on common, forest and private lands (para 5 of Schedule-1). The scope covers lands like:

- Degraded forest land
- Wasteland
- Public and community lands, pasturelands
- Riverside, canals, and embankments
- Along PMGSY roads and other roads
- Private lands

a. Salient Features of Forestation Activity in Favor of Goat Rearing

- The program allows forestation/plantation activity on all types of land including private, community and forest lands.
- It not only provides plants free of cost but also labor employment, fertilizer cost, equipment for watering, labor for watering (Vanposhak), protection and maintenance of plants for five years.
- The selection and recommendation of plant species is based on consultation of experts in horticulture departments, and it has a list of fruit and fodder trees in practice.

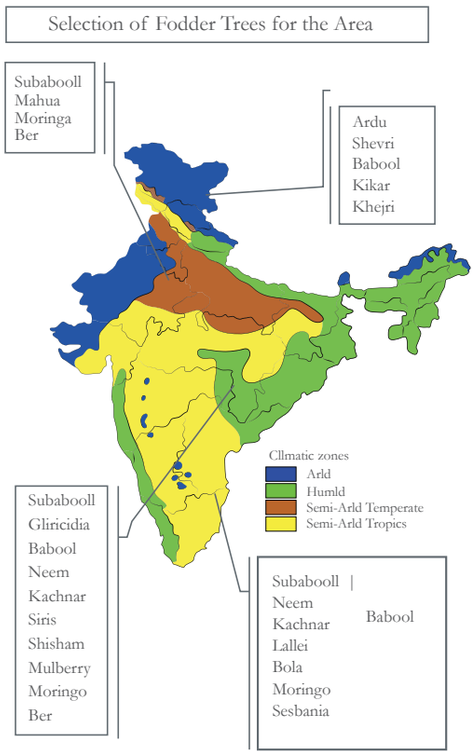

Figure 30: Selection of Fodderfdf Trees as per Agro-Climate Zones of India

Legal Disclaimer:
The geographical map used in this toolkit is for informational purposes only and does not constitute recognition of international boundaries or regions; GIZ makes no claims concerning the validity, accuracy or completeness of the maps nor assumes any liability resulting from the use of the information therein.

[5]Circular on Nutri-garden

- The act also gives rights to utilize the usufruct benefits of plantation to vulnerable families.
- Development of pastureland/fodder farm- There is provision for developing fodder farm or pastureland along with convergence of AHD departments. The recommendation is on the plantation of fodder trees, horticulture plants, and perennial grasses like Anjan, Fox Tail, and Napier.
- There is provision for the development of -month-wise activity for at least three to five years for the plantation to sustain. (Annual Master Circular 2022-23, page-51, Section-7.6.16)

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Figure 31: Moringa nursery in Latehar, Jharkhand

- Nurseries under MGNREGA - There is also a provision for nurseries under MGNREGA, which is largely handed over to the SHG members of DAY-NRLM.

b. <u>Scope of Inclusion of Goat Requirements in Afforestation Activities</u>

The MGNREGA has created ample scope and space to promote afforestation and plantation activities to have a positive impact on environment. Also, it has been well-recognized that stray animals and grazing animals/goats are serious threats to afforestation activities. Sustaining the open plantation on the roadside and other areas is really a challenge. The possible interventions to be adopted in MGNREGA that can help in sustaining both are:

- The Gram Sabha must identify the animal owners and sensitize them about the benefits of the plantation. Some panchayats put penalties and fine for any destruction of forest.
- The panchayat must calculate the fodder requirement of their animals/goats and arrange for coverage of afforestation and plantation.
- The panchayat must plan the plots for grazing of animals with strict efforts for maintenance and replantation every year.
- Height of Trees in Fodder Plot -The selection of plants based on height is to be recommended in the fodder plot/Sylvi-pasture plots. The large trees and bushes require the application of labour to harvest the fodders every day, which is a tedious task. Small trees like Glyrcidia, Sesbania (Agathi), Ardu, Ber, Sahtoot, etc. must be planted along with big trees like Peepal, Bargad, Jackfruit, Moringa for fodder supply (Mohmad Arif, 2021). Also, see Annexure -2 for a list of fodder trees as recommended in India for different soil conditions.

Importance of Tree fodder for goats

- 60% of sheep and goat feed are derived from the fodder trees, especially in case of goats it is 90%.
- The goats prefer large area browsing in search of good quality forage & travel long distance.
- They climb trees and steep areas in search of better leaves.
- The physical structure of goats like long tongue and mobile lips, upright neck makes them best browsing animals.
- The goats are well tolerant to the tannin content of leaves.

7.3. Scope of Inclusion/Customization of Other Components for Goat-Based Livelihoods

The focus of MGNREGA work is on INRM and creating durable assets for the people to have a sustainable income. There are plenty of schemes and their combination of works under MGNREGA, which are implemented in isolation due to various reasons. There is a lack of time or capacity to create a bigger picture of INRM in an area to have a greater impact on the environment and ecology. The INRM works are incomplete without the integration of livestock, which provide nutrition to human beings and manure to plants. There is a requirement of an inclusive approach in the program to include animals/livestock and their owners in the interest of sustaining the environment. To impact the goat-based livelihoods in the area, following initiatives can be taken:

a. Rural Haats

There is provision for the construction of Grameen Haats in MGNREGA, which can also provide space for animals with the facility of drinking water and a shed.

b. Creating a Quarantine Centre

The purchase and sale of goats are a common phenomena in the village and sometimes the purchased goats bring diseases along with them. A place at the end of the village near the gram panchayat office/veterinary office/other community building with a facility of watering and resting will be helpful to prevent the spread of disease. The same quarantine centre can be used to separate the diseased goats/animals in case of infectious disease outbreaks.

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Figure32: Fish market development under MGNREGA, Kursakata, Araria (Bihar)

c. Goat Hostel for the Landless at Gram Panchayat Level

There are schemes for individual asset creation for vulnerable households, but it is a challenge that most of the poor households do not have land/homestead land for shed construction. There are animal hostels created under MGNREGA in Kurnool district, Thadakanapalli village, but the setup is focused on cattle and buffalo. There are also examples of sheep and goat hostels in Telangana.

The main advantages of the hostel are mentioned below:

- The availability of goat hostels will help in competitive marketing, protection of animals during floods, storms, and any other natural calamity.
- The hostels may be used as quarantine centres in case of disease outbreak and new purchase of animals.
- It provides more space for animals so that the rearing could be expanded.
- Helps in protecting from predators and thefts.
- Collection of manure in a large scale which can be sold.
- The viages remain clean.
- Examination of veterinary care and marketing becomes easy.
- Sharing of labour becomes easier.

The disadvantage with such an arrangement is that the diseases spread fast when animals live in close proximity. The Gram Sabha needs to manage and maintain such buildings.

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Figure 33: Goat hostels in Telangana.

d. Fodder Management for Lean Periods

The goat farmers face challenges of feeding goats during floods, draught, and rainy season. The lower immunity due to poor nutrition make them susceptible to various diseases and leads to losses due to mortality and reduction in productivity.

MGNREGA could be considered for introducing the following initiatives that may help in better fodder management, especially for lean periods:

- Introduction of appropriate awareness and technology to prepare dry fodder from the leaves, & pods of trees for the lean seasons.
- Cultivation of fodder trees which can be dried and kept for lean season feeding like Moringa, Ber, Sahtoot (Morus Alba), Ardu (Ailanthus excelsa), pods and leaves of Subabul, etc.
- The azolla can also be dried and stored for the lean seasons.

e. Creating Fodder Nurseries

Most nurseries under MGNERGA focus on the fruit and timber plantation. Enforcement of fodder tree plantation is highly recommended to protect other plantations in the villages and to preserve the villages' ecosystems. The MGNREGA has outsourced the nursery work to the entrepreneurs of the SHGs and SHGs may be encouraged and capacitated to create and grow fodder nurseries. The various species of fodder trees are listed in the Annexure 2.

7.4. Planning Process: Inclusion of Goat-Based Livelihood

The inclusion and strengthening of goat-based livelihood is to be started with the planning process of MGNREGA in the Gram Sabha, conducted by the gram panchayat on 2nd October every year.

The various steps for the inclusion of goats in the MGNREGA planning process are mentioned below:

Training and Sensitization of GPs on Goat-Based Livelihoods

The gram panchayat members play an important role in planning the MGNREGA works, and their capacity building and orientation is much necessary to include goat-based planning in the entire process. The GP members must consider the following points while designing or developing any capacity-building or orientation program on goat-based farming:

- The number of families having goats in the village.
- A total number of goats in the village to understand their fodder requirement.
- The number of people having proper goat sheds in the village, the goat shed is mandatory for households having six to seven adult goats in their sheds.
- The information on an average number of goats sold, or purchased will be good to access the net number of goats in the village and for further planning of goat population development and management.
- Data or information about goat mortality in the village will be beneficial to access the reasons behind mortality.

Roles and responsibility of DPC in goat-based livelihood.

- The DPC can play an important role in planning for the various activities required for sectoral development.
- The DPC should take expert guidance from the CSOs, and line departments on the type of work and priority area.
- The district program officer must plan to maintain the 60:40 ratio of labour and materials at district level to ensure the construction of durable and relevant goat sheds rather than enforcing at gram panchayat level.
- The DPC needs to monitor the plantation work under MGNREGA for the achievement of larger environmental benefits.

Roles and Responsibility of MGNREGA SEGC on Goat-Based Livelihoods

- The state MGNREGA cell can issue model estimates and guidelines for the schemes supporting goat-based livelihoods.
- The state can develop a separate sectoral development plan for goats.
- Monitor the works and their use as desired.

Agenda in social audit

- The social audit can play an important role in sensitization, planning and inclusion of goat-based activity in the upcoming plans. The social audit can review the impact of sectoral interventions also motivate people on the assets use.

Awareness on Sensible Harvesting and Grazing of the Plantations

The goats are a threat to any plantation activity done in the area, and it requires lots of expense on the protection of plants for certain years. The loose goats can destroy the entire plantation in few hours. Following precautionary measures are recommended to protect the fruit plants and fodder plants from overgrazing by goats:

- The gram panchayat should plan for proper rationing of the grazing area to avoid overgrazing and destruction of the grazing land.
- Proper actions should be taken on the offenders in the form of penalty or compensation by gram panchayat.
- Regular maintenance, pruning, fertilization and irrigation is highly recommended.
- Annual replacement of trees to expand the plantation area.

Creation of Fodder Banks for Goats

The MGNREGA has ample scope for plantation activity, in which the availability of leaves varies with season. The goats usually become undernourished during the lean season, drought, flood, agriculture sowing season, sickness of family members, festivals, etc. The establishment of fodder bank can help address the fodder scarcity. The fodder bank can store dry fodder, hay, and silage for lean period.

7.5. Role of CSOs in MGNREGA Goat-Based Interventions

The MGNREGA has provisions to partner with NGOs (Section 2(g) to facilitate the implementation of the schemes. The CSOs/NGOs can play an important role in promoting goat-based livelihoods through:

- Awareness building on different requirements of goats, demand generations, organization of Gram Sabha, mobilization and strengthening the capacities of workers.
- Training and capacity-building support to the MGNREGA functionaries on goat-based livelihoods.
- Sensitization of community on protection of forest and long-term benefits to goat rearing.
- Facilitating approval of the project and implementation.
- The CSOs can participate in monitoring and social audits to facilitate knowledge building of panchayat members on goats.

How to Strengthen MGNREGA Delivery?

- The inclusion of new schemes in MGNREGA are to be influenced at the state level, with proper evidence and logic supported from the gram panchayats, CSOs, professional technical agencies.
- The inclusion of new schemes for the next financial years is to be initiated in the current year before the gram sabha is conducted.
- The gram panchayats must be sensitized to generate the need for the new work under the ambit

- of MGNREGA act.
- There must be demand from the bottom, which will be formulated as a project by the state.
- The state will seek administrative and technical approvals from the MORD for implementations.

7.6 Climate Change Mitigation Through MGNREGA & Goats

The goats are significant contributors to Green House Gas (4% of global GHG) in the environment like other ruminants, and pose threat to forest/grazing area due to close grazing. The context of reducing the GHG from goats is still under investigation and research. The rising number of goats will further add to the emission in the future. Compromising on the number of goats through any policy may significantly impact the livelihood of the poor and vulnerable people.

The threat on forest and grazing land due to grazing is mainly due to insufficient fodder availability. The goats are very selective feeder, and they prefer to take the best fodder/leaves over anything. So sufficient availability of fodder as per the density of goats and controlled grazing may have positive impact on the forest, through manuring and seed dissemination by goats.

The check on mortality through the various interventions may have positive impact on income of farmers with the same number of goats. There are reports of up to 40% mortality in goat kids and 20% mortality in adult goats every year due to various reasons.

Goats as Medium for Climate Change Adaptation

The goats can be a medium for climate change adaptation for the farmers in the following ways:

- The GHG emission per unit of body weight of goats is lower than other animals, so rearing of goats have lesser impact on climate change.
- The goats adopt well to the rising temperatures due various anatomic, behavioural, and morphological adaptation and give income to farmers, when the yield of other crops decline.
- They are efficient converters of low-quality feed into high quality proteins, can contribute to the nutrition of humans in case of crop failures.
- Goats usually drink less water as compared to other animals.
- The goats thrive well on the available dry fodder in case of draught or floods.
- They gain fast in favorable weather conditions as compared to other domestic animals.

7.7. How Can MGNREGA Protect Goat-Based Livelihoods Under Climate Change Threat?

The MGNREGA can contribute in a greater way in protecting the goat-based livelihoods of the poor and enhancing the income of farmers, along with mitigating the effects of climate change. The following ways can be helpful:

- The **goat sheds** will reduce the mortality and enhance the productivity of the goats. Thus, preventing the losses of the farmers.
- The **plantation activity** under MGNREGA will enhance the carbon sequestration along with contributing to the fodders for animals. There are other benefits of plantation too.
- The better **fodder and forage** also gives better growth rate to the goats and enhances the immunity to fight against the diseases.
- The availability of **fodder trees** will be helpful in feeding goats in lean seasons like rainy season or agriculture seasons.
- Availability of clean potable **drinking water** will reduce the parasitic loads in the goats.

STRENGTHENING GOAT VALUE CHAIN THROUGH PARTICIPATION OF CSOs & GOVERNMENT

8. STRENGTHENING GOAT VALUE CHAIN THROUGH PARTICIPATION OF CSOs & GOVERNMENT

The goat rearers are the primary stakeholders in the goat value chain and are responsible for the production activity. Other actors support the production activity like breeders, input suppliers, veterinary service providers and feed and fodder suppliers. Since the overall production in goat farming is low, combined with uncertainty of yield, the rearers are reluctant to invest in any of the inputs. The poor production system does not support the input system to grow rather they become exploitative and opportunistic. Also, the availability of few players in the market makes them monopolistic in their approach rather than supporting the value chain to grow.

The different actors in the goat value chain, work independently to maximize their own profit and, despite putting labor and resources and bearing the maximum risk burden, the goat rearers are the least benefited by the rearing. The goats are regarded as perishable commodity and prone to mortality and weight loss during the transactions. The traders also face the risk of mortality and weight loss along with the price fluctuation risk in the market.

The consumers also face the risk of quality, disease risk, and parasitic transfer due to poor quality of goat rearing and transport. The stakeholders are usually unaware about the risks coming from other stakeholders and often cause harm to themselves and others until transactions are completed.

So, the entire system of goat value chain requires an approach to strengthen each node in the value chain to maximize benefits for the farmers. There is requirement of external investment in the form of capital, knowledge and human resource, until the production system becomes robust (like dairy) to support the other stakeholders. This chapter discusses various approaches to strengthen the goat value chain for the benefit of the farmers.

8.1 Enhancing Role of CSOs on Goat-Based Livelihoods

The CSOs/NGOs play an important role in strengthening the goat-based livelihoods. In India, many NGOs are working on the improvement of goat value chains in different geographies like PRADAN, Heifer International, Aga Khan Foundation, CWS, 4S, GIZ-ERADA project, Tata Trusts, Nudge Foundation, SRIJAN, Ibtada, CmF, Ambuja Foundation, Microsave Consulting, etc. The goal of the CSOs is to enhance the livelihoods and income of beneficiaries to have better living standards. The CSOs engage themselves very closely with the community to bring behavioral change and adoption of interventions. The approach of CSOs in goat rearing are -

- Identify the most vulnerable and poverty pockets.
- They target the household through more participation of women head of the family.
- Organize them in Self-Help Groups (SHGs) or Producer Groups (PGs)
- Create sensitization of goat farmers on improved management practices through training, exposure, and demonstrations.
- Identify, train and handhold village-based local resource persons.
- Provide professional support for goat rearing.

- Handholding support to beneficiaries while adopting the new interventions.
- Provide financial support also wherever required.
- Some CSOs are also promoting FPOs to establish a business model around the value chain.

How to Maximize the Participation of CSOs (NGOs) in Goat Value Chain

- The CSOs must be invited to bring knowledge and expertise on goats to provide benefits to a larger number of people.
- Identifying innovations and scale-up.
- The CSOs have limited financial capability, and they work in smaller geography, the good models developed by CSOs can be adopted by governments for benefit of larger number of beneficiaries.
- Facilitate knowledge sharing among various CSOs working in the area.
- Recognition of good work of CSOs and provide required support like financial and support for the creation of common assets.

8.2. Role of Other Community Institutions PG, VO, CLF, and FPOs

There are certain community-based institutions promoted by CSOs, SRLMs, banks, and government line departments to organize people to achieve set objectives. These institutions have selected members of the village, who are also part of the Gram Panchayat. These institutions are formed and further supported to improve the livelihood of people. The regular meetings/interactions provide strength to their voices and facilitate brainstorming on the issues and problems of the village. These institutions can also play a vital role in influencing the work at the Gram Panchayat level.

Table 17: Challenges for Goat Farmers & Possible Solutions

SN	Community Institutions	Promoting Agency	Level of Influence	How can it influence the goat-based livelihood in MGNREGA?
1.	Producer Groups (A group of farmers organized in informal group at village)	NGOs, SRLMs	GP & Village level	• Enrolment and registration of members/workers. • The PGs can identify the actual beneficiary to be benefited by the Government schemes. • Can bring harmony and less conflict in implementing the MGNREGA work at village. • The PG members of one hamlet can participate in good INRM planning.
2.	Cluster Level Federations (Federations of SHG members at block level)	NGOs, SRLMs	GP and Block level	• Enrolment and registration of members. • The CLF can provide technical expertise to the Block/GP on goat base livelihood planning (like CFT program for INRM planning). • Can help in program implementation and monitoring. • The CLF can improve the participation of the other line departments in strengthening goat-based livelihood.

3.	Farmers Producer Company (For profit institution promoted at block/district level)	NGOs, SRLMs	GP, Block and district level	• The FPOs can facilitate availability of inputs of goat rearing at GP level through Pashusakhi. • It can also help in marketing linkage of ready goats. • FPO can also facilitate required routine services for goat health management.
4.	Van Suraksha Samitis (Informal group promoted at GP level)	Forest Departments	GP level	• The VSS can help in protection of fodder trees. • Planning of plantation area in MGNREGA.
5	Traditional Tribe Groups (Headed by an elected leader at block/district level, with strong norms)	Self-Promoted by Tribes	GP, Block, district and multi district level.	• They have strong institutional norms, which can help in enrolling the needy persons in MGNREGA. • Also help in listing the actual beneficiaries for the schemes. • The tribe group leaders can also participate in social audit and help in monitoring of the work.

8.3. Strategic Role of CSOs in the Government System at Different Levels

The CSOs are known for extending their arms to the last mile through a close and empathetic working culture. They derive lots of learnings and information, through robust planning, implementation and innovative approach. The reach and knowledge generated by the CSOs are limited due to low funding and high transaction costs.

The national-level thematic-based CSOs can contribute to Government programs in the following ways:

Table 18: Areas Where CSOs can Contribute to Govt. Programmes for Goat-Based Livelihood Promotion

Area	Possible Support
Planning	• The CSOs can facilitate participatory planning and also bring good examples from other areas. • They can map, identify, and engage experts and other stake holders for the benefit of the community. • The CSO can contribute to developing an comprehensive plan.
Capacity Building	• The CSO can identify the need of capacity building at different level. • Can bring experts and examples for the capacity building. • Invest time and resources for the benefit of members. • Develop tools and techniques of effective training.

Project Implementation	• The CSOs can help in project implementation through handholding of implementing staff. • Mobilizing and managing the primary stake holders. • Provide support through critical resources in the gaps. • Can help in generating understandable MIS
Monitoring	• Can engage human labor and knowledge in project monitoring. • Generate required periodic reports • Raise alarm on behaves of primary members on requirement. • Can help in troubleshooting and finding solutions.
Audit	• The CSO can facilitate participatory audit of the schemes. • Derive learnings and cases of good practices for future.
Generating Knowledge Resources & Documentation	• CSO can play important role in documentation of innovations and successful stories. • Develop audio-video materials for future trainings and disseminations.

8.4. Innovations (Joint Piloting) with CSOs to Deal with the Challenges

The goat-based livelihood at the village level faces challenges of mortality, low productivity and poor marketing support. Although this livelihood seems to consume low input (low cost), but it has a major component of labour engagement around the year. The optimization of labour engagement is still very far in the rural livelihood set-up. The labour investment is the same irrespective of number of goats owned. The losses due to the mortality of goats are significant, so the measures to be taken to prevent the losses are still inadequate.

The present goat-based schemes are not strictly monitored and therefore the conditions of some of the poor rewind back to the same start position.

So, there is a need for synchronized planning by different agencies to identify innovative solutions to make the livelihood better. The role of different agencies can be as given below:

Table 19: Goat-Based Livelihood Promotion- Role of Govt., CSOs & PRIs

State Animal Husbandry Dept.	CSOs	PRI & Gram Panchayat
• Development of different SOPs of process,	• Identify grassroot issues on goat rearing. • Piloting of the solutions. • Develop cases and learning papers. • Demonstration to Government and other CSOs for adoption. • Finding innovative solutions and piloting.	• Improve sensitivity to the issues faced by the goat rearers. • Brainstorming at GP meetings to identify solution, seek support from CSOs and Government institutions. • Identify opportunity in the problems for creating MGNREGA assets.

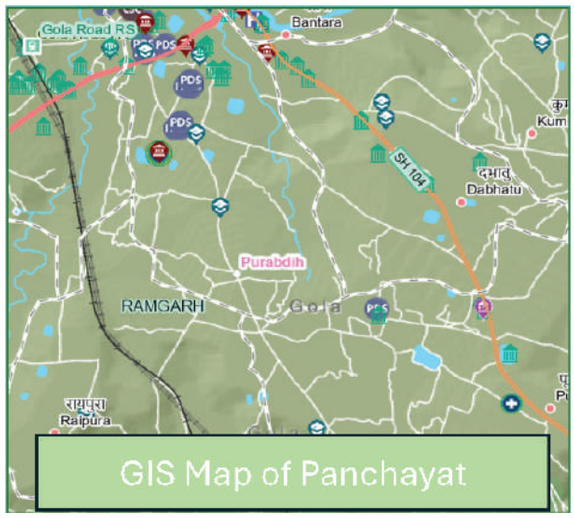
8.5. Planning Template for Goat-Based Livelihood at the GP level

Goat-Based Livelihood Planning Template

Planning Period	
Date	
Duration	1 Yr/ 2Yr/3 Yr

Details of Gram Panchayat	
Name	
Block	
District	

Gram Panchayat Details	
No. of Villages	
HH	
HH with Goats	



Goat Census (At Planning)		
1. No. of Adult Female Goats		
2. No. of Adult Male Goats		
3. No. of Kids (Male+Female)		1.5 times of No-1
4. No. of Male Bucks in the Village		5%-10% of the No-1

Fodder Requirements Planning		
5. Availibilty of Agriculture By-products (Months)		Provide 120-150 days of feeding
6. No. of Fodder Trees in Common Area		1 tree medium canopy Every 10 goats
7. Months of Fallow Land for Grazing		Regenerating grasses 60 days

Goat Shed Status	
8. No. HH with Goats (>7 goats)	
9. Eligible Sheds under MGNREGA	
10. Sheds Constructed in MGNREGA	
11. Own Investment for Sheds	

Health Care Services (1+2+3+4)	
Deworming of Goats (3 Times a year)	
Vaccination	
Name of Pashusakhi/Paravet	

Health & Production Indicators		
12. Mortality of Kids		<5%
13. Mortality in Adult Goat		<5%
14. No. of Goat Sold to Market		80% (3)
15. No. of Goats retained in the village.		20% (3)

Motivation & Capacity Building	
Best Performing HH	
Trainings No.	

8.6. A case of GIS-Based Goat Livelihood Planning with MGNREGA Raniganj Block, Araria (GIZ Project, Bihar).

a Identification of Potential Sites for Planting Fodder Trees Using GIS Techniques

Using the GIS techniques, the groundwater depth from the surface for the entire panchayat has been estimated. Using Aster DEM, the elevation, slope, aspect, flow direction, and stream network has been extracted, soil, and land usage. These are the primary data and are helpful in design making. Further various geospatial layers have been extracted, such as road networks, human settlements, waterbodies, and drainage networks.

b. Modelling using weightage overly techniques for the plantation of various fodder species.

The broad-leaf plants are favourable fodder for livestock. These plants play an important role in the ecosystem. It is suitable for fodder as well as it also provides shelter to birds. In this study area, approximately 10,000 Kg of fodder/per day is required. To full fill, the demand approximately 10,000 to 15,000 trees are required.

The trees are planted on public land, so anybody can have access to the leaves. The suitable condition for the plantation of broad-leaf plants is on both sides of the roads. It also provides shadow to animals and travellers during summer.

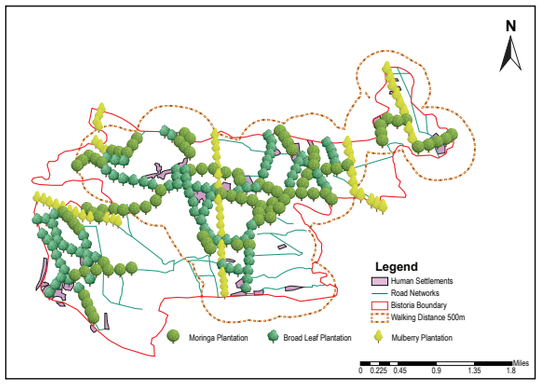


Figure 34: Suitable site for various trees plantation in Raniganj, Bihar.

In this study, the total length of the road network is approximately 172 Km. The plant-to-plant distance is 10 meters. The total number of plants shown in Bistoria Panchayat is 17,200.

c. Fodder Tree Species

There are various species of trees available for fodder, but few trees have multiple benefits such as nutrients, medicinal, fruit, and other properties. These trees play an important role in long-term sustainability and rural job generation. These trees should be of native to the areas and easily available to the local nursery. Some species available in the panchayat are Gular, Jackfruit, Peeple, Pakar, Bamboo, Almond, Kadam, Moringa, Jalebi, and Mulberry.

d. Selection of potential sites for plantation of fodder trees

Selection of potential sites based on plant water tolerant behaviours, soil, fodder demand, nutritional properties, and other livelihood demand.

Wetland Plantation – The wetland plantation deals with the plantation that can survive in a wetland or marshy land. In the Bistoria Panchayat, approximately 60km of road networks exist in wetland areas and the water level is 3 to 3.5 m below the ground surface. Some special plants such as Blackberry, Mulberry, and Gooseberry, are types of wetland plants. The suitable sites for the plantation of these plants are in Fig. The total number of required plants for these areas are 5060.

Linear Plantation – The linear plantation deals with the plants which is done linearly to any area. In the Bistoria Panchayat approximately 172 km road network is available, and it is also proposed for the

plantation. The benefit of linear plantation (roadside) is it does not occupy the useful lands or agricultural lands. It also holds the soil laid for slope protection for the road. Due to public land, anyone has the access of the resources. It also provides the shades during summer. The total number of plants required in the Bistoria Panchayat for linear plantation is 12,140 the fig. Linear plantation site in Bistoria Panchayat.

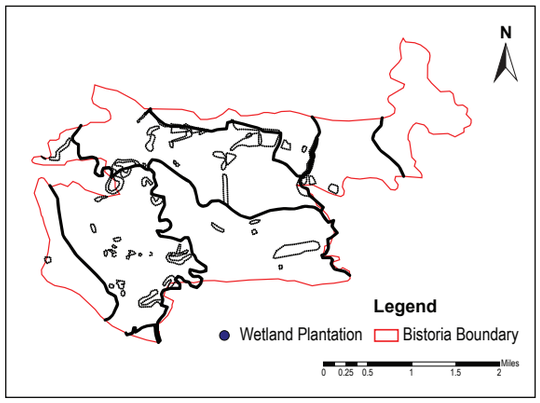


Figure 35: Site for wetland plantation.

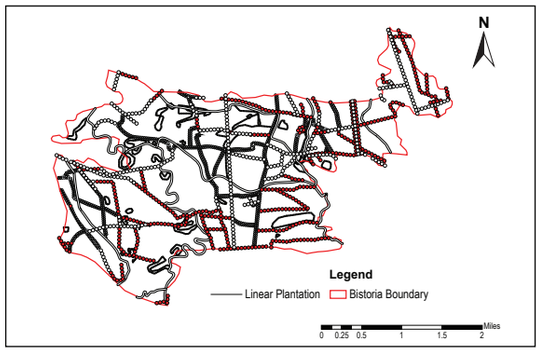


Figure 36: Site for linear plantation.

e. Gaps

Plant selection plays an important role in the overall development of the Panchayat. They provide job and business opportunities, a better environment, skills, etc. to the people living in the community. The plant selection for the panchayat should be done in consideration of local entrepreneurs, local culture, nutrient availability, medicinal properties, etc. Such as fodder requirements, horticulture, timber wood, etc. It will provide business opportunities in the community.

f. Recommendation

The involvement of local departments such as forest, veterinary, virology, etc. Government and Private Nurseries, NGOs, Private Organizations such as dairies, tanneries, fodder, farmers, and local educational and research institutions. It plays an important role in employment generation, skill development, culture conservation as well as the overall development of society. The involvement also ensures new technology, skills, and better productivity.

The fodder plantation should be done in the month of August to September or during the rainy season. Plant growth should be monitored regularly at least three times a year. If any plants die, then find the reason for it and plant a new one immediately. The local species also conserve by making a few orchids in public places. The overall maintenance of the fodder plant shall be done by the panchayat, and it should be the responsibility of the panchayat to ensure the fodder to each household. So, the entrepreneur can work on other value-added activities.

The engagement of professional research institutions needs to link with panchayats such as veterinary science students, and researchers, so they can have a field experience at the local level. The Panchayat also ensures at least a few centres for physical or online consultation of doctors, NGOs, and private firms for business development and marketing.

Panchayat also ensures the proper rate including sale of the livestock product to the Panchayat. The Panchayat has the right to dissolve any dispute with their own consent.

8.7 Creating Village Level Service Providers (Pashu Sakhi/Prani Mitra)

The poor farmers have limited access to the government veterinary care services due to their distant locations and paucity of government staff to provide the services. It is also challenging to reach such large number of goat rearers for providing low-cost services. The CSOs and DAY-NRLM have established local livestock service providers called as Pashu Sakhi/Prani Mitras/Pashu Mitras/Community Animal health workers/Community Agro-Vet Entrepreneurs, Livestock Entrepreneurs, etc. It has been proved that the villages where Pashu Sakhis are active and extending help have reduced mortality and improved the care and management of goats.

These local resources provide primary first aid at affordable rates and make the inputs available at doorsteps. In DAY-NRLM, there are nearly 26,000 Pashu Sakhis trained so far. The government has recently adopted the model in the form of A-Help program.

Steps in Promoting Pashu Sakhi

- Ascertain the number of goat rearers in the village. A Pashu Sakhi is promoted on at least 100 households.
- Identify the motivated, literate active women of mid-age group to be trained as Pashu Sakhi.
- The Pashu Sakhi can be trained with the help of CSOs or Government institutions.
- The Pashu Sakhi needs handholding supports at field to carry out the activities.
- The Pashu Sakhi work needs to be planned every month and monitored.
- The Pashu Sakhi earns her living by charging for the services, a minor support is required in the initial years.
- The Pashu Sakhi must be linked with input supply businesses.

8.8. Calendar of Services Required for Goat Rearing

Since there is seasonality in the occurrence of diseases in goats, the scientific rearing requires some of the routine preventions services to be done at certain interval. The preventive action taken on time saves the goats from contracting the disease, also minimize the weight loss due to seasonal stress.

There is requirement on the universality on the preventions methods across the country to bring larger impact. There is a lot of confusion about the activity to be taken up and availability and logistics issues of inputs delays the action on ground.

There is requirement for the development of calendar of events and implementations of same with strict norms. The proposed calendar is given below:

Table 20: Calendar of Vaccinations, Deworming & Supplements for Goats

Activity	Frequency	Months
Deworming of kids	Every month after birth	1st, 2nd, 3rd months after birth irrespective of season.
Deworming in adults (>4 months)	Every 3 months	January, April, July, Oct. (before and after monsoon is must)
PPR vaccination (> 4 months)	Once a year	Preferably in Oct/Nov
Enterotoxaemia vaccination (ET)	Once a year	Before monsoon (May)
Pox vaccination	Once a year	Before winter (Sept)

Mineral mixture/salt lick supplementation	Round the year	
Feed supplementation	Round the year	
Purchase of new animals	Preferably 2 times	Any month, avoid rainy season, best time Jan-Mar & Sept-Nov.
Sale of animals	Any time	Any months, preferably in festival months.
Castration of male kids	Any time based on age	Avoid rainy days.

8.9 How to Strengthen Insurance for Goats?

The goats are more prone to mortality due to various reasons. The losses of goats are not only economic loss to the farmer but takes away the future earnings as well. It makes the entire family more vulnerable to the various risks. Since, goats contribute to the emergency and some of the planned expenditure of goat-farmers, the loses need to be protected through insurance. The established insurance companies show reluctance for goat insurance to cover the risk of poor, due to high claim ratios.

The various steps recommended to strengthen the goat insurance are:

- Policy level interventions to enforce public sector companies to provide goat insurance,
- Digitalization of goat insurance to minimize the fraudulent claims.
- There are also policy level interventions to minimize the complexity of insurance and claim process.
- There must be time bound delivery of services like finalizing insurance and processing claims.
- There is requirement to improve the coverage of affordable goat insurance schemes in the Animal Husbandry Department of some of the states.
- The CSOs, SHGs/PGs of DAY-NRLM and other government institutions need to be engaged for facilitation of goat insurance.

Supporting poor farmers with goat asset creation. Some of the farmers are unable to purchase new goats to start their livelihood due to unavailability of capital. Also, sometimes farmers lose their goats due to epidemics, in such case, the needy farmers must be supported with grants to start their livelihood again. The financial support reduces the vulnerability of family and provides social security. Such schemes vary from state to state. Some of the schemes for getting goat purchase support are -

- Area development program of NABARD.
- Mukhyamantri Pashudhan Vikash Yojana in many states.
- Animal Husbandry Department schemes.
- Satat Jivikoparjan Yojana (SJY), Bihar.
- Grants support from CSOs schemes.
- Tribal subplan for tribal populations.
- Various state sponsored schemes implemented by PRI/Animal husbandry Departments.

8.10. Support from State Animal Husbandry Departments for Goat-based Livelihoods

The State Animal Husbandry Department is the largest stake holder for the improvement of goat livelihood in the state. The department is extending various supports to the goat rearers without any cost. Although the quality and type of services varies from state to state, the following services are required to

strengthen the goat value chain -

- Support to poor farmers with goat schemes to improve their asset ownerships.
- Providing affordable/subsidized insurance coverage and claims settlement.
- Provide preventive vaccinations on time for various diseases.
- Alerts on various disease outbreaks and on time remedial actions to control the diseases.
- Primary first aid to ailing goats.
- Enforcement of meat market practices to improve the hygiene and protect the interest of consumers.

a. Creating Government Regulated Markets

The goats are sold through the local visiting traders, who further participate in the goat haats at block/tehsil/subdivision level. The farmers rarely visit the market to sell their stocks due to various reasons. There is need to establish government regulated goat markets or to include this in APMC to protect the farmers from exploitation and facility to sell their stock in time of need. The market must be regulated for the pricing and prevent sales of diseased animals.

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Figure 37: Sheep & Goat market, Tiptur, Tumkur

8.11. Challenges for Goat-Based Livelihoods

Government's attention is required to address limitations of existing goat value chain and thereby also protecting the interest of farmers and consumers.

- Enforcement of meat hygiene practices in market to prevent zoonotic diseases spread and provide wholesome clean meat to consumers.
- Disease diagnostic measures in the vicinity and professional treatment to minimize the use of antibiotics for prevention of antibiotic resistance.
- Creation of goat fodder banks to meet the need of feeding during lean seasons/months.
- Establishing marketing channels and promote private participation.

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Figure 38: Sheep & goat herd in Gadag, Karnataka

CONCLUSION & RECOMMENDATIONS

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9. CONCLUSION & RECOMMENDATIONS

The MGNREGA is a comprehensive program for the rural area, that not only focuses on wage and employment generation, but also it significantly contributes to the environment and climate. There is a wide variation of modalities and process of implementation of goat-farming related programs among the states. However, goat farming has created significant impact in the earnings and social security of poor people. The increased participation of women has added economic empowerment to the family.

The present toolkit gives an overview of the goat-based livelihoods and value chain. The conclusions and recommendations of the toolkit are:

- The program MGNREGA has ample scope of work which directly and indirectly influences goat husbandry like goat shed, feed and fodder development through plantations, availability of tree shade, drinking water, forestation activity, etc.
- The program needs a sectoral inclination to have a comprehensive growth rather than sporadic instances. The development of goat sectors can be targeted in the poverty pockets of some of the states.
- The MGNREGA functionaries need to be aware of the various requirements of goat husbandry.
- MGNREGA can be a great contributor to nutrition of goat, which is almost 90% of the cost of rearing for a goat. The availability of nutritious fodder has significant indirect impact on immunity and productivity in comparison to grazing on fallow lands.
- The design of sheds constructed under MGNREGA need to be reviewed and compared among the states. The sheds constructed in Kerala and Karnataka fits the goats' requirements and they are used for the intent created.
- The support of goat sheds has improved the number of goats owned and income of the beneficiaries.
- There is provision for sheds and fodder plots on the individual lands under the selected criteria, but most of the vulnerable households do not have homestead land for shed and plantation area. So, developing commons with group ownership would benefit the goat rearers as well as goat husbandry in general.
- The gram panchayat can plan the development of goat hostels on common lands and collect some rent.
- The program MGNREGA has ample provision for plantation activity in all types of lands, and there is space of tree species selection by the DPC based on suggestion of horticulture departments.
- The MGNREGA focuses on plantation activity, but the goats and free grazing animals are threat to plantation. Sensitization workshops or trainings on downer ship and protection of such plantation for future use is highly recommended.

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ERADA INTERVENTION

Background

Enhancing Rural Resilience Through Appropriate Development Action (ERADA) is an Indo-German development cooperation project commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmBH, India is implementing the project in partnership with the Ministry of Rural Development (MoRD), Government of India (GOI). ERADA was part of Corona Immediate Program as well.

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Figure 39: Self-Help Group Goat farmers meeting

Project's Objectives

The ERADA intervention aims to strengthen the livelihoods of vulnerable households based on locally available natural resources and developmental support programs.

Approach of the Project

This goal will be achieved through the following:

i. Increasing Mahatma Gandhi NREGA performance in terms of effectiveness and efficiency by enhancing the implementation modalities and performance

ii. Promoting policy convergence by aligning policies in terms of their objective and instruments, so that different policy areas are coherent and reinforce each other.

Components of the Project

The project has three outputs components.

i. Improving wage work potential of vulnerable households and enhancing the natural resource base.

ii. Long-term green livelihood development, in convergence with the National Rural Livelihood Mission (NRLM) and other relevant and state-level programs.

iii. Improving convergence and strengthening of multi-stakeholder platforms for providing better access to vulnerable households.

Resilience Framework of ERADA

The ERADA project was designed to support the impact of Mahatma Gandhi NREGA by promoting the capacity of households to absorb the effects of climate risks, adapt to climate impacts and transform their livelihood strategies to growing climate stress. Goat rearing has been promoted under ERADA to bring both absorptive and adaptive resilience among the rural poor population.

The Resilience Framework of the ERADA Project: -

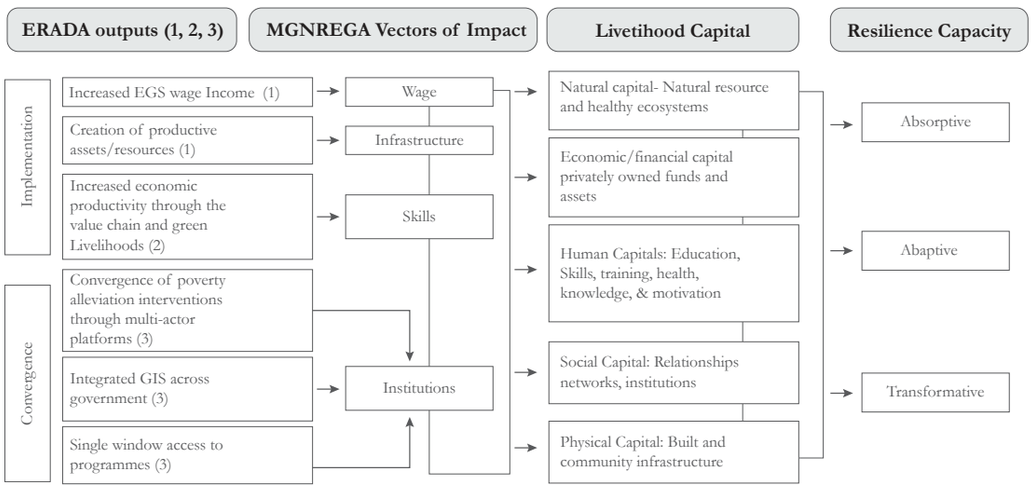

Chart 7: Contribution of ERADA and MGNREGA across the five livelihood capitals (Source: Strengthening Rural Resilience in India, 2022, GIZ)

Selected Project Area in ERADA

The project has been implemented in selected poverty pockets of four states of India. The project was envisaged to improve sustainable livelihood generation opportunities for 40,000 vulnerable households in these pilot project locations. The activities ranged from plantations, horticulture gardens, aquaculture, goat and cattle rearing, biogas construction, vermicompost, mushroom cultivation, beekeeping, makhana, peanut, and agriculture and allied activities. It worked with multiple departments/programmes in tandem to achieve the objectives. The pilot project areas are mentioned below:

Table 21: ERADA Project Districts & Blocks

SN	State	Distric	Block
1.	Bihar	Gaya	Mohanpur
		Araria	Raniganj
2.	Jharkhand	Ramgarh	Gola
		Dumka	Masalia
3.	Madhya Pradesh	Guna	Bamori
		Khandwa	Khalwa
4.	Rajasthan	Baran	Shahbad
		Sirohi	Pindwara

Goat Rearing and ERADA

Goat rearing has been identified as a prevalent livelihood for vulnerable people in all the selected states. The income from goats has been supporting the families in crisis and emergency. It is not only the primary source of income for landless farmers but also contributes significantly to the income of small and marginal farmers after agriculture. The earlier studies in ERADA reveal that the goat livelihood is most adaptable by women and poor and it is very easy to manage as compared to the large animals. Despite so many scopes and advantages the income from goat rearing is skewed due to high mortality, poor weight gain, and a fair market's unavailability. The project identified the unavailability of nutritious fodder, mortality, and unhygienic sheds/space as major constraints for income enhancement from goat rearing. The project has taken various initiatives to improve goat rearing such as-

Awareness Generation Among People on Goat Rearing

The project partnered with the State Rural Livelihood Missions (Jeevika, JSLPS, MPSRLM, etc.) and the PRI members to conduct village awareness meetings/training on goats. The meetings and preliminary visits helped to understand the current situation and concerns of people on goat rearing. The various concerns raised by the people are:

i. Unavailability of grazing/pasture area in the village
ii. Lack of vaccination, deworming and treatment services for goats
iii. Lack of fair market for goats/high involvement of middlemen
iv. Poor management due to a lack of skills and resources

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Figure 40: Awareness Generation Among Goat Farmers Associated with ERADA Project

The initial findings have shown the need for interventions like village-level service providers (Pashu Sakhi), low-cost shed, durable sheds, fodder cultivation, and regular handholding, etc. to strengthen the goat-based livelihood.

Awareness Generation Through Mobile IVR

To address the need for easy and accessible true information on MGNREGA and other activities, the project has developed "ERADA Mobile Vani", an IVR-based interface, where anyone can call and interact, listen, or raise their queries. The accessible missed call facility is easy and approachable to all and does not require any complex internet inputs. There are high number of calls to the number from the project area.

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Figure 41: ERADA Mobile Vani

Local Planning and Capacity Building Support

The project facilitated the participation of the people in Gram Sabha and MGNREGS meetings along with PRI members. The local planning has given a new perspective, voice, and high involvement of primary stakeholders of MGNREGA workers. The spread of awareness and information generated a high demand for work as well as a new avenue of work in the same village. The facilitation to the creation of labor groups and the involvement of VLRPs has raised job availability and income.

	Components Underv MGNREGS		Achievements
Outcome Indicator 1: MGNREGA Work	Scheme selection for MGNREGA		552
	Fodder park site selection		06
	Rural ha at site selection		06
	Total worker involved in MGNREGA Work	Target; 15,000	16,724
	Labour Group Formation		34
	Goat Shed (Under SJY)		122
	Individual Plantation		44
	New job cards		1104

	Product	Target HHs	Achievement	Percentage (%)
Outcome 2: Agri Based Livelihood	Til (Sesame)	750	2022	270%
	Millet	750	652	87%
	Mushroom	1000	500	50%
	Moringa	500	100	20%
	Goat	2500	2580	103%
		5500	**5854**	**107%**

MIS Report of Mohanpur Gaya (29th Feb 2024)

Identification, Capacity Building and Handholding of Pashu Sakhi

There is high mortality in goats in all areas due to weakness, lack of awareness, and treatment of minor ailments of goats. The available para-vet services are located at distant places and are costly to the farmers. There is felt need for local resource persons like Pashu-Sakhi in rural areas to provide such services at affordable cost. The NRLM has already promoted such services in all the SRLMs. The project ERADA has adopted the available local Pashu Sakhi and supported them to provide the services as an entrepreneur.

The project has trained approximately 203 Pashu-Sakhis in Madhya Pradesh, 30 Pashu-Sakhis from each project block through RSETI (Jharkhand), The Goat Trust, Madhya Pradesh, Expert Trainers (Mohanpur) and other agencies. The other steps taken by Project ERADA for strengthening Pashu Sakhi are -

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Figure 42: Pashu Sakhi deworming a goat in Mohanpur, Gaya

i. Some of the Pashu Sakhis were trained through SRLMs but were inactive due to various reasons. The project staff provided counselling and handholding support for regular earnings.

ii. The project also establishes relations of Pashu Sakhis with the AHD departments, and agencies operating on goats. Like Pashu Sakhi of Raniganj Araria are linked with Seemanchal Jeevika Goat Producer Company Ltd. (Goat Farmers Producer Company promoted under Jeevika) for inputs purchase and output sale.

iii. The Pashu Sakhis were also trained at distant places like The Goat Trust Lucknow to have wider perspectives.

iv. In Madhya Pradesh the Pashu Sakhi were trained on Artificial Insemination (AI) of goats for breed improvements with the help of State Animal Husbandry Departments.

v. The ERADA project conducts regular monthly meetings with the Pashu Sakhis to improve their work efficiency and income. They also provide technical support through the convergence with line departments.

vi. The Pashu Sakhis in MP were linked with banks to enhance their income.

Interventions in Durable Asset Creations for Individuals and Community

The goat sheds were identified as an important asset for the improvement of income from goat rearing. The project has facilitated the following:

i. Generation of demand for the goat shed, horticulture gardens, and Azolla pit for goat rearing.

ii. Identification of appropriate beneficiaries and construction of goat sheds.

iii. The project also influenced the MGNREGA policies for the creation of fodder parks and rural haats (Mohanpur, Gaya).

iv. The project also put efforts into low-cost sheds for goats for small farmers. In Mohanpur, Gaya, 122 goat sheds have been constructed under SJY.

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Figure 43: Goat Shed constructed under MGNREGA in Mohanpur, Gaya

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Figure 44: Low-Cost Shed constructed in Jharkhand.

Influencing Policies

The project ERADA was a pilot project for enhancing the efficiency of MGNREGA's largest employment program in India. The collaborative efforts of the department and ERADA have opened many areas where the efficiency of MGNREGA can be improved along with the participation of primary stakeholders. The various initiatives taken in ERADA that impacted the implementation of the ERADA are:

i. Advocacy for inclusion of Vulnerable Groups- The ERADA project has set the process of conducting MGNREGA meetings also inclusion of those left out by facilitating registration and getting job cards. Capacity building of PRIs for identification of new avenues of work for the people.

ii. Moringa Cultivation for Fodder- The moringa is well known as a super nutritious plant both for humans and animals. The ERADA project has included the moringa plantation for individuals and community through constant advocacy. The team has also developed "Moringa Tool Kit" for the benefit of larger community.

iii. Influencing Goat Livelihood through MGNREGA- The construction of goat sheds has been included in the scheme for vulnerable families, but the ERADA project has stressed the need for convergence of many other essential things at one point for strengthening the goat livelihood like:

- The inclusion of fodder trees in the plantation schemes of both individuals and communities,
- Engagement of the community in planning for the fodder requirement based on the number of goats in the village (Raniganj, Araria)
- Engagement of CSOs in the planning process of MGNREGS, to benefit the left-out vulnerable families.
- Convergence with the animal husbandry department for training and routine services

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Figure 45: Training of goat farmers in Raniganj, Bihar

- Advocacy for the inclusion of appropriate shed design for goats in the schemes, rather than high-cost masson structure.
- Advocacy for the creation of goat markets, and goat hostels in every village to manage the risk of climate, bad weather, and floods.

iv. The innovative approach of MGNREGA information dissemination through Mobile IVR.

GIS-based NRM Planning

The ERADA project has piloted GIS-based planning for the NRM activity in some of the panchayats in Bihar. The GIS mapping helps to visualize the available water bodies, flow of water, streams, canals, land topography, and availability of fallow land. The construction of water harvesting structures on the water flow area will keep them recharged for a longer duration. The GIS also helped to visualize the potential land on the farm bunds, sides of the canal, and roadsides for plantation activity for the goat fodder. GIS-based NRM planning has helped in construction of suitable structures to improve water conservation, and improved land use. The GIS-based data helped in the accurate implementation of the scheme, and it is very logical and easy to understand.

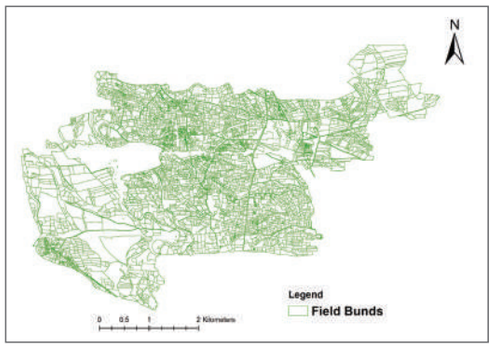

Figure 46: GIS map of Bistoria Panchayat, Raniganj Araria, shows 815km of field bunds.

The piloting of GIS mapping in Bistoria Panchayat, Raniganj, Araria, Bihar has shown lots of fallow land in commons which can be used for fodder cultivation for animals. It was identified through GIS that the panchayat has nearly 815km of farm bunds and 172km of road networks, which can be used for plantation without competing with the food crops.

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GOAT-BASED LIVELIHOOD IN INDIA: POLICIES & PROGRMMES

Overview of Goat Development Programs in India

In 2012-13, the goat sector contributed 22.138 billion rupees (USD 369 million) to India's GDP through meat, milk, and skin. Recognizing the significance of goat farming, the Government of India (GoI) has launched various programs to promote goat-based livelihoods. During the 1980s, the GoI initiated goat development schemes which primarily involved importing goats rather than promoting local breeding. This led to a sudden increase in the goat population and a fodder crisis. Without support activities like fodder development, these projects had negative impacts on the ecosystem and biodiversity. Consequently, goat-based livelihoods became unpopular among foresters and environmentalists. However, studies later disproved the negative assumptions about goats' environmental impact, renewing interest in promoting goat farming as a viable livelihood.

Challenges for Goat Livelihood

Goat rearing is a vital livelihood for 33 million households in India. Despite their efficiency and adaptability, goat rearing faces challenges such as high mortality due to diseases, availability of poor nutritious fodder, lack of appropriate care and management and unplanned breeding. Key challenges, including some area specific challenges, that can be addressed through MGNREGS are

i. **Shrinkage of Pastureland and Forests:** While goat population increased by about 10% from 2012 to 2019, pastureland decreased by 50%. Restrictions on forest grazing and conversion of fallow land to agriculture exacerbate undernourishment and reduced productivity.

ii. **Fodder Demand and Supply Gap:** Urbanization and climate change reduce fodder availability. Government schemes prioritize fodder for milch animals, neglecting goats. Introducing local fodder seeds and preservation technology is crucial.

iii. **Shed for Goats:** The farmer rears the goats in one corner of their house and the space provided is fixed and there is no relation with the goat number. The sheds also receive lease priority on maintenance and cleaning. The effects of poor housing are chronic and inhibit herd growth and minimize the desired profit.

iv. **Awareness and Capacity Building:** Most of the goat rearers are less educated and have little resources to invest in goats. They are unaware of the impact of parasites, poor nutrition, and unplanned breeding.

There are other challenges to goat rearing like unavailability of vaccines and services at the village level, financial support to expand the business, elite males for breeding, insurance, and disease management, which need to be addressed properly by the line departments. In sum, training and climate-adaptive approaches are crucial for sustainable goat farming. Addressing the abovementioned challenges through coordinated efforts and targeted interventions can significantly enhance the goat value chain, ensuring better livelihoods for rural communities.

Key National Policies for Goat Based Livelihood Promotion

The Government of India (GoI) has launched various programs to support goat-based livelihoods, recognizing their potential. During the Eleventh Five Year Plan (2007-12), the Integrated Development of Small Ruminants and Rabbits initiative provided training and subsidies but excluded marginalized populations like landless farmers and women. The Central Institute for Research on Goats (CIRG), established in 1979, enhances goat production for livelihood security and poverty alleviation. State-specific schemes, such as those for Pashmina goats in the Himalayas, further support goat-based livelihoods. Despite challenges like disease and financial constraints, the GoI invests in research, technology transfer, and targeted programs. Initiatives like the National Livelihood Mission (NLM), Animal Husbandry Infrastructure Development Fund (AHIDF), MGNREGA and NRLM have played a critical role in strengthening infrastructure, building capacity, and enhancing market access for goat farmers.

National Schemes and Programmes to Promote Goat-based Livelihoods

Some of the important national schemes and programmes aimed at promoting goat-based livelihoods in India are mentioned below:

i. **Comprehensive Support for Individual Farmers/Entrepreneurs** scheme broadly focuses on two aspects of goat farming: i) fodder feed production and ii) sheep/goat farming.

ii. **Entrepreneurship Development in the Sheep/Goat Sector** scheme facilitates establishment of sheep/goat breeding farms with varying unit sizes, providing capital subsidies ranging from Rs. 10 lakhs (for 100 females and five males) to Rs. 50 lakhs (for 500 females and 50 males).

iii. **Animal Husbandry Infrastructure Development Fund (AHIDF)** scheme supports processing of dairy and meat products; improvement of animal breed and feed plants; production of veterinary vaccine drug; and animal waste management. The fund offers loans up to 90% of project costs, a 3% interest subvention, and credit guarantees.

iv. **Combining Schemes for Goat Farming** programme helps farmers to leverage combinations of schemes like NLM and AHIDF for setting up goat farms for milk/meat production. NLM offers a 50% capex subsidy, while AHIDF provides a 3% interest subvention, significantly reducing the initial project cost and investment burden.

v. **Livestock Health and Disease Control Programs** initiative includes:

- Assistance to States for Control of Animal Diseases (ASCAD)
- Establishment and Strengthening of Veterinary Hospitals and Dispensaries (ESVHD)
- Peste des Petits Ruminants Control Program (PPR)
- Classical Swine Fever Control Program (CSF-CP)
- The National Animal Disease Control Program (NADCP) (which covers Foot and Mouth Disease Control (FMD-CP) and Brucellosis Control, funded entirely by the central government).

vi. **MGNREGA** has been instrumental in promoting goat-based livelihood in rural India. This toolkit offers elaborate description on how MGNREGA could be leveraged for promoting goat-based livelihood. Some of the key interventions for livestock promotion under MGNREGA broadly include:

A. Feed and Water Availability

i. **Grassland Development:** MGNREGA supports activities like soil and moisture conservation (SMC) works, protection works, and seeding works to improve grasslands.

ii. **Drinking Water Troughs:** Construction of troughs in strategic locations on community land provides vital access to clean drinking water for livestock, especially during droughts. Water can be supplied through pipelines from local Rural Water and Sanitation (RWS) borewells.

iii. **Nursery Schemes:** MGNREGA promotes nursery schemes to grow saplings for future plantation projects. This creates income for involved workers and aims to make planting materials available locally. These nurseries support a key aspect of MGNREGA's focus area, i.e., agroforestry, which combines trees, crops, and fodder on the same land.

iv. **Azolla Cultivation:** Azolla is recognized as an organic cattle feed and can be used as a nutritional supplement for Goats. MGNREGA allows for construction of infrastructure to grow Azolla under category B assets.

v. **Fodder Cultivation:** MGNREGA supports plantation activities by PRIs on Gochar, wasteland and fallow land.

B. Goat Rearing Infrastructure

i. **Mahatma Gandhi NREGA Pashu Shed Scheme 2022:** This scheme provides financial assistance to eligible farmers for constructing goat shelters on their own land. These sheds offer ventilation, a urinal tank, and improved animal well-being. The scheme prioritizes farmers whose primary income comes from livestock. The semi-permanent shelters (7.5 square meters) are suitable for 10 animals. This allows for improved goat rearing practices like controlled grazing and concentrated feeding, leading to better animal health and fattening.

ii **Commuznity fodder farms, live fencing, and livestock centres in Odisha:** The Odisha government released comprehensive guidelines for the development of Gochar lands under MGNREGA in 2020. The objective is to provide common infrastructure for cattle and goat rearing to smallholder farmers with negligible or no landholdings. This initiative intends to ensure availability of adequate green fodder for livestock in all seasons, particularly during summer. The MGNREGA provisions under this initiative include:

- Community fodder farms on Gochar land under the MGNREGA scheme
- Live fencing for plant protection
- Construction of common livestock centres
- Community Azolla tanks

iii **Karnataka's Pashu Bhagya Yojna:** Govt. of Karnataka introduced Pashu Bhagya Yojna (May 2015) for goats, sheep, and dairy animals. Under this, the cost of pens for areas of 164 and 240 square feet would be met under MGNREGA .

Intervention That Worked for Goatery Promotion in India

Apart from the abovementioned initiatives, following interventions played a crucial role in promoting goatery in India:

i. **Pashu Sakhi:** Livestock rearing, including goats, pigs, poultry, and dairy, is crucial for 60% of the rural female workforce. A major challenge is the lack of primary veterinary care due to limited resources. The National Rural Livelihood Mission (NRLM) addressed this through the Pashu Sakhi program, training local women as livestock service providers. Pashu Sakhis receive training and kits to deliver veterinary services, reducing goat mortality from 22% to 6% and increasing their income by rupees 5,000-6,000. Over 26,000 Pashu Sakhis are now engaged, promoting better livestock management and marketing practices.

ii. **Pashu Sakhis Model to National Level A-Help Program:** The Pashu Sakhi model led to the National A-Help program, launched in 2020, which extends veterinary services to farmers' doorsteps, enhancing women's roles as livestock resource persons. A-Help workers assist in data management and vaccination tracking, bridging the gap between the Animal Husbandry Department (AHD) and farmers.

iii. **SRLMs as Facilitators of Convergence with AHD:** SRLMs facilitate convergence with AHD through various asset creation programs, such as distributing cows, goats, and backyard poultry to Self-Help Group (SHG) members. Programs in Jharkhand and Bihar, like the Satat Jivikoparjan Yojana (SJY), focus on sustainable goat rearing for ultra-poor farmers.

iv. **MKSH Program- Impacting Women Farmers:** The Mahila Kishan Sashaktikaran Program (MKSP), initiated in 2010-11 under NRLM, enhances women's productive participation in agriculture, including goat farming. This program focuses on skill enhancement, asset creation, and decision-making in agriculture, promoting increased income, crop diversity, and nutritional security. Evidence suggests higher women participation in agriculture correlates with increased income, crop diversity, and nutritional security (Malapit, 2019).

Case Study: 1

Tetri Devi is a resident of Sagarpur village of Teswar gram panchayat under Mohanpur block. She is a member of SHG under Amrit village organization and Kuber cluster level federation. There are 5 members in the family. She belongs to a schedule caste family.

Voice of beneficiary

"My name is Tetri Devi, and I live in Sagarpur village under Teswar panchayat of Mohanpur block. I belong to a poor family. Goat rearing is a major source of income for me. I have received training from the ERADA team. They motivated me to adopt better management practices for goats".

The living conditions of my goats were very poor as the shed was kuccha, constructed of mud and roof with paddy straws. During monsoon, my goats used to get wet, didn't get proper rest, and diseases occurred. There was mortality of kids due to poor nutrition and health related issues every year.

With the support of ERADA, I got pucca sheds from MGNREGA and now my goats are protected & safe, and reduced mortality of kids & goats has led to increased income of my family.

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Figure 47: Tetri Devi's Goat shed constructed under MGNREGA.

Case Study: 2

Puja Devi resides at Chorniman village with her husband Rampravesh, two daughters and a son. The village comes under Teswar gram panchayat of Mohanpur block. She belongs to a scheduled caste family. Sources of income of her family are goat rearing and.

Voice of Beneficiary

My name is Pooja Devi, and I live in Chornima village, Teswar gram Panchayat of Mohanpur block. Growing up in a financially disadvantaged family with only a small piece of land, I had to rely on migrant work and goat rearing to support my three children. For me, my goats are like an invaluable ATM machine–whenever we need money, we simply sell them in the nearby market to meet our expenses.

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Figure 48: Pashu Sakhi deworms Pooja Devi's goat.

In the past, we had little knowledge about proper goat rearing practices, and our goats suffered because of it. They were kept in an unclean area. We neglected essential aspects like providing them with good feed, clean water, and timely deworming and vaccinations. As a result, their growths were stunted, and they often fell sick, leaving us heartbroken as we lost a few kids due to these hardships. On top of it all, the expenses of calling a veterinary doctor became a heavy burden for our family.

However, things took a positive turn when our lives changed for the better. We were introduced to the incredible Pashu Sakhi, Ms. Rinku Devi & ERADA Team members, who put in efforts to reach out to us, and provided handholding support and knowledge of good goat rearing. They provided us with valuable training and unwavering support in deworming and goat health management. Thanks to their guidance, our goats are now flourishing – they have gained weight, and their overall health has improved significantly.

Learning about proper feeding, shelter, and water practices made a remarkable difference. Not only have our goat numbers increased, but diseases have also become a rare occurrence. Witnessing the tremendous growth in my goats has filled my heart with pride. Moreover, selling these healthy goats in the market has brought us additional benefits – a boost in income that has made a significant impact on our lives.

Table 22: Pre- and Post-Intervention Analysis	
Before intervention	After intervention
• Goats were tied in unclean area	• Goats are kept in good clean area
• No goat shelter	• Proper goat shelter
• No proper feed & water practice	• Proper feed & water management
• No deworming & preventive vaccinations	• Timely deworming & disease management
• Untimely castration of goat	• Timely castration of goats
• Weight loss in goats	• Good growth and weight gain in goats
• Selling goats in 3-4 months	• Rearing goats till 6 months then selling it in market
• Lack of veterinary healthcare services. Veterinary doctor expense	• Pashu Sakhi services at doorstep now
• Lack of knowledge & skills on goat rearing	• Training on improved goat rearing, health & disease management trainings
• Loss of baby goats (kids) due to mortality	• No more loss of baby goats (kids)

STATUS OF GOATS & GOATERY IN LOW INCOME STATES OF INDIA

Indian States with Major Goat Population

As per 2019 Census, total goat population of India is 144.88 million. As the Map in figure 2 shows, six out the ten states with majority of goat population also happen to be states where over 15 percent of the population is dealing with multidimensional poverty (Niti Ayog, 2023)[5]. Livestock-based livelihoods, such as goat farming, have tremendous scope to help low-income states, raise poor households' incomes and, subsequently, complement and strengthen these states' poverty alleviation programs. Moreover, goat farming also helps improve the health and nutritional status of poor household members by ensuring easy access to protein sources in the form of milk and meat. With 75 million, over 50 percent of the total goat population is concentrated in low-income states of Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Uttar Pradesh and Odisha.

Table 23: Top Ten States with Maximum Goat Population Concentration

SN.	States	Goat Population (in million)		% change
1.	Rajasthan	**2012**	**2019**	
		21.7	20.8	-3.81
2.	West Bengal	11.5	16.3	41.49
3.	Uttar Pradesh	15.6	14.5	-7.09
4.	Bihar	12.2	12.8	5.49
5.	Madhya Pradesh	8.0	11.1	38.07
6.	Maharashtra	8.4	10.6	25.72
7.	Tamil Nadu	8.1	9.9	21.43
8.	Jharkhand	6.6	9.1	38.59
9.	Odisha	6.5	6.4	-1.84
10.	Karnataka	4.8	6.2	28.63
	Total	**103.4**	**117.7**	**13.83**

In 2019, the ten states referred to in the Table 23 had the highest goat population, with Rajasthan leading despite a slight decadal decline. States like Wets Bengal, Madhya Pradesh, Jharkhand and Karnataka saw substantial growth in goat population. Low-income states with relatively high goat populations possibly offer the most promising space for promoting goat development initiatives aimed at poverty eradication. As Annexure 1 shows, with above 15% population dealing with MDP (multi-dimensional poverty), states like Rajasthan, Jharkhand, Bihar, Madhya Pradesh and Uttar Pradesh) offer contexts to assess the efficacy of goat farming for poverty eradication. These states fall in the list of the top ten states with highest concentration of goat population as well.

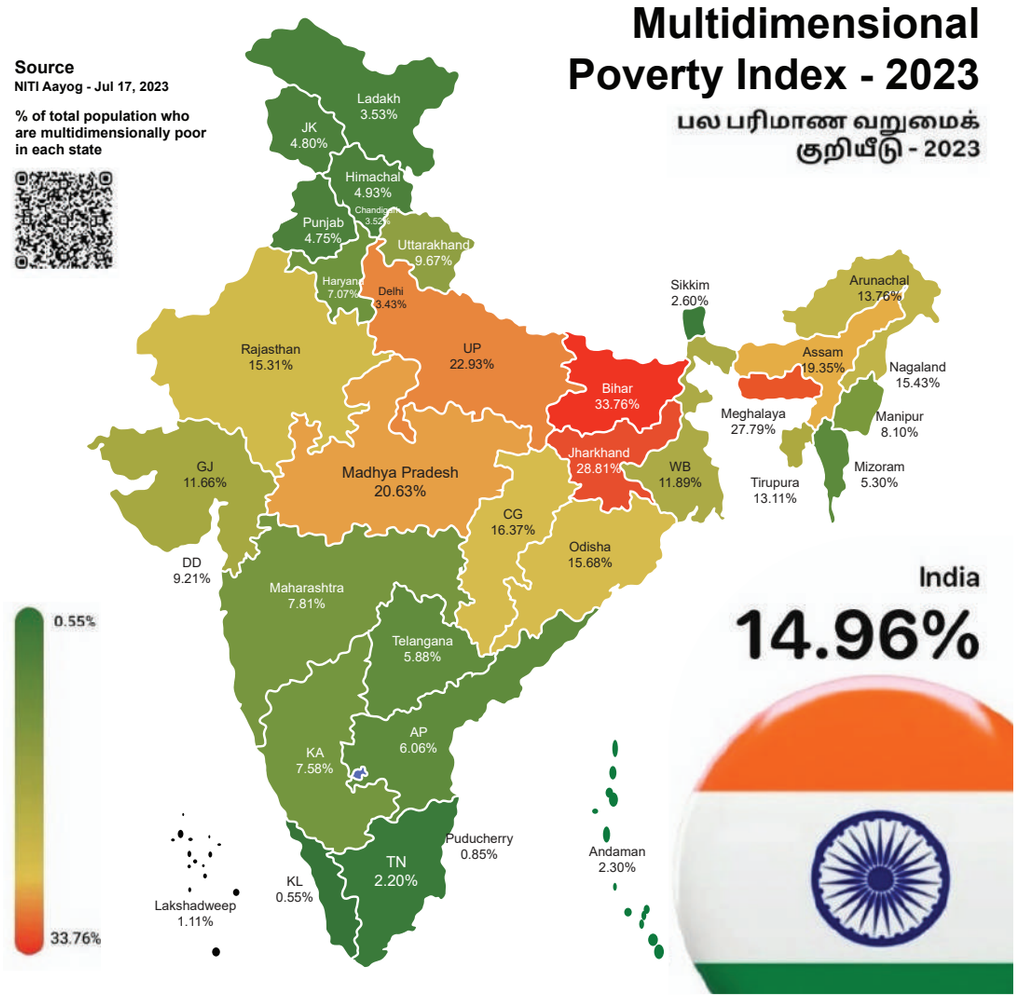

Figure 49: Multidimensional Poverty Index in India, 2023 (Source: NITI Ayog, GoI)

Key Learnings from Goat Farming in Various Indian States

The process of formulation and implementation of goat-farming policies/schemes varies in different states of the country. However, learnings from several state-specific schemes could be commonly implemented in the entire country. Reference of some such policies have been mentioned below: -

Table 24: Commonly Implemented Learnings from Various Relevant Policies

Policy Themes	Learnings that could be commonly implemented in the country
Veterinary Support system	The states with widespread and better veterinary support systems for goat rearers have progressed well like Karnataka, Telangana, Rajasthan, Kerala, Andhra Pradesh, etc. Telangana launched veterinary ambulance services and a toll-free helpline number "1962" in 2017 to support doorstep service to goat/sheep rearers. There are similar systems in Gujarat and Karnataka also.

Operationalization of Schemes	Online portals to bring transparency have been adopted in most of the southern states. There a are State level Monitoring Committee (SLMC) and a District level Monitoring Committee (DLMC) to monitor the progress of program implementation.
Insurance & Ex-gratia scheme	Comprehensive insurance and ex-gratia schemes as implemented in Karnataka are required to be implemented in all states to protect the uncertain losses to farmers.
Schemes for Asset Creation	Almost all states have schemes to provide grant support to farmers to purchase breeding animals. These schemes are limited to animal supply only and lack comprehensive support for training, shed management, veterinary care and insurance. The role of civil societies, and FPOs can be strengthened to support the livelihood in these areas.
Supply of Breeding Animals from Government run farms	The production and supply of breeding animals require research and investment, which is beyond the farmer's control. The states like Karnataka, Telangana, Jharkhand, etc. maintain farms and supply breeding animals to farmers. There is high demand and supply gap in these states too.
Plantation Activity	The states realized the importance of fodder availability for the goats, so extensive plantation has been promoted by the departments and MGNREGA in the entire country, but it is successful in some of the states like Gujrat, Karnataka, Rajasthan, Odisha, etc.
E-Commerce Platform for Selling and Purchasing Goats	There is a need to popularize the use of E-Commerce platforms like Animal, netlivestock.com, pashubazar.com and others for facilitating transparent transactions between buyer and seller. The government-regulated platforms can protect poor farmers from fraud.
Promotion of FPOs	The states like Madhya Pradesh, Maharashtra, Bihar, and Rajasthan have promoted FPOs to facilitate the business of goats. These FPOs need separate policies, guidelines, and investments to scale up.
Hygienic Meat Startups	The hygienic meat startups like Licious, NE Fresh, Fresh to Home, Tender Cuts, etc. have given a boost to the marketing of goat meat. The country needs a logistics set-up starting from modernized abattoirs to hygienic meat logistics to reach the consumers.

LEVERAGING MGNREGA FOR GOAT-BASED LIVELIHOOD PROMOTION

MGNREGA and Economic Opportunities for Low-Income Households in Rural India

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) 2005 aims to enhance rural livelihood security by guaranteeing at least 100 days of wage employment annually to each household whose adult members volunteer for unskilled manual work. In the financial year 2024-25 (as of May 21st), MGNREGA generated 430 million workdays, engaging about 30 million workers. As the world's largest social security program, MGNREGA covers 266 categories of permissible works. Permissible livestock-related work under MGNREGA includes goat shelters, poultry shelters, construction of pucca (permanent) floor urine tanks, fodder troughs for cattle, and Azolla as a cattle-feed supplement. Healthy fodder, complemented with supplements like Azolla, significantly improves goats' health and nutritional status. Moreover, goat sheds enhance the quality of life for both goats and farmers. The construction of durable community (Category C) and individual beneficiary (Category B) assets is a crucial aspect of MGNREGA. State governments focus on improving lives through wages, earnings, and durable assets, especially for women. Leveraging MGNREGA and other schemes for women and households engaged in goat farming can improve the health and well-being of goats and farmers. Provisions for women include creating decent rural jobs with at least one-third participation, reducing drudgery by providing nearby employment, and offering facilities like crèches and shaded childcare areas. Women's participation reached about 59% in 2023-24, promoting wage parity and economic empowerment.

The MGNREGA is a paradigm shift from the wage employment programs. Some of the salient features of this program are: -

- It provides a statutory guarantee of wage employment to the adult members of the family.
- It gives choice to the worker for registration, getting a Job card, and demanding the job for a specified time and duration.
- There is a 15-day time limit for fulfilling the job requirement, in case of failure there is provision for providing unemployment allowance. The unemployment allowance is a disincentive to the state as it's born by the state.
- The centre provides 90 percent of the cost of the scheme.
- The scheme gives equal weightage to male and female workers and it is mandatory to involve one-third of the workforce as women. The work site must have water for drinking, a shed and a creche for children.
- Wages are paid according to the Minimum Wages Act 1948 for agriculture labourers in the state, and they should be paid weekly and not beyond a fortnight in any case.
- The works are recommended by the village panchayats.
- There is a 60:40 ration between the cost of wages and material costs. No contractors and machinery are allowed.
- The scheme has provisions for doing social audits, grievance redressal, and public display of all accounts related to work for transparency.

How MGNREGS can be Leveraged to Promote Goat Farming and Accelerate Income?

Successful models of goat rearing in various Indian states highlight the importance of government support, financial assistance, technical guidance, and market linkages. MGNREGS offers a programmatic and institutional base for the convergence of relevant policies and schemes around goat farming and poverty alleviation. Leveraging MGNREGS for the effective implementation of these policies or scaling of successful models of goat farming can significantly raise the income of MDP population. Special measures are required to ensure the implementation of existing policies and leveraging programs like MGNREGS in states with a relatively higher proportion of MDP population. MGNREGS can be instrumental in:

i). **Providing Infrastructure:** The goat sheds have a greater influence on production and productivity and MGNREGS has provision to build sheds (80 sq ft) for certain defined categories of people. However, the number of sheds constructed per year is much lower than the total number of goat rearers in rural India. The MGNREGS can plan at the Gram-Sabha level to support most of the goat rearers with shed in a short period of 3-5 years.

The dimensions of the goat shed are sufficient to rear 3-4 small goats with kids, which can give a minimum income of 15000-20000 annually. There is a need to revise the dimensions of the shed to rear at least 8-10 goats for higher income annually. The other infrastructure support that can be created in the scheme are Goat hostels/Community goat sheds, space in rural markets for goat selling, and village-level animal quarantine sheds. Other minor infrastructure supports can be provided in the scheme that can benefit all the livestock of the village such as rain/flood shelter, drinking water, etc.

ii) **Supporting Training and Capacity Building:** The MGNREGS workers have little access to the routine training programs conducted by NRLMs, relevant AH Departments and NGOs. The MGNREGS workers can be trained on the basics of poultry, and goat rearing at the work site for a few hours daily. The knowledge enhancement will help in improving production.

iii) **Facilitating Fodder Planning & Production:** The MGNREGS can facilitate the planning to meet nutritious fodder requirements for the goats. The unused lands on bunds, canals, and roads sides can be allocated for fodder tree cultivation. The MGNREGS can also allocate a certain percentage of land in the village for silvi-pasture.

By leveraging MGNREGS, goat farming can be promoted as a sustainable livelihood option, leading to poverty alleviation in low-income states. This approach will not only improve the economic well-being of marginalized communities but also enhance their social status and overall quality of life.

Who Funds the Program?

The financing pattern of the MGNREGS is distributed among the state and central governments.

The central governments bear the following: -

- The central government funds 100% of the labor cost
- 75% of the materials cost and wages of skilled and semi-skilled workers
- Administrative expenses as decided by the central government, which include salary and allowances of Program officers, their support staff and work site facilities.
- Cost of Central Employment Guarantee Council

The State Government bears the following expenses: -

- 25% of the cost of materials and wages of skilled and semi-skilled workers.
- Unemployment allowance cost.
- Cost of State Employment Guarantee Council

Table 25: Structure of MGNREGS Functionaries and their Roles		
Level	**Stakeholders**	**Roles**
Village Levela	Wage Seekers	• Primary stakeholder • The demand for jobs by the wage seekers triggers the entire process. • Have the right to demand the job. • Have the right to check the muster rolls and get information regarding their employment.
	Gram Sabha	• Recommends the work to be taken under MGNREGS. • Forum for social audit and information dissemination. • Monitors the works executed by Gram Panchayat
	Gram Panchayat	• Planning of work • Receiving applications, verifying, registering households, and issuing job cards. • Receiving applications for jobs, allotting jobs, executing the jobs, maintaining records and payments. • Convening Gram Sabha for planning and audits • Monitoring and implementation the works at village level.
Block Level	Intermediate Panchayat	• Consolidation of programs at block level • Monitoring and supervision
	Program Officer	• Ensure issue of the Job within 15 days to the applicant • Scrutinizing the annual development plan • Consolidating all proposals • Disposal of complaints • Ensuring social audit • Payment of unemployment allowance
District Level	District Panchayat	• Finalizing the district plan and labor budget • Monitoring and supervising
	District Program Coordinator (DPC)	• Implementation of schemes according to the act in the district • Information dissemination, trainings, consolidation of block plans, release, and utilization of funds • Ensure administrative and technical approval of projects. • Monitoring work
State Level	State Employment Guarantee Council (SEGC)	• Advise state gov on implementation of the scheme. • Decide on the preferred works and their modalities. • Wide communication of schemes • Establish an Employment Guarantee fund. • Ensure adequate human resources for implementations. • Release of budgets on time to districts. • Training and network of professional agencies for technical support • Monitoring and evaluation at the state level

Central Level	Central Employment Guarantee Council (CEGC)	• Advisory to MORD on MGNREGA matters. • Annual report preparation • Monitoring and evaluation of implementation
	MORD	• Nodal for implementation of MGNREGA • Availability of resources to SEGC and CEGC • Review, monitoring and evaluation. • Support innovations. • Track through MIS

Figure 50: Estimates of Goat Shed under MGNREGA from Karnataka

ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಗ್ರಾಮೀಣಾಭಿವೃದ್ಧಿ ಆಯುಕ್ತಾಲಯ

ಗ್ರಾಮೀಣಾಭಿವೃದ್ಧಿ ಮತ್ತು ಪಂಚಾಯತ್ ರಾಜ್ ಇಲಾಖೆ

2ನೇ ಮಹಡಿ, 3ನೇ ಹಂತ, ಬಹುಮಹಡಿ ಕಟ್ಟಡ, ಬೆಂಗಳೂರು-01.

ದೂರವಾಣಿ ಸಂಖ್ಯೆ : 080-22372738, E-mail: karnregs@gmail.com

ಸಂಖ್ಯೆ: ಗ್ರಾಅಪ 576(1)ಉಖಾಯೋ 2016 ದಿನಾಂಕ: 31-08-2020

ಗೆ,
ರಾಜ್ಯದ ಎಲ್ಲಾ ಜಿಲ್ಲಾ ಪಂಚಾಯತಿಗಳ,
ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಧಿಕಾರಿಗಳು.

Goat Shed under MGNREGA

ಮಾನ್ಯರೇ,

ವಿಷಯ: ಮಹಾತ್ಮ ಗಾಂಧಿ ರಾಷ್ಟ್ರೀಯ ಉದ್ಯೋಗ ಖಾತರಿ ಯೋಜನೆಯಡಿ ಆಡು ಸಾಕಾಣಿಕೆ ಶಡ್ ನಿರ್ಮಾಣ (10 ಆಡುಗಳಿಗೆ) ಮಾಡುವ ಕುರಿತು.

****

ಮಹಾತ್ಮಗಾಂಧಿ ರಾಷ್ಟ್ರೀಯ ಗ್ರಾಮೀಣ ಉದ್ಯೋಗ ಖಾತಿ ಯೋಜನೆಯಡಿ ಆಡು ಸಾಕಾಣಿಕೆ ಶಡ್ ಕಟ್ಟಡ ನಿರ್ಮಾಣದ ಮಾದರಿ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು ರೂ. 68,000/- ಕ್ಕೆ ಅನುಮೋದಿಸಿ ಈ ಪತ್ರದೊಂದಿಗೆ ಮುಂದಿನ ಕ್ರಮಕ್ಕಾಗಿ ಕಳುಹಿಸಿದೆ.

ಕ್ರ.ಸಂ	ಕಾಮಗಾರಿಯ ಹೆಸರು	ಅಂದಾಜು ಮೊತ್ತ(ರೂ. ಗಳಲ್ಲಿ)	ಕೂಲಿ ಮತ್ತು ಸಾಮಾಗ್ರಿ ಅನುಪಾತ	ಷರಾ
1	ಆಡು ಸಾಕಾಣಿಕೆ ಶಡ್ ನಿರ್ಮಾಣ	68,000/-	2.37:97.63	ವಯ್ಯಕ್ತಿಕ ಆದಾರಿತ ಕಾಮಗಾರಿ

1. ಅಂದಾಜು ಪತ್ರಿಕೆಯಲ್ಲಿ ಅಡಿಪಾಯ ಮತ್ತು ಬೆಸ್‌ಮೆಂಟ್‌ಗೆ **Size Stone Masonry** ಉಪಯೋಗಿಸಲಾಗಿರುತ್ತದೆ. ಸ್ಥಳಕ್ಕೆ ಅನುಗುಣವಾಗಿ **RCC** ನ್ನು ಉಪಯೋಗಿಸಬಹುದು.
2. ಕಾಮಗಾರಿಗೆ ಮೇಲ್ಛಾವಣಿ ನಿರ್ಮಿಸಲು **MS Tubular Truss** ಮತ್ತು **Trapezoidal profiled sheet** ನೀಡಲಾಗಿರುತ್ತದೆ. ಇದರ ಬದಲಾಗಿ ಸ್ಥಳದ ಲಭ್ಯತೆಯ ಮೇರೆಗೆ ಮೇಲ್ಛಾವಣಿಯನ್ನು ರೂಪಿಸಬಹುದು.
3. ಆಡು ಸಾಕಾಣಿಕೆ ಶಡ್‌ನ ನೆಲ ಹಾಸಿಗೆ **Plywood Sheet** ನೀಡಲಾಗಿರುತ್ತದೆ. ಇದರ ಬದಲಾಗಿ ಸ್ಥಳದ ಲಭ್ಯವಿರುವ ವಸ್ತುವಿನಿಂದ ನೆಲ ಹಾಸನ್ನು ರೂಪಿಸಬಹುದು.

ಷರತ್ತುಗಳು:

1. ಕಾಮಗಾರಿ ಆಯ್ಕೆ, ಅನುಷ್ಠಾನ ನಿರ್ವಾಹಣೆ, ಶೆಡ್ಯೂಲ್ 1, 2 ಹಾಗೂ ಕಾರ್ಯಚರಣೆ ಮಾರ್ಗಸೂಚಿ 2013ರ 4ನೇ ಆವೃತ್ತಿಯ ನಿರ್ದೇಶನಗಳಿಗೆ ಒಳಪಟ್ಟಿವೆ.
2. ಕಾಮಗಾರಿ ಗುಣಮಟ್ಟ ಕಾಯ್ದುಕೊಳ್ಳಲು ಗಮನ ನೀಡುವುದು
3. ಕೂಲಿ ಮತ್ತು ಸಾಮಗ್ರಿಗಳ ವೆಚ್ಚದ ಶೇ. 60:40ರ ಅನುಪಾತವನ್ನು ಜಿಲ್ಲಾ ಪಂಚಾಯತಿ ಮಟ್ಟದಲ್ಲಿ ಒಟ್ಟಾರೆ ಕಾಮಗಾರಿಗಳ ಮೊತ್ತದ ಮೌಲ್ಯದಲ್ಲಿ ನಿರ್ವಹಣೆ ಮಾಡುವುದು.

4. ಪಂಚಾಯತ್ ಅಭಿವೃದ್ಧಿ ಅಧಿಕಾರಿಯವರು ಹಣ ಸಂದಾಯ ಮಾಡುವುದಕ್ಕೆ ಮೊದಲು ಅಂದಾಜು ಪಟ್ಟಿ ಅನುಮೋದನೆ (ಆಡಳಿತಾತ್ಮಕ ಹಾಗೂ ತಾಂತ್ರಿಕ ಅನುಮೋದನೆ ತತ್ಸಂಬಂಧಿತ ಪ್ರಾಧಿಕಾರದಿಂದ) ಬಗ್ಗೆ, ಹಾಜರಿ ಪಟ್ಟಿಗಳ ಬಗ್ಗೆ, ಬಿಲ್ಲು, ಸರ್ಕಾರಕ್ಕೆ ಸಲ್ಲಿಸಬೇಕಾದ

5. ತೆರಿಗೆಗಳ ಕಡಿತದ ಬಗ್ಗೆ ಕಡಿಮೆ ಅಳತೆ ಪುಸ್ತಕದಲ್ಲಿ ನಮೂದನೆ, ಚೆಕ್ ಮೆಷರ್‌ಮೆಂಟ್ಗಳ ಬಗ್ಗೆ ಪರಿಶೀಲನೆ ಮಾಡತಕ್ಕದ್ದು. ನಂತರವೇ ಹಣ ಸಂದಾಯಕ್ಕೆ ಕ್ರಮ ವಹಿಸುವುದು.

6. ಕಾಮಗಾರಿ ಸ್ಥಳದಲ್ಲಿ ನಾಮಫಲಕ ಕಡ್ಡಾಯವಾಗಿ ಅಳವಡಿಸುವುದು.

7. ಸದರಿ ಕಾಮಗಾರಿಗೆ ಆಗುವ ವೆಚ್ಚವನ್ನು ಮಹಾತ್ಮ ಗಾಂಧಿ ರಾಷ್ಟ್ರೀಯ ಗ್ರಾಮೀಣ ಉದ್ಯೋಗ ಖಾತರಿ ಯೋಜನೆಯ ಅನುದಾನದಿಂದ ಭರಿಸತಕ್ಕದ್ದು.

8. ಅಂದಾಜು ಪಟ್ಟಿಯಂತೆ ಕಾಮಗಾರಿ ಪೂರ್ಣವಾದ ನಂತರ ಇದು ಸಮುದಾಯ ಮಹಾತ್ಮಗಾಂಧಿ ರಾಷ್ಟ್ರೀಯ ಗ್ರಾಮೀಣ ಉದ್ಯೋಗ ಖಾತರಿ ಯೋಜನೆಯಡಿ ಸೃಜಿಸಲಾದ ಗ್ರಾಮ ಪಂಚಾಯತಿ ಆಸ್ತಿಯಾಗುತ್ತದೆ.

9. ಪ್ರಸ್ತಾಪ ಮಾಡುವ ಕಾಮಗಾರಿಗಳನ್ನು ಗ್ರಾಮ ಸಭೆಗಳಿಂದ ಅನುಮೋದನೆ ಪಡೆದು ತರುವಾಯ ಕ್ರಿಯಾ ಯೋಜನೆಯಲ್ಲಿ ಸೇರಿಸಿಕೊಂಡು ಜಿಲ್ಲಾ ಪಂಚಾಯತಿಯಿಂದ ಅನುಮೋದನೆ ಪಡೆದು ಈ ಯೋಜನೆಯ ಮಾರ್ಗಸೂಚಿಗಳ ಪ್ರಕಾರ ಅನುಷ್ಠಾನಗೊಳಿಸುವುದು.

10. ನೊಂದಾಯಿತ ಕೂಲಿ ಕಾರ್ಮಿಕರಿಂದ ಮಾತ್ರ ಅಕುಶಲ ಕೆಲಸಗಳನ್ನು ನಿರ್ವಹಿಸುವುದು, ಕಾಮಗಾರಿಗಳನ್ನು ನಿರ್ಮಿಸುವುದು. ಫಲಾನುಭವಿ ಕಾಮಗಾರಿ ಅನುಷ್ಠಾನದಲ್ಲಿ ನಿಯಮಗಳಂತೆ ಭಾಗವಹಿಸುವುದು.

11. ಕಾಮಗಾರಿ ಗುಣಮಟ್ಟದಿಂದ ನಿರ್ಮಾಣ ಮಾಡಲು ಕೇಂದ್ರ ಸರ್ಕಾರ ಅನುಮೋದಿಸಿದಂತೆ ರೋಲರ್, ಕಾಂಕ್ರಿಟ್ ಮಿಕ್ಸರ್, ವೈಬ್ರೇಟರ್ ಇತ್ಯಾದಿ ಯಂತ್ರ ಬಳಸಲು ಪತ್ರ ಸಂಖ್ಯೆ: ಗ್ರಾಅಪ 417 ಉಖಾಯೋ 2014 ದಿನಾಂಕ: 10–09–2014ರ ಪ್ರಕಾರ ಅವಕಾಶ ಕಲ್ಪಿಸಲಾಗಿದೆ.

12. ಈ ಅಂದಾಜು ನರೇಗಾ/ಲೋಕೋಪಯೋಗಿ ಇಲಾಖೆಗಳ ದರಪಟ್ಟಿಯ ಪ್ರಕಾರ ತಯಾರಿಸಲಾಗಿದ್ದು ಆಯಾ ಪ್ರದೇಶಗಳಿಗೆ ಅನ್ವಯವಾಗುವ ಚಾಲ್ತಿ ಸಾಲಿನ ದರಪಟ್ಟಿಯನ್ನು ವಾಸ್ತವಿಕ ಪರಿಸ್ಥಿತಿ ಪ್ರಕಾರ ತಳಪಾಯ ವಿನ್ಯಾಸಿಕೊಂಡು ತಯಾರಿಸತಕ್ಕದ್ದು ಮತ್ತು ಮಂಜೂರಾತಿ ನಂತರವೇ ಕಾಮಗಾರಿ ಅನುಷ್ಠಾನಿಸತಕ್ಕದ್ದು.

13. ನರೇಗಾ ಕಾಮಗಾರಿಗಳು ಸಾಮಾಜಿಕ ಪರಿಶೋಧನೆ ಹಾಗೂ ಒಂಬುಡ್ಸ್‌ಮನ್ ಪರಿಶೀಲನೆಗೆ ಒಳಪಡುತ್ತದೆ.

14. ಇದರೊಂದಿಗೆ ಈ ಕುರಿತು ಈ ಹಿಂದೆ ನೀಡಲಾದ ಅಂದಾಜು ಪತ್ರಿಕೆಯನ್ನು ರದ್ದು ಪಡಿಸಿದೆ.

15. a. Some of the rate adopted in this estimate are as per PW, P & IWTD, schedule of rates of Bengaluru Circle for 2018-19

    b. Some of the rates adopted in this estimate are also NREGA SoR for year 2020-21

16. ಈ ಕಾಮಗಾರಿ ಆದ ನಂತರ ಹಣ ಸಂದಾಯವಾದ ನಂತರ ಮುಕ್ತಾಯ ಪ್ರಮಾಣ ಪತ್ರ ನೀಡಿ ಕಾಮಗಾರಿ ನರೇಗಾ ತಂತ್ರಾಂಶದಲ್ಲಿ ಅಳವಡಿಸುವುದು.

17. ಇಲಾಖಾ ಕಾಮಗಾರಿಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಶೇಕಡಾ 10 ರಷ್ಟಿನ ಗುತ್ತಿಗೆದಾರರ ಲಾಭವನ್ನು ಕಡಿತಗೊಳಿಸಲಾಗಿದೆ.

18. ಈ ಕಾಮಗಾರಿಯ ಅಂದಾಜು ಪಟ್ಟಿಯನ್ನು SECURE ತಂತ್ರಾಂಶದಲ್ಲಿ ತಯಾರಿಸತಕ್ಕದ್ದು.

ತಮ್ಮ ವಿಶ್ವಾಸಿ,

31.08.20

ಆಯುಕ್ತರು, ಗ್ರಾಮೀಣಾಭಿವೃದ್ಧಿ
ಗ್ರಾಮೀಣಾಭಿವೃದ್ಧಿ ಮತ್ತು ಪಂಚಾಯತ್ ರಾಜ್ ಇಲಾಖೆ.

ಪ್ರತಿಗಳು:

1. ಮುಖ್ಯ ಕಾರ್ಯಾಚರಣೆ ಅಧಿಕಾರಿ, ಗ್ರಾಮೀಣಾಭಿವೃದ್ಧಿ ಆಯುಕ್ತಾಲಯ ಗ್ರಾಮೀಣಾಭಿವೃದ್ಧಿ ಮತ್ತು ಪಂಚಾಯತ್ ರಾಜ್ ಇಲಾಖೆ ಇವರ ಮಾಹಿತಿಗಾಗಿ.
2. ಜಂಟಿ ನಿರ್ದೇಶಕರು (ತಾಂತ್ರಿಕ/ಆಡಳಿತ/ತೋಟಗಾರಿಕೆ), ಗ್ರಾಮೀಣಾಭಿವೃದ್ಧಿ ಆಯುಕ್ತಾಲಯ ಗ್ರಾಮೀಣಾಭಿವೃದ್ಧಿ ಮತ್ತು ಪಂಚಾಯತ್ ರಾಜ್ ಇಲಾಖೆ.

PART A
Detailed and Abstract Estimate

Name of Work : **Detail Estimate for the Construction of Goat Building- 10Goat**
Type of Work : **Individual**
Financial year : **2020-21**
Head of Account : **Mahatma Gandhi NREGS Karnataka**
Work Code(As in *nregasoft*)
Estimate Cost : **0.68 Lakhs**

Important Notes

1a. Some of the rate adopted in this estimate are as per PW, P & IWTD, schedule of rates of Bengaluru circle for 2018-19
2. Some of the rates adopted in this estimate are also Nrega SoR for year 2020-21
3. This is only a model estimate, the officer / Engineer-in-charge should visit the site and prepare the estimate
5. KTPP 1999 to be followed for procurement of materials
6. The contactor profit of 10% is deducted in the unit rate.

Sl.No	Item as per SoR (Prevailing	Unit	No	L	B	D	Qty	Rate	Amount
PART A :	**Sub structure**								
1	Earth work Excavation in Ordinary Soils (Up to 2.0 m lift) for foundation(MGNREGA SoR 2020-21)								
	Main column		4	0.60	0.60	1.00	1.44		
	Deducion								
							1.44	266.99	384
2	KSRB 4-1.3 :Providing and laying in **position plain cement concrete of mix 1:4:8** with OPC cement @ 180 kgs with 40mm and down size graded granite metal coarse aggregates @ 0.85 cum and fine aggregates @ 0.57cum machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in **foundation** and plinth, including cost of all materials, labour, HOM of machinery, curing complete as per specifications. Specification KBS 4.1, 4.2(Page-12 Item No.4.3 PW,P & IWTD,B'lore Circle SR-2015-16)	Cum							
	Main column		4	0.60	0.60	0.10	0.14		
							0.14	4591.80	661
3	KSRB 5.1-3 : Providing and constructing granite / trap / basalt rubble stone masonry in foundation with cement mortar 1:6 (uncoursed), bond stones at two m. apart in each course including cost of materials, labour, curing complete as per specifications. KBS 5.1.12 (Page-23 Item No. 5.3 PW,P & IWTD,B'lore Circle SR-2015-16)	Cum							
	Column		4	0.60	0.60	0.45	0.65		
							0.65	3282.30	2127
5	KSRB 5.3-3 : Providing and constructing granite / trap / basalt **size stone masonry in basement** with cement mortar **1:6**, edges of stones chistle dressed in courses not less than 15 cms high, bond stones at two m. apart in each course including cost of materials, labour, curing complete as per specifications. KBS 5.1.13(P-26, I-5.9) (Page-23 Item No.5.9 PW,P & IWTD,B'lore Circle SR-2018-19)	Cum							
	Column		4	0.45	0.45	0.45	0.36		
	Deduction								
							0.36	4934.70	1779
6	KSRB 5-14.1 : Providing and constructing load bearing wall with solid concrete blocks having block density not less than 1800kg/m3 having a minimum average compressive strength of 5.00 N/mm2 confirming to IS 2185 (Part 1):2005 and constructed with CM 1:4, as per IS 2572:2005 including cost of all materials labour charges, scaffolding, curing, hire charges of machineries etc., complete as per specifications.(Item no 5.27.1)	Sqm							

	Column		4	1.20	-	0.45	2.16		
							2.16		
							2.16	820.80	1773
7	Fabricating, supplying and erecting M.S. TubularTruss of span upto 10m. The bottom and top member is provided with 50x50x6mm double equal angles, welded back to back and in between top and bottom line, in areas of mid section is provided with 50x50x6mm equal single angle for vertical and inclined members and at supporting ends 40x40x5mm single angle is provided. All the members are welded together with 6mm gusset plate as per Drawing. The entire truss is anchored in RCC column by using 4 Nos. of M.S. anchor bolts at each support, with 10mm thick base plate and shoe plate.The work includes cutting, straightening, placing in position of M.S angle and wleding wherever necessary, and applying one coat of red oxide primer coat to all themembers including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per							Kg	
	Rafter		6	x	1.8	10.8			
	Main coulmn		4	x	3	12			
	Braces		4	x	1.5	6			
	Through beam		1	x	15	15			
	Per Unit length in KG= 3kg					**131.4**			
	Angle Supports - Vertical		6	x	2.5	15			
	Angle Supports - Horizontal		1	x	15	15			
	Purlin		6	x	5.5	33			
	Ramp		4	x	1.5	6			
	Angle for Door		1	x	6.2	6.2			
	Per Unit length in KG= 1.2 kg					**90.24**			
							221.64	93.50	20723
8	KSRB 8.3-1:PROVIDING TRAPEZOIDAL PROFILED SHEET Providing and installing of pre painted Galvolume iron Trapezoidal profiled sheet of approved make 1060 mm width (1000 mm cover width), 28-30 mm crest height with crest distance of 200 mm c/c with 2 ribs at the centre for stiffening. The total coated thickness (TCT) of the sheet will be 0.47 mm +/- 0.02 mm tolerance Zinc-Alu Alloy coating AZ150 gsm as per ASTM 1397/A755-550 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 20-22 microns using self drilling/self tapping screws of 25 mm length, to be fixed over the existing purlins, rafters, channels and trusses. [P.No. / I.No.38.30 PWD SR 2018-19]							Sqm	
	Roof		2	2.00	-	5.00	20.00		
							20.00	619.20	12384
9	Providing of weld mesh 75 x 25 mm of 6G to 10G. (Market Rate)							Sqm	
	All round		1	15.00	-	2.00	30.00		
							30.00	249.15	7475
10	Plywood - 12 mm thick							Sqm	
	All round		1	4.50	-	3.00	13.50		
	Ramp		1	1.50	-	1.50	2.25		
							15.75	636.00	10017
10	Misc. Name Board							Lump sum	3000
11	GST - 12%							Lump sum	6518
12	Miscalleneous -Round off							Lump sum	1159
								Grand Total	**68000**

P.G.V

Part B

Detailed Estimation (Calculation) of labour and Material Requirement.

Name of work	= Model Estimate for Construction of Goat Building- 10Goat
Financil Year	= 2020-21
Head of Account	= Mahatma Gandhi NREGS Karnataka
Work Code (As in Nregasoft)	=
Estiamte Cost	= Rs 68,000/-

Sl. No.	Item as per SoR (prevailing NREGA or line dept. As per approved Data Sheet) as in part A detailed and abstract estimate	Unit	Quantity	Unskilled labour Component			Skilled, Semi skilled wage and Material component including essential achinery like rollers etc but excluding unskilled labour displacing machinery
				No. of person days	Wage rate for 2018-19 fixed by GOI, MoRD	Amount (in Rs) (col 5 X col 6)	Amount (in Rs)
1	2	3	4	5	6	7	8
A	**Sub Structure**						
1	Earthwork excavation in Ordinary soil	Cum	1.44	1.40	275	385	-
2	PCC M 7.5 (KSRB 4-1.3 , I. No 4.3, Page 12)	Cum	0.14	0.72	275	199	462
3	SSM foundation with CM 1:6	Cum	2.92	1.80	275	495	1,632
4	SSM basement with CM 1:6	Cum	1.50	1.00	275	276	1,503
6	Solid Concrete Block Wall	Sqm	2.16	0.94	275	258	1,515
7	MS tubular truss	Sqm	221.64	-	275	0	20,723
8	Trapezoidal Profiled Sheet	Sqm	20.00	-	275	0	12,384
9	Weld mesh	Sqm	30.00	-	275	0	7,475
10	Plywood- 12 mm	Sqm	15.75	-	275	0	10,017
11	Add for Shaping of tools for 6.0 Manday's @ Rs 10/day/person					Lump sum	60
12	Misc. Name board and rounding of					Lump sum	3,000
13	GST -12%					Lump sum	6518
14	Miscalleneous -Round off					Lump sum	1099
	Grand Total			5.86		1613	66387

Unskilled labour component in percentage	**2.37%**
Skilled labour and material component in percentage	**97.63%**

Government if India

Government if kamatexa
Model for Constuction of goat shelter wider MGNREGA

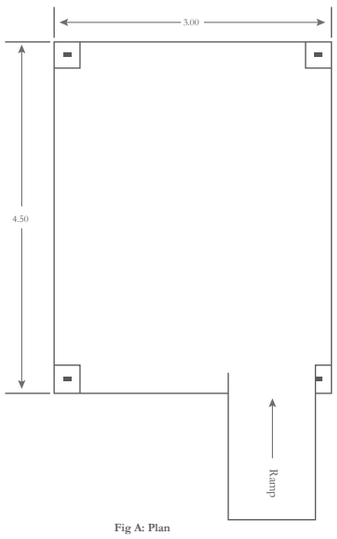

Fig A: Plan

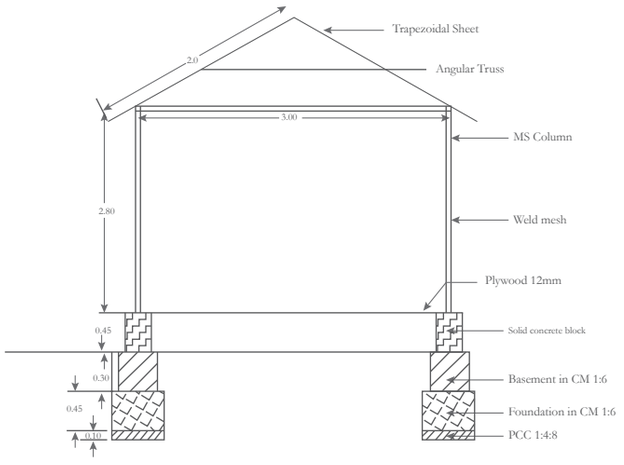

Fig B: Section

NUTRITIONAL FODDER CULTIVATION

Fodder Deficit Scenario in Country

The total area available for grazing of sheep and goats in 1951 was 82.1 million ha, which has now decreased by 47% to 43.3 million ha, but the small ruminant population has increased by 105%, resulting in overstocking and overgrazing of available land and resources. Area Under Fodder Crops and Permanent Pastures & other Grazing lands during 2016-17 to 2020-21[7]

Table 26: Fodder Crops & Pastureland Between 2016 and 2021		
SN	Area in thousand hectares	
	Fodder Crops	Pastures & Grazing land
2016-17	9142	10262
2017-18	9581	10261
2018-19	8135	10340
2019-20	7879	10337
2020-21	7356	10374

Source: Directorate of Economics & Statistics; Ministry of Agriculture & Farmers Welfare.

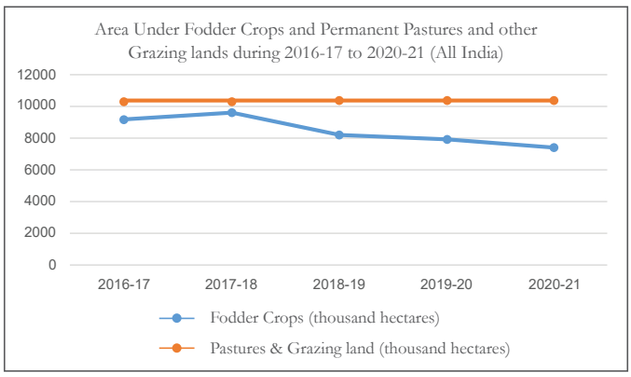

Figure 51: Area Under Fodder-crops, Pasture and Other Grazing Lands (2016-21)

Table 27: Fruit Fodder Plant Species at Individual/Community Lands			
SN	Common English Name	Scientific name	Commonly grown areas
1	Subabool	*Leucaena leucocephala*	Sub humid, Semi-arid
2	Gliricidia	*Gliricidia sepium*	Humid, sub humid
3	Ardu	*Alianthus excelsa*	Arid and semiarid regions
4	Agasthi	*Sesbania grandiflora*	Arid and semiarid regions
5	Shevri	*Sesbania sesban*	Arid and semiarid regions
6	Khejri	*Prosopis cinereria*	Arid and semiarid regions
7	Mahua	*Bassia latifolia - Flower*	Semi-arid
8	BabuI	*Acacia Nilotica*	Dry and moist tropics
9	Neem	*Azadirachta indica*	Dry and moist tropics
10	Kachnar	*Bauhinia variegata*	Sub tropics, moist and dry tropics
11	Safed siris	*Albizia procera*	Wet tropical and subtropical
12	Lallei	*Albizia amara*	Dry tropics
13	Siris	*Albizia lebbeck*	Moist and dry tropics
14	Shisham	*Dalbergia sissoo*	Moist tropics
15	Mulbery	*Marus alba*	Moist tropics

[7] BasicAnimalHusbandryStatistics2023.pdf

16	Bola	*Marus laevigata*	Subtropics
17	Drumstick	*Moringa oleifera*	Moist tropics, sub humid Humid
18	Kikkar	*Prosopis chilensis*	Dry tropics
19	Ber	*Ziziphus mauritiana*	Dry and moist tropics

Source- www.nddb.coop

Feeding of Multi-Nutrient-Mixture (MNM) in Goats

The feed requirement of small ruminants is mainly met by extensive grazing on common lands, degraded pasture, roadside vegetation, etc. in arid regions, which often causes deficiency of certain nutrients especially in the scarcity period after monsoon withdrawal, i.e. from November to June. Therefore, there is a need for an alternative supplementation to improve the nutrition during scarcity period to sustain the productivity of goats.

The **Multi-Nutrient-Mixture (MNM) powder** was formulated in the **Feed Technology Unit of CAZRI** using molasses, urea, common salt, vitamin-mineral mixture, dolomite, wheat bran, cluster-bean meal, and organic binder.

The MNM is offered to the animals @ 100 g/day/goat after goats return from grazing. The effect of nutrient mixture supplementation on the milk yield of lactating goats found significant. The mixture is palatable and accepted by goats.

It also helped in the improvement of kidding performance and twinning rates in supplemented-fed goats. Thus, MNM is a suitable economically viable option to supplement deficient nutrients in goats and sustain the productivity during feed scarcity period.

Table 28: Composition and Chemical Constituents of MNM Block

Ingredients (%)		**Proximate components (%)**	
Molasses	44.5	Dry matter (DM)	97.3
Urea	4.3	Organic matter	78.3
Common salt	4.3	Crude protein	22.9
Dolomite	4.3	Ether extract	4.1
Vitamin mineral mixture	4.3	Minerals	21.7
Wheat bran	32.1	Total carbohydrates	51.3
Cluster-bean gum dust	1.0	Dross energy (kcal)	381
Cluster-bean meal	5.1	-	-

Source: Central Arid Zone Research Institute (CAZRI), Jodhpur, Rajasthan

Case of Moringa and Azolla Cultivation for Goats Moringa [8]

Moringa is a good alternative for substituting commercial rations for livestock. The relative ease with which Moringa can be propagated through both sexual and asexual means and its low demand of soil nutrients and water after being planted, make its production and management comparatively easy. Its high nutritional quality and better biomass production, especially in dry periods, support its significance as livestock fodder

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Figure 52: Moringa plantations

Moringa planted at **ICAR-IGFRI,** Jhansi at 50x50 cm spacing and gave 80-130 toes green forage/ha in 4 cuts at 45 days harvest intervals in 2 years of planting. Moringa leaves contain 21.53% crude protein, 24.07% acid detergent fibre (ADF) and 17.55% neutral detergent fibre (ADF). One of its main attributes is its versatility, because it can be grown as crop or tree fences in alley cropping systems, in agroforestry systems and even on marginal lands with high temperatures and low water availabilities where it is difficult to cultivate other agricultural crops.

Azolla

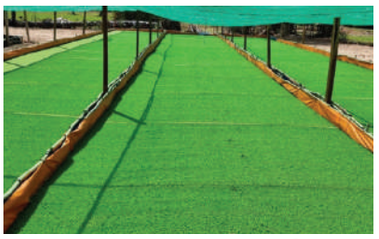
Azolla farming, in general, is inexpensive and it can be multiplied in natural water bodies for the production of biomass. Azolla is very rich in proteins, essential amino acids, vitamins (vitamin A, vitamin B12, beta-carotene), and minerals including calcium, phosphorous, potassium, ferrous, copper, and magnesium. On a dry weight basis, Azolla has 25-35% protein, 10-15% mineral content, and 7-10% comprising a combination of amino acids, bio-active substances, and biopolymers. The Azolla production can be taken up at small as well as at large farmers' fields because of ample water availability.

© Passing Gifts

Figure 53: Azolla cultivations

However, its production will be restricted in the months of December-January and April to May due to extreme temperature conditions. It doubles its biomass in 3–10 days, depending on conditions and it can yield up to 37.8 t fresh weight/ha (2.78 t DM/ha dry weight).

Entrepreneurships development for Azolla cultivations in Heifer International Cambodia, which has helped farmers protein supplementation & reduction in cost of production. This type of large size Azolla tank can be promoted under MGNREGA.



© Passing Gifts

Figure 54: Azolla cultivation in Heifer International's Intervention Area in Cambodia

[8]ICAR- Indian Grassland and Fodder Research Institute (IGFRI), Jhansi-284 003 (UP) India

Table 29: Agronomic Practices for Cultivation of Fodder Shrubs					
Fodder species	**Mulberry**	**Subabul**	**Shevari**	**Drumstick**	**Dasharath**
Scientific name	*Morus alba*	*Leucaena leucocephala*	*Sesbania aaegyptiaca*	*Moringa oleifera*	*Desmanthus virgatus*
Varieties	*V1 (Victory) S-32, Anantha and S32*	*Nirbija, K636, Wondergraze and Tarramba*	*Local selection*	*Location-specific, PKM 1 & 2, Odissi*	*Hedge Lucerne (local variety)*
Important feature	Grows in wide soil & climatic conditions leaves consist of 20-22 % protein, 10-12% nutrients, nutritious fodder, deep-rooted & fast-growing deciduous woody perennial plant.	Fast-growing, nitrogen-fixing, high protein content 20-25 %, drought resistant, high coppice rate, care must be taken while feeding to young animals due to mimosine content	fast-growing, perennial legume tree grows well in dry zones, reaching a height of up to 8 m, but has a shallow root system, multipurpose species, average N content was 4.3%	Multipurpose in nature, fodder is nutritious, fast growing, hardy to water stress, have protein content of 15-25 %	The legume crop boasts of 22% crude protein content and is abundant in essential vitamins and minerals. It facilitates nitrogen fixation in soil and has the potential to produce fodder for a period of 3-4 years.
Spacing	Block: 2m×1m or 3m×1.5m Boundary: at every 2-3 m aways	Block: 1m×1m Boundary: 1.5 to 2 m away	Broadcasting in row as live fence or paired row planting at 1m×0.5m.	Block: 1m×1m Boundary: 2m to 3 m away (dual purpose)	45-60 cm apart is recommended
When and how to plant	Pensile size cutting of 10-12-month-old branches used for planting in July to November months in pits or polybags.	Broadcasting of seeds or seeds can be sown in root trainers or polybags, sowing or planting in July-August gives the better establishment.	Seeds are widely used for sowing. Monsoon is best season for planting.	Seeds or cuttings are the best source of Planting material. On average, 1 kg of seed gives around 2500 seedlings under field conditions. Monsoon planting is best season.	This crop can be grown year-round with irrigation, but it is typically a rainfed crop from June to October. Soaking seeds (20 kg/ha) in sulphuric acid for 8-10 minutes before planting.
Irrigation	Requires irrigation for profuse sprouting at least once in 10-15 days	Once in 15-20 days, drip irrigation gives better results	Mostly rainfed, every 25-30 days depending on soil moisture.	At least once in 15 days or depending on soil conditions.	The crop is typically cultivated as a rainfed crop, with irrigation provided every 12-15 days when required.

Irrigation	Requires irrigation for profuse sprouting at least once in 10-15 days	Once in 15-20 days, drip irrigation gives better results	Mostly rainfed, every 25-30 days depending on soil moisture.	At least once in 15 days or depending on soil conditions.	The crop is typically cultivated as a rainfed crop, with irrigation provided every 12-15 days when required.
When to harvest	After planting, 4-5 months for the first harvest and subsequently every 40-45 days	The first harvest takes 4 months after sowing or transplanting, a sharp cut at 100-150 cm above ground yields profusely.	First harvest after 6 months of sowing, subsequently at every 40-50 days. A cutting height of 75-100 cm is recommended.	First harvest 4-6 months after sowing & subsequent cutting at every 50 days at 1 to 1.5 m height	Harvested after 3-4 months of growth. It is recommended to cut the plants when they are 30-40 cm tall. The plant can be harvested up to 5-6 times per year.
Green fodder yield (tonnes/ha)	35-45 tonnes of fresh leaf	15-20 tonnes	20-25 tonnes	50-60 tonnes	60-80 tonnes

Source: ICAR-National Institute of Abiotic Stress Management Baramati, Pune, Maharashtra

GOAT-BASED PRODUCTION

Table 30: Milk Production Parameters (Traits) of Important Goat Breeds			
SN	**Breed**	**Lactation yield (kg)**	**Lactation length (days)**
1	Jamunapari	201.67±6.39	194
2	Beetal	173.90±1.27	182
3	Jakharana	121.80±8.82	115
4	Sirohi	113.62±2.43	194
5	Marwari	101.49±2.43	197
6	Kutchi	124.06±2.84	195
7	Barbari	95.60±2.78	152
8	Sangamneri	83.40±3.43	168
9	Malabari	90.02±4.10	178
10	Bengal	35.20±1.56	111

Source: Central Arid Zone Research Institute (CAZRI), Jodhpur, Rajasthan

Table 31: Production and Economic Characteristics of Major Goat Breeds of India					
SN	**Production characteristics**	**Barbari**	**Jamunapari**	**Sirohi**	**Black Bengal**
1	Suitable climate	Semi-arid	Semi-arid	Semi-arid	Hot-humid
2	Cost of adult female (INR)	5,000	8,000	7,000	3,500
3	Age at first kidding (months)	12-16	18-22	18-20	10-12
4	Kidding interval (months)	9	10	10	8
5	Multiple birth (number)	1.6	1.3	1.3	2.2
6	Kids produced in 3 years	6.4	4.7	4.7	10
7	Survival of kids up to 12 months (%)	92.5	92.5	92.5	80
8	Survived kids available in 3 years	6.4	4	4	8
9	Body weight at 12 months (kg)	22	27	27	16
10	Weight delivered/goat/year	42	38	38	42
11	Milk yield/goat/year (litre)	80	135	100	30
12	Surplus milk/goat/year (litre)	25	78	60	0
13	Income surplus milk	625	1,950	1,500	-
14	Maintenance cost of adult female and its kid/year	4,250	4,550	4,150	3,840
15	Sale price of kids/year (Rs)	8,400	7,300	7,300	8,440
16	Net profit/goat/year	4,775	4,700	4,650	4,600

Source: CIRG, Makhdoom, Mathura (UP)

Note: Productivity and economics are obtained of those goats which are maintained under a semi-intensive feeding system where they will be provided about 50% of feed-fodder requirement through supplementation and the remaining 50% from the grazing area.

Case of JEEViKA Bihar

Success Story: JEEViKA in Bihar Supports Improve Goat Rearing Practices and Pashu Sakhi's Income

JEEViKA's (Bihar Rural Livelihood Promotion Society) goat-rearing intervention has been designed to enhance the income of households by reducing the mortality and morbidity of the goats, instilling improved rearing practices and processes to ensure the sustainability of the intervention. Moving ahead with this vision, the project has developed 1445 Pashu Sakhis in the form of micro-entrepreneurs to cater health services to goat keepers and has been able to reach out to 1.15 lakh goat keepers across 18 districts of Bihar.

Promoted Health services at the doorstep of Goat keepers and ensured the deworming of 6,31,921 goats along with the vaccination of 4,08,066 goats. Also, promoted 10,779 Azolla pits, 11,552 Machan/Shed construction, 44,739 feeders installed, 71,242 castrations of male goat kids have come up as a major source of income for Pashu Sakhis and 1,07,712 kgs of Dana Mishran has been sold by Pashu Sakhis to the goat keepers.

Community-based marketing system has also been introduced under the tag of Bakri Bikray Kendra. It has been initiated in 12 districts of Phase 1 and Phase 2 goat interventions and made a business volume of Rs. 86,36,049 by selling 3260 goats with an average weight of 12-13 kgs.

Success Story: Silvi-pasture of Sambalpur, Odisha [10]

Silvi-pasture - a practice of combining forestry and grazing of domesticated animals in a mutually beneficial way was taken up through MGNREGS in Sambalpur.

To provide support to the livestock farmers along with continued efforts to increase the green cover of the state, the Sambalpur District Administration decided to introduce 'Silvi-pasture' in the district. Silvi-pasture is the term coined to denote the practice of efficient management of land to produce both trees and fodder. In this method, trees are plants with wide spaces in between which is used to sow fodder plants and grasses. Animals are allowed to graze once the trees are tall and strong enough to resist attacks. This practice of Silvi-pasture is a package bundled with several benefits. Firstly, rather than keeping the land between the trees fallow, it is used to grow fodder. This also protects the soil from erosion. Once the animals start grazing in the grove, their droppings add to the fertility of this soil. In return, the animals receive shelter from the trees signifying a great symbiotic relationship. This is the first time that the Silvi-pasture project has been undertaken through MGNREGS in Odisha.

The Sambalpur District Administration plans to implement this initiative in 26 hectares across nine villages in Bamra, Jamankira and Kuchinda Blocks. The total estimated cost for establishment of Silvi-pasture units is about Rs. 69 lakhs. Silvi-pasture is undertaken in village forests, wasteland and pastureland.

Impacts: By integrating afforestation and fodder development, MGNREGS and the Sambalpur District Administration are not only addressing the farmers' immediate fodder needs but also ensuring the long-term conservation of forests.

[9] NRLM_75_Stories_of_Atmanirbhar_17092021.pdf (rural.gov.in)

[10] Sankalan_II.pdf (rural.gov.in)

GOAT SHED AUDIT TOOL

The purpose of this exercise to make the farmers/Pashu Sakhi/Prani Mitra/practitioner understand the importance of goat shed. They should be able to relate each component of housing to the comfort and disease of the goats.

Trainers Note- The trainer should take the trainees to a village and tell the trainees to do the audit of a shed based on the learnings and record their observation in the given format. In the last the sum of total points needs to be calculated and compared with the standard chart.

Name of Village: ……..

Name of Farmer: …….

No of Goats with the Farmer: ……

Date of Visit: ……..

Marks	**4**	**3**	**2**	**0**
Q-1	Does the farmer have separate shed for goats?			
	shed for goats? Yes	Separate but in a corner of own house	Kept mixed with other animals	No
(Please put √)	( )	( )	( )	( )
Q-2	Does the shed have sufficient space to rear the no. of goats, or it is congested?			
	Sufficient Space	Less Space for kids	Less Space for all	Congested
(Please put √)	( )	( )	( )	( )
Q-3	Is the shed ventilated?			
	Yes			No
(Please put √)	( )	( )	( )	( )
Q-4	Does the shed have raised floor or Machan?			
	Yes, Machan is there	Small Machan is there		No Machan
(Please put √)	( )	( )	( )	( )
Q-5	Is the goat shed clean?			
	Yes	Less Clean	Less Tidy	Unitidy
(Please put √)	( )	( )	( )	( )
Q-6	Does the goat shed have the facility to hang the feed?			
(Please put √)	( )	( )	( )	( )
Q-7	Does the vicinity of the farm is clean?			
	Yes			No
(Please put √)	( )	( )	( )	( )
Q-8	Does the farm have any type of smell?			
	No	Slight Smell	Not Much	Foul Smell
(Please put √)	( )	( )	( )	( )

Q-9	Does the goat shed have 24 hrs. water and separate feeding arrangements?			
(Please put √)	Yes			No
Q-10	Does the goat shed have lighting arrangements at night?			
(Please put √)	( )	( )	( )	( )
Add the Marks corresponding to the (√) mark and write the total marks here. ⟶				

Result Analysis

SN	Marks	Inference
1.	0-10	The shed is Extremely Poor and there is risk on goats getting infected with diseases and high mortality.
2.	10-25	The Shed is still Poor and there is chances of mortality and low growth in kids. The farmer can improve the shed to have better comfortable environment for goats.
3.	25-35	The goat shed is OK, but can be improved to have better results
4.	35-40	The Shed is Good and Comfortable for goats, and there are chances of less disease. The growth will be good in the shed.

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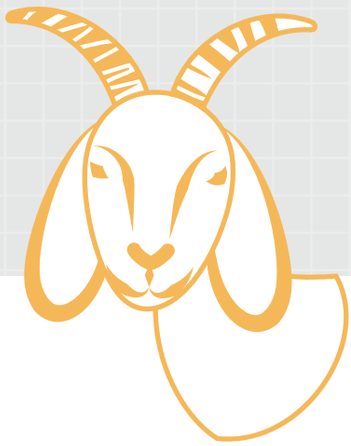
Annexure 8-A

GOAT DISEASE MANAGEMENT



CONTAGIOUS CAPRINE PLEUROPNEUMONIA (CCPP)

CCPP is highly contagious and one of the most severe diseases in goats characterized by fibrinous pleuropneumonia and hepatization of the lungs. The disease is caused by Mycoplasma. CCPP is an important and distinct disease limited to goats in certain areas of the world. These organisms may be responsible for severe pneumonia outbreaks in goat herds. CCPP is strictly a respiratory disease.

TRANSMISSION & SPREAD:

HIGHLY CONTAGIOUS

DIRECT CONTACT – INHALATION OF INFECTIOUS RESPIRATORY DROPLETS.

CARRIERS ARE THOUGHT TO BE UNCOMMON BUT POSSIBLE SOURCES OF DISEASE TRANSMISSION.

VISIBLE SIGNS:

In CCPP,

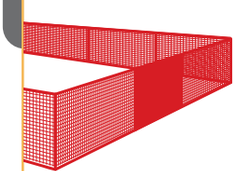
- Weakness
- Anorexia
- Cough
- Tachypnea
- Nasal Discharge
- Accompanied by Fever (40.5°–41.5°C [104.5°–106°F]), are Typical

Violent coughing

Mucopurulent nasal discharge

Stand with limbs abducted and neck extended

PREVENTION & CONTROL:



Quarantine and disinfection measures

Vaccination gives good protections

Antibiotic treatment is done

Accurate diagnosis, strict biosecurity, and prompt treatment are essential for decreasing disease transmission and herd losses

Annexure 8-B

DEWORMING OF GOATS

DEWORMING:

PREVENTION FROM ENDO-PARASITES (PARASITES OF GI TRACT)

- Primarily deworming should be done at an age of 3 months.
- In areas where water logging is a problem, deworming should be done twice in a year, i.e., pre-monsoon and post-monsoon.
- The first anthelmintic is given at 25-30 days. Then it should be given every month for three months. After that, anthelmintic medicine should be given at every three months interval or need base.
- Deworming should be done before the onset of monsoon, i.e., May/June month of every year.
- To avoid drug resistance, one must change the medicine every time during deworming.
- Commonly used drugs for deworming are Albendalzole, Fenbendazole, Nilzan, Ivermectin, etc.

DIPPING:

PREVENTION FROM ECTOPARASITES (TICKS, LICE, FLEAS)

- Dipping should be done twice in a year (one each before onset of summer and winters).
- Dipping can be done by making 0.1% solution of Butox or Tickomax in water.
- All animals should be given ad-lib drinking water before dipping.
- A test dipping can be done by dipping 5 to 10 animals a day before scheduled dipping, and if everything remains normal, the entire flock can be dipped next day.
- Avoid dipping during rainy season.

The goats are also infested with various external parasites which cause irritation and itching. They also destroy the skin and make the goats anemic and weak. The different parasitic infestations occur in different conditions -

- Lice - In cold period
- Ticks - When goats are reared along with dogs and other infested cattle.
- Mites - When reared very close to dirty shed.

DRENCHING FOR COCCIDIOSIS:

- The disease is more prevalent in young ones, i.e., animals between 1-6 months of age group.
- Primarily drenching can be done at an age of 1-3 months, anticoccidial drugs like Amprolium can been given @ of 50-100 mg orally for 5 days.

Annexure 8-C

ENTEROTOXAEMIA (ET)

It is a bacterial disease that occurs in growing kids/goats which are well fed and healthy. It can progress so quickly that animals may be found dead with no previous signs of disease. It is also called Overeating Disease/Pulpy Kidney Disease.

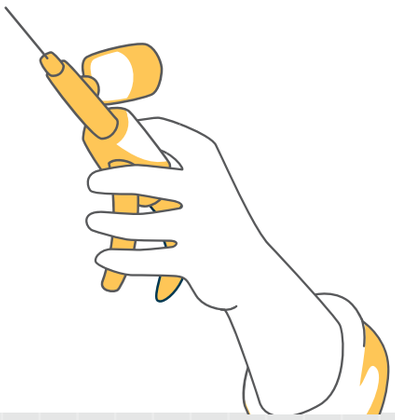
CLINICAL SIGNS:

- Peracute and acute cases are more common in susceptible animals. These cases may be found dead or die rapidly after short episodes of excitement and convulsion, sometimes with opisthotonos (head arched back over the body).
- Affected animals may also vocalise (bleating), circle, head press, become recumbent and paddle or froth at the mouth. Profuse watery diarrhoea may also be seen (more commonly in goats than sheep).

- The animals may abruptly go off feed, acute indigestion and become lethargic.
- Signs of abdominal pain
  - Kicking at their belly, repeated laying down and getting up, laying on their sides,, panting, and crying out.
- Profuse diarrhea, blood in the loose stool.
- Animals may lose the ability to stand, lay on their sides, extended their legs, with their head and neck extended.
  - This posture is caused by the effects of the toxins on the brain. Death commonly occurs within minutes to hours after this sign is seen.
- Sudden death

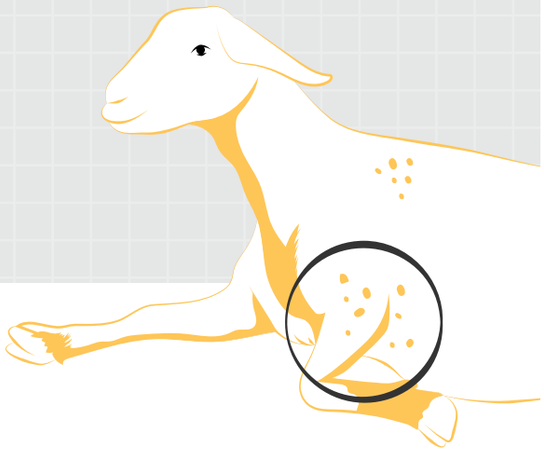
PREVENTION & TREATMENT:

- Vaccination is the best choice.
- Don't feed too much grains & lush green fodder which are rich in carbohydrates.
- Fluid thepary, non-steroidal anti-inflammatory drugs & antibiotic treatment is done.
- Management of feeding regimes to avoid overeating.



Annexure 8-D

GOAT POX



Goat pox and sheep pox are characterized by pyrexia, generalized skin, internal pox lesions, and lymphadenopathy. Typical pox lesions appear on the skin and on the respiratory and gastrointestinal mucosa. It is caused by Capripox virus.

TRANSMISSION & SPREAD:

- It is a viral disease & transmission occurs via an aerosol during direct or close contact between infected and susceptible animals.
- Transmission may also occur through other mucous membranes or by skin abrasions.
- Indirect transmission by contaminated implements, vehicles, or products (litter, fodder) occurs.
- Indirect transmission by insects (mechanical vectors) has been established (minor role)

VISIBLE SIGNS:

Goat muzzle:
The muzzle contains several papules and is partially covered by hemorrhagic nasal exudate.

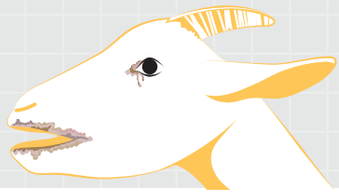
Goat:
Abundant thick nasal exudate covers the muzzle and partially occludes the nares.

Goat:
Two pox on the ventral tail have desiccated, dark red, undermined (necrotic and sloughing) centers.

PREVENTION & TREATMENT:

- Vaccination to be done in epidemic area.
- Treatment protocol: broad-spectrum antibiotics, topical antibiotic ointments.
- If culling is not possible, isolate infected herds and sick animals for at least 45 days after recovery.
- Quarantine of new animals before introduction into herds
- Animal and vehicle movement controls within infected areas

PESTE DES PETITS RUMINANTS (PPR) IN GOATS



Peste des Petits Ruminants (PPR) also known as 'Goat Plague' is a viral disease that affects goats and sheep which causes huge financial loss to the animal farmers and economic loss to the country.

Also called Contagious Pustular Stomatitis; Pseudo-rinderpest of small ruminants; Pest of small ruminants. PPR is a highly contagious disease of both domestic and wild small ruminants. It is characterized by fever, ocular and nasal discharges, mouth sores, disturbed breathing and cough, foul-smelling diarrhea, and death.

HOW THE DISEASE SPREADS:

- Direct contact with infected animals.
- Contact with contaminated water & feed troughs.
- Inhalation when affected animals sneeze.
- Contact in markets where animals from different sources are brought together.

CLINICAL SIGNS:

Inflamed (reddened) eye membranes: early stages of infection

Purulent eye and nose discharges

Early mouth lesions showing dead cells: Early pale, grey areas of dead cells on the gums

Later mouth lesions: the membrane lining of mouth is completely obscured by a thick cheesy material

Ulcerative lesions in the mouth

Swollen, eroded lips

Diarrhea

Nodular lesions around the mouth (common in later stages of PPR.

PREVENTION & TREATMENT:

- Vaccination is must at three months of kid's age at 1 ml S/C. Immunity for three years.
- Separate sick animals from healthy ones.
- Keep their house clean and neat on a regular basis.
- Take care if animals are kept in confinement as this seems to favor outbreaks.
- Be vigilant of livestock dealers moving in your farm flock.
- Antibiotic can be given (to check secondary bacterial infection) with pain killer & fluid therapy.
- The PPR virus can be killed by common disinfectants such as phenol or sodium hydroxide 2% for 24 hours, besides alcohol, ether, and detergents.

Annexure 8-F

EXEMPLARY GOAT SHEDS CONSTRUCTED UNDER MGNREGA IN KARNATAKA AND KERALA HAS TRANSFORMED GOAT-BASED LIVELIHOOD PERSPECTIVES

1. Goat shed of Sharanappa Talavara, a farmer from Hirebannigola village, Kushtagi, taluk, Koppal district (Karnataka)

'Constructing shed under MGNREGS has helped me to protect my goats as well as to maintain hygiene. I am rearing more than 20 goats and earning around 2.5 to 3 lakhs annually'.

Says Sharanappa Talavara, a farmer from Hirebannigola village, Kushtagi, taluk, Koppal district (Karnataka)

©Source: https://x.com

2. Shri Kiran Chalavadi, a young farmer from Mangenakoppa, Khanapura Taluk, Belagavi district (Karnataka)

Shri Kiran Chalavadi, a young farmer from Mangenakoppa, Khanapura Taluk, Belagavi district has constructed a shed under MGNREGS. "Along with Sheep and Goat, I am also rearing poultry. I am expecting a good income" he says hopefully.

©Source: https://x.com

3. Goat shed constructed under Mahatma Gandhi NREGS in Panamaram Grama Panchayat of Wayanad district.

©Source: https://x.com

©Source: https://x.com

4. Goat Shed in Agali Grama Panchayat of Attappadi Block in Palakkad District (Kerala)

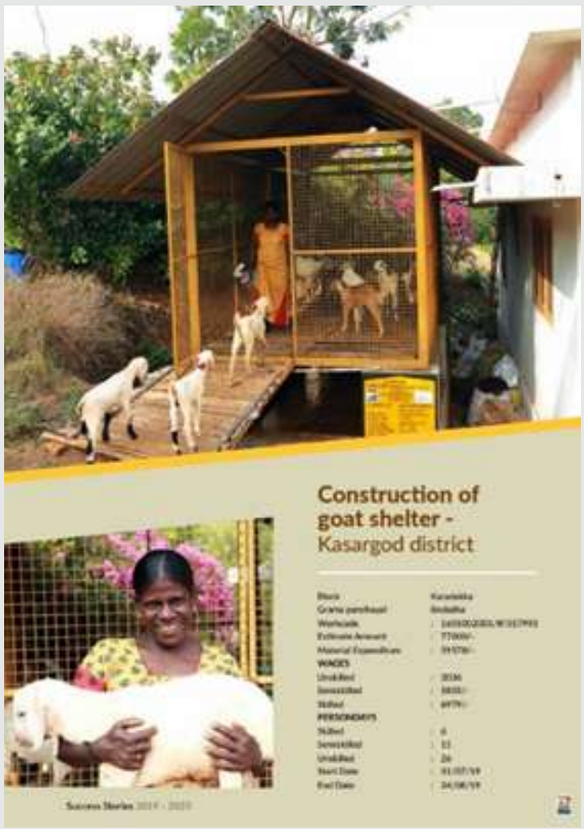
Construction of goat sheds under Mahatma Gandhi NREGS (examples from State Mission- Kerala 2019-20)

5. Goat Shed - Alappuzha District, Kerala

As a flagship social security scheme, Mahatma Gandhi NREGS aims to provide wage employment as well as public assets and individual assets for livelihood. As part of the Scheme, providing livelihood assets was taken up as a priority activity in the State. Various beneficiaries in Kanjikuzhy grama panchayath of Kanjikuzhy Block Panchayath in Alappuzha district were provided with goat sheds under the Scheme. Providing better infrastructure for livelihood has resulted in increased income to the beneficiaries. Now the beneficiaries have gained a better livelihood opportunity and an eco-friendly mode of sustenance.

Goat shed constructed – Alappuzha district, Kerala

6. Goat Shelter - Kasargod District, Kerala



Success-Stories.pdf (kerala.gov.in)

Block	:	Karadukka
Grama panchayat	:	Bedadka
Work code.	:	1601002001/If/357993
Estimate Amount:	:	₹ 77,000/-
Material Expenditure	:	₹ 59,578/-
Wages		
Unskilled	:	₹ 3,036/-
Semiskilled	:	₹ 5,855/-
Skilled	:	₹ 6,979/-
Person days		
Skilled	:	6
Semiskilled	:	11
Unskilled	:	26
Start Date	:	31/07/19
End Date	:	24/08/19

7. Goat Shed - Pathanamthitta District, Kerala

Name of Asset	:	Construction of Goat shed.
Work Code	:	IF/433739
District	:	Pathanamthitta
Block Panchayat	:	Konni
Gram Panchayat	:	Vallicode
Ward	:	5
Name of beneficiary (for individual Asset)	:	Subha S. Nair
Estimated cost	:	₹ 74,000/-
Actual cost	:	₹ 56,821.76/-
Financial year	:	2019-20

Annexure 8-G

VACCINATION & ANNUAL HEALTH CALENDAR FOR GOATS

VACCINATION SCHEDULE OF GOATS IS GIVEN BELOW:

Diseases	Vaccine name	Dose & Route	Primary injection		Repeat vaccination
			1st injection	Booster injection	
Peste des Petits Ruminants (PPR)	PPR vaccine	1ml S/c	At 3 months of age	Not required	After 3 years
Goat pox/ Sheep pox		1ml S/C on inner aspect of thigh	At 3-5 months of age	3-4 weeks after 1st injection	Annually (preferred in December)
Contagious Caprine Pleuro-pneumonia (CCPP)	CCPP or IVRI vaccine	2 ml S/C	At 3 months of age	3-4 weeks after 1st injection	Annually (preferred in January)
Enterotoxaemia (ET)	ET vaccine	5 ml S/C	At 3-5 months of age	3-4 weeks after 1st injection	Annually (recommended in May-June)
Foot & Mouth Disease (FMD)	Polyvalent FMD vaccine	3 ml S/C	At 3 months of age	3-4 weeks after 1st injection	Twice in a year (preferred in September & March)
Anthrax	Anthrax spore vaccine	1ml S/C	At 6 months of age	3-4 weeks after 1st injection	Annually (in affected area only) in May-June

- The PPR, Goat Pox and ET vaccines are to be done everywhere due to high prevalence. Always follow the instructions of manufacturing company before administration of any vaccines.

Vaccination and Cold Chain Maintenance:

- The Pashu Sakhi/ant service provider/farmers must check that special care is given for storing, transporting and maintenance of the vaccines. Once the temperature of the vaccines exceeds 8ºC, it is destroyed, which cannot be cured again.

ENDNOTES

i. Please see https://www.giz.de/de/downloads/giz2022-en-not-reinventing-the-wheel.pdf

ii. Self-sustaining goat farming model for livelihood improvement of small and marginal farmers. ICAR- National Institute of Abiotic Stress Management. Retrieved on 9th May, 2024 retrieved from https://niasm.icar.gov.in/sites/default/files/pdfs/Final%20TB%20on%20Goat%20Model.pdf

[3] For more information on scope for goat-based livelihood under MGNREGA, please visit following websites and links:

a. www.vikashpedia.com
b. https://agritech.tnau.ac.in
c. www.fao.org
d. www.msdvetmanual.com

In addition, one may also access Social Media Handles of MGNREGA:

- Facebook page - https://m.facebook.com/iecmgnrega
- x.Com- https://x.com/MgnregaGoi
- Instagram account - https://www.instagram.com/mgnregagoi/
- YouTube channel - https://youtube.com/c/IECMGNREGA

[iv] Please see Annexure 4 for more information on scope for goat-based livelihood promotion under MGNREGA.

[v] Twentieth Livestock Census 2019- All India Report. Government of India Department of Animal Husbandry & Dairying under Ministry of Fisheries, Animal Husbandry & Dairying.

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INTERNATIONALE ZUSAMMENARBEIT
(GIZ) GMBH

A2/18 SAFDARJUNG ENCLAVE
NEW DELHI - 110 029, INDIA

E GIZ-INDIEN@GIZ.DE
I WWW.GIZ.DE/INDIA

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