

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

**Published by:**

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

**Registered offices:**

Bonn and Eschborn, Germany

Enhancing Rural Resilience through Appropriate Development Actions (ERADA)

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, GIZ India

E: rajeev.ahal@giz.de

**Author:**

Ram Kumar Bendapudi, Consultant

**Content Review:**

Sharat Singh, Technical Advisor, Project ERADA, GIZ India

Meekha Hannah Paul, Senior Policy Advisor, Project ERADA, GIZ India

Kumar Ujjwal, Technical Advisor, Project ERADA, GIZ India

**Editors:**

Nisha Singh, Junior Technical Advisor, Project ERADA, GIZ India

Noah Mommartz, Intern, Natural Resource Management & Agroecology, GIZ India

**Design/Illustration:**

Caps and Shells Creatives Pvt. Ltd.

As at

July 2022

New Delhi, India

GIZ is responsible for the content of this publication.

**On behalf of the**

German Federal Ministry for Economic Cooperation and Development (BMZ)

**EXPANDING LIVESTOCK-BASED LIVELIHOOD  
OPPORTUNITIES THROUGH MAHATMA GANDHI NREGA**

**An Exploration**

# Table of Contents

List of Acronyms	6
Executive summary	7
1. Introduction	8
2. Livestock situation in Bihar, Jharkhand, Madhya Pradesh and Rajasthan	9
3. Enabling environment for livestock-based livelihoods through NRM based Mahatma Gandhi NREGA interventions	11
4. Interventions (under Mahatma Gandhi NREGA) directly linked to livestock-based livelihoods	13
4.1. Improving feed and fodder availability	14
4.1.1. Pastureland development	14
4.1.2. Removal of invasive species for improving quality of pastureland	15
4.1.3. Alternate sources of fodder production (Azolla)	16
4.1.4. Hydroponic fodder production	16
4.1.5. Silage units	16
4.2. Drinking water troughs	17
4.3. Housing for animals	17
4.3.1. Shelter for cattle and buffaloes	17
4.3.2. Construction of elevated community cattle shed	18
4.3.3. Agriculture related works such as NADEP	18
4.3.4. Poultry shelters	19
4.3.5. Goat shelters	19
4.4. Skilling and Capacity Building under Mahatma Gandhi NREGA	19

4.5. Focus on women empowerment in Livestock based livelihoods	20
4.6. Scope for livestock feed and fodder-based entrepreneurship	20
<b>5. Enabling environment for livestock production from other intersecting programmes and schemes</b>	<b>22</b>
5.1. Breed improvement programmes	23
5.2. Animal health care services	23
5.3. National schemes that converge with Mahatma Gandhi NREGA for enhancing livestock-based livelihoods	23
5.3.1. National Livestock Mission	23
5.3.2. National Rural Livelihood Mission	24
5.3.3. Deendayal Antyodaya Yojana– National Rural Livelihood Mission (DAY-NRLM)	24
5.3.4. Project Livelihoods in Full Employment under Mahatma Gandhi NREGA (Project LIFE-MGNREGA)	25
5.4. State specific livestock schemes in convergence with Mahatma Gandhi NREGA	25
5.4.1. Government of Bihar	25
5.4.2. Government of Jharkhand	25
5.4.3. Government of Madhya Pradesh	26
5.4.4. Government of Rajasthan	26
5.5. Summary of programmes and schemes that converge with Mahatma Gandhi NREGA for enhancing livestock-based livelihoods	26
<b>6. Process of implementation and convergence</b>	<b>28</b>
<b>7. Recommendations</b>	<b>30</b>
<b>8. References</b>	<b>32</b>

# List of Acronyms

BAU	Business as usual
BMZ	German Federal Ministry for Economic Cooperation and Development
CAD&WM	Command Area and Water Management
CAZRI	Central Arid Zone Research Institute
CFB	Complete Feed Block
CLF	Cluster Level Federations
COMFED	Milk Cooperative Federation
DADF	Department of Animal husbandry, Dairying and Fisheries
DAY-NRLM	Deendayal Antyodaya Yojana-National Rural Livelihood Mission
DDU-GKY	Deen Dayal Upadhaya Grameen Kaushalya Yojana
DPC	District Project Coordinator
EDEG	Entrepreneurship Development & Employment Generation
ERADA	Enhancing Rural Resilience through Appropriate Development Action
FCHM	Full Circle Hammer Mill
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GPDPs	Gram Panchayat Development Plans
GRS	Gram Rozgar Sahayak
GVT	Gramin Vikas Trust
IBS	Individual Beneficiary Systems
IGFRI	Indian Grassland and Fodder Research Institute
INR	Indian Rupees
IPPE	Intensive Participatory Planning Exercise
IWMP	Integrated Watershed Management Programme
Mahatma Gandhi NREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MoRD	Ministry of Rural Development
MoA&FW	Ministry of Agriculture and Farmers Welfare
MPPT	Multi-Purpose Plot Thresher
MT	Metric Tonnes
NABARD	National Bank for Agriculture and Rural Development
NDDB	National Dairy Development Board
NGOs	Non-Governmental Organisations
NIRD	National Institute for Rural Development
NLM	National Livestock Mission
NPDD	National Programme for Dairy Development
NRLM	National Rural Livelihood Mission
NRM	National Resource Management
PMKSY	Pradhan Mantri Krishi Sinchayi Yojana
RGM	Rashtriya Gokul Mission
RKVY	Rashtriya Krsihi Vikas Yojana
RLDB	Rajasthan Livestock Development Board
RSETI	Rural Self Employment Training Institutes
SAPPLPP	South Asia Pro-Poor Livestock Policy Programme
SHGs	Self Help Groups
SRLMs	State Rural Livelihoods Missions
SVEP	Start-up Village Entrepreneurship Program
WCDC	Watershed Cell cum Data Centre

# Executive Summary

In partnership with the Ministry of Rural Development (MoRD), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH implements the Indo-German development cooperation project 'Enhancing Rural Resilience through Appropriate Development Actions (ERADA)' on behalf of the German Federal Ministry for economic Cooperation and Development (BMZ).

ERADA supports BMZ's *Corona Immediate Programme*. The project aims to strengthen the resilience of rural regions and enhance the ability of vulnerable people to make a living by building upon locally available development programmes as well as improved natural resource management.

The objective of this report is to map activities under the Mahatma Gandhi National Rural Employment Guarantee Act (Mahatma Gandhi NREGA) for livestock-based livelihoods in rural areas. Additionally, livelihood generating activities of other related departments and schemes, located in the Indian states of Bihar, Jharkhand, Madhya Pradesh and Rajasthan, are covered. This report is part of a series of five thematic areas study reports covering livestock, non-farm, agriculture, aquaculture, and trees and forest-based livelihood activities under Mahatma Gandhi NREGA. The motto is to 'not reinvent the wheel', and build on the existing successful thematic based livelihood based activities with a potential to replicate and upscale at larger level.

Natural Resource Management (NRM) has been an important component of the Mahatma Gandhi NREGA to promote sustainable livelihoods in rural areas especially for the economically weaker sections. NRM interventions cover water harvesting and conservation, including ex-situ interventions, irrigation management and in-situ interventions. NRM activities also include pastureland development, fruit orchards, animal resting place and productivity enhancement (silt application, land levelling). All these activities have potential to directly or indirectly benefit livestock production through increased biomass (for fodder and feed) and drinking water availability.

Apart from the NRM related interventions, livestock related works permitted under the public works programme, such as poultry shelters, goat shelters, construction of pucca floor, urine tank and fodder trough for cattle and azolla as cattle-feed supplement would improve the participation of the poor and disadvantaged sections of the society. Feed and fodder development activities (silage, azolla) can be taken up in a planned manner considering the location specific cropping patterns (availability of crop residues) and developing institutional mechanisms for managing the pasture land developed as part of the Mahatma Gandhi NREGA.

The Mahatma Gandhi National Rural Employment Guarantee Act provides a platform for exploring and planning of complementarities between the programs of different

ministries. The planning should focus on institutional convergence and implementation of management stages of the Mahatma Gandhi NREGA interventions. Convergence of livelihood activities of different national and state government programmes of the Ministry of Rural Development, the Ministry of Environment, Forest and Climate Change and the Ministry of Agriculture and Farmers Welfare has already been addressed to some extent as per convergence strategies of various departments and programmes.

The main conclusion of this report is that Mahatma Gandhi NREGA activities that can directly enhance livestock production are related to the following:

- a. Feed and fodder availability and quality
- b. Provision of drinking water facilities
- c. Creation of livestock housing infrastructure.

Improvements of feed and fodder availability result from pastureland development and the construction of silage units. The former is mainly achieved through soil and water conservation works and fencing. The appropriate selection of plant species, depending on the location, is also important. Technical inputs from local forest and agricultural authorities could be very useful for this.

Furthermore, synergies between agriculture related works (NADEP composting, vermi-composting and preparation of liquid bio-manures) and the construction of cattle sheds exist and can be made use of, as both complement each other. Another method of developing business models is utilising feed technologies and practices developed by research organisations such as the Central Arid Zone Research Institute (CAZRI) and the Indian Grassland and Fodder Research Institute (IGFRI).

Most of the animal husbandry activities are performed by women. The Mahatma Gandhi NREGA provides that priority be given to women in such a way that at least one-third of those who have registered, applied for and been given work, are women. It is important to make provisions for organising gender sensitisation workshops and training events at the activity planning stage itself (where both women and men participate). This goes hand in hand with one of ERADA's main focus areas, which is the empowerment of women.

Planning for livestock-based livelihoods would also have to be given equal importance at all stages of planning in order to engage landless and other such households in the current planning process.

Finally, to mainstream livestock-based livelihoods into the planning processes under Mahatma Gandhi NREGA, it is important for the key village level functionaries (barefoot technicians) to be oriented and trained (as part of skill development or capacity building) in the works related to livestock development and work in close collaboration with Animal husbandry department along with other concerned departments.

# 1. Introduction

The project 'Enhancing Rural Resilience through Appropriate Development Actions (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 Ministry of Rural Development (MoRD), Government of India (GoI). The objective of the ERADA project is to strengthen the livelihoods of vulnerable households in selected rural areas, based on locally available natural resources and development support programmes especially Mahatma Gandhi NREGA. ERADA is under implementation in the four Indian states of Bihar, Jharkhand, Madhya Pradesh and Rajasthan. The project focuses on five agro-climatic zones across four states such as

1. Rajasthan-Western Dry Region, and Central Plateau and Hills
2. Bihar-Middle Gangetic Plains
3. Madhya Pradesh-Central Plateau and Hills and Western Plateau and Hills
4. Jharkhand-Eastern Plateau and Hills

**There are three output areas of the project which are as follows:**

1. Improving wage work potential of vulnerable households and enhancing the natural resource base through government support programmes especially Mahatma Gandhi NREGS
2. Long term green livelihood development in convergence with National Rural Livelihood Mission (NRLM) and other relevant national and state level programmes

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

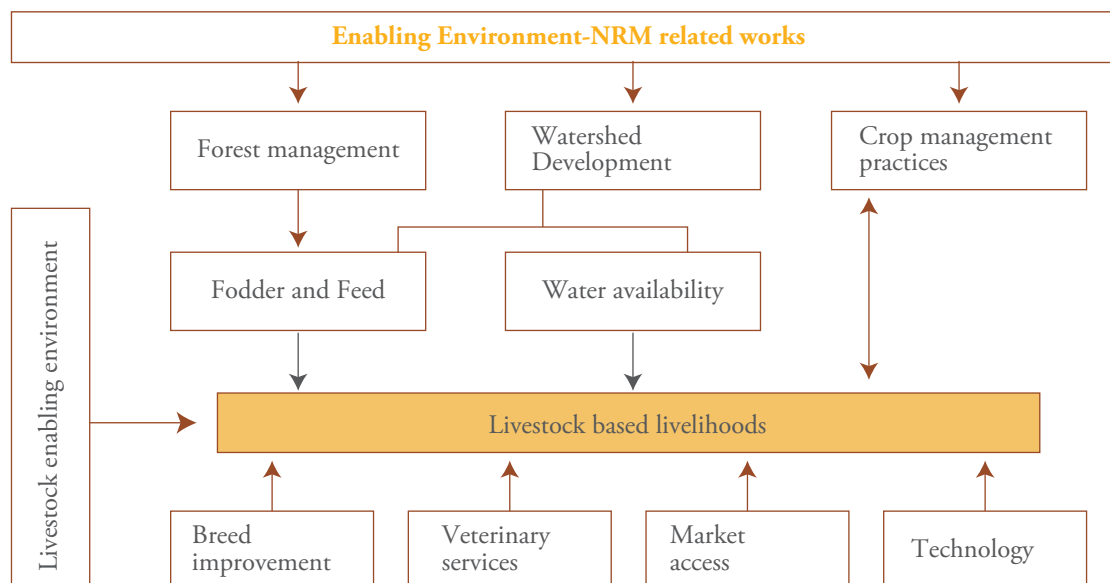
**Mahatma Gandhi NREGA provides for creation of productive assets to strengthen the livelihood resource base of the poor, while guaranteeing employment of at least 100 days in a financial year to every household in rural areas. There are 262 combinations of works which are permissible under Mahatma Gandhi NREGA, out of which 181 works are related to NRM. Out of these, 85 are water related works, 165 works are related to agriculture and allied activities.**

The ERADA project especially under output 2, focusses on mapping livelihood activities under five different production system under Mahatma Gandhi NREGA especially under Mahatma Gandhi NREGA and other state and national specific schemes. This happens through various departments like the Department of Animal Husbandry and Dairying, the Agriculture Department, the National Bank for Agriculture and Rural Development (NABARD), targeting women, migrant households, youth and other vulnerable communities.

## Objective of the report

The objective of this report is to map existing livelihood activities from list of activities under Mahatma Gandhi NREGA and activities which have potential for creating enabling infrastructure for livestock-based livelihoods in rural and tribal areas. The mapping will also cover livelihood generating activities under other related departments and schemes from the four project states of Bihar, Jharkhand, Madhya Pradesh and Rajasthan.

### Framework for capturing enablers for livestock-based livelihoods







©freepik/jcomp

# 2

Livestock situation in Bihar, Jharkhand,  
Madhya Pradesh and Rajasthan

As per the 20<sup>th</sup> Livestock Census, the total livestock population increased by 4.6% between 2012 and 2019. The female cattle (Cows population) increased by 18%. The population of the total exotic/crossbred cattle has increased by 27%, whereas there is a decline of 6% in the total Indigenous/non-descript cattle population. The total milch animals (in-milk and dry) in cows and buffaloes increased by 6%. Sheep and goat population increased by 14% and 10%. Total pigs in the country declined by 12%. In the context of poultry, backyard poultry has increased by around 46% and commercial poultry in the country increased by 4.5% over previous Census.

The growth in population of female cattle (cows) indicates dairy farmers' preferences for milk-producing cattle as well as government's support in providing sex-sorted (Artificial Insemination), with semen of high-yielding bulls, free of cost at farmers' doorstep.

As far as increase in the number of indigenous breeds of female cattle is concerned, the growth can be attributed to the Centre's 'Rashtriya Gokul Mission' and the 'National Gokul Gram' programme to conserve and promote climate resilient indigenous breeds of cattle. The higher growth of exotic and cross-bred variety of cows is an indication of continued preference of dairy farmers because of their much higher yield as compared to the indigenous breeds of cows.

These changes could vary at the state level. The livestock situation in the states of Bihar, Jharkhand, Madhya Pradesh and Rajasthan are summarised as follows:

**Bihar and Jharkhand states registered the maximum increases in cattle population between 2012 and 2019 (25.18% and 28.16% respectively)**

**The cattle population were down in Madhya Pradesh (4.42%) along with those of Maharashtra (10.07%) and Odisha (15.01%)**

**Buffalo population increased in Madhya Pradesh (26%), Bihar (2%), Rajasthan (5.5%) during 2012-19**

**During the period 2012-19, Goat population increased in Jharkhand (38.5%), Madhya Pradesh (38%), Bihar (5.5%) and decreased marginally in Rajasthan (-3.8%)**

**Sheep population decreased in all states with Rajasthan (13%)**

These changes could again vary within the state depending on the agro-climatic zones. For example, Bihar livestock production system has been classified into three livestock production zones, namely, Northern, Central and Southern. The Northern and Central zones contribute the largest share of the Bihar state livestock population. Under the business as usual (BAU) scenario, in 2032–33 there is projected to be significant growth in the populations of all livestock, especially of chickens, goats and buffaloes, at 374%, 71% and 45% respectively.

All of these have a bearing on the type of livestock-based livelihood strategies that can be promoted in a specific location as well as the type of NRM interventions that can be planned under Mahatma Gandhi NREGA that can be supportive to livestock production in the respective location.

**Under the business as usual (BAU) scenario, in 2032–33 there is projected to be significant growth in the populations of all livestock, especially of chickens, goats and buffaloes, at 374%, 71% and 45% respectively.**



©freepik/ Immagini Di D Allevamento

3

**Enabling environment for livestock-based  
livelihoods through NRM based  
Mahatma Gandhi NREGA interventions**

NRM has been an important component of Mahatma Gandhi NREGA to promote sustainable livelihoods for the poor with about 60% expenditure allotted for the creation of natural resource assets (both community and individual assets). NRM activities comprise of water harvesting and conservation, including ex-situ interventions (tank rejuvenation, loose boulder structures/stop dam, masonry structures like check dams), irrigation management (farm pond, canal renovation, micro irrigation) and in-situ interventions (field bunding, contour trenches/staggered trenches, etc.). NRM activities also include pastureland development, fruit orchards, animal resting place and productivity enhancement (silt application, land levelling).

Each of these NRM interventions contribute to ecosystem services that include provisioning services (supply of goods having direct benefit to the households or community), regulating/supporting services (essential for function of ecosystem sustainability) and cultural services (the non-material benefits such as spiritual enrichment, recreation, and aesthetic experience) (Sachin Malve, 2016). Provisioning services include crop yield, horticultural yields, fish production, milk, meat, fodder, timber, drinking water (human and livestock). Intended environmental impacts of Mahatma Gandhi NREGA focus on water conservation and harvesting include enhanced irrigated area, crop yield, per cent crop area saved due to flood control, fodder production, employment generation due to crop intensification, harvested runoff, soil erosion control and potential groundwater recharge. All the above NRM activities have potential to directly or indirectly benefit livestock production through increased biomass (for fodder and feed) and drinking water availability.

Though Mahatma Gandhi NREGA is demand-based, there has been some debates on the effectiveness of works undertaken on public land in comparison to works on private land. Public assets lack of maintenance in the absence of strong local institutions (tragedy of the commons),

whereas assets on private land are relatively well taken care of and better maintained. Also grazing restrictions on common lands due to soil water conservation (SWC) structures and afforestation activities negatively impact households dependent on small ruminants.

Even though NRM interventions contribute to ecosystem services, these may not be accessible to the poor and vulnerable. Therefore, apart from creation of public NRM-based assets on common lands, focus can also be given to the additional livestock linked activities that can be taken up on private lands of eligible households under Mahatma Gandhi NREGA at the planning stage itself to promote livestock-based livelihoods, especially for small ruminants.

One of the consequences of increased natural resource base through Mahatma Gandhi NREGA NRM interventions is the increased population of crossbred cattle and buffaloes. Crossbred animals and buffaloes require higher inputs, and this could put pressure on local feed and fodder resources. They are also less stress tolerant and thereby are at higher risk to climatic stresses, water and fodder scarcities. Due to continuous fall in productivity, indigenous breeds of cattle have become liabilities for farmers, forcing them to desert the unproductive cows. Farmers find other animals such as buffaloes, goats and sheep much more productive. Unlike cows, if these animals become unproductive, they can be sold and slaughtered for further processing.

Livestock population management of large and small ruminants with emphasis on improving indigenous breeds specific to the location that are more stress tolerant, improved livestock health (reducing mortality and morbidity and increasing productivity) could help in getting higher income generation from lesser number of animals. This would be possible with improved accessibility to facilities and livestock health services that could reduce mortality and morbidity while increasing productivity at the same time.

---

**NRM has been an important component of Mahatma Gandhi NREGA to promote sustainable livelihoods for the poor with about 60% expenditure allotted for the creation of natural resource assets (both community and individual assets).**

---



©Unsplash/Monika Kubala

4

---

## Interventions under Mahatma Gandhi NREGA for livestock-based livelihoods

Apart from the NRM related interventions, guidelines for the new additional works permitted under Mahatma Gandhi NREGA are made to strengthen the positive synergy between Mahatma Gandhi NREGA, agriculture and allied rural livelihoods wherein the list of permissible works was expanded. Following this, the Mahatma Gandhi NREGA Schedule I & II have been amended. These give much more scope and flexibility to include activities that directly enhance livestock-based livelihoods. Livestock related works permitted under Mahatma Gandhi NREGA such as poultry shelters, goat shelters, Construction of pucca floor, urine tank and fodder trough for cattle, Azolla as cattle-feed supplement would improve the participation of the poor and vulnerable sections of the society. Feed and fodder development activities (silage, azolla) can be taken up in a planned manner, considering the location specific cropping patterns (availability of crop residues) and developing institutional mechanisms for managing the pastureland developed as part of Mahatma Gandhi NREGA.

The livestock policy documents (national and state-wise) have all identified the following areas of interventions which enhance livelihood sectors, namely feed and fodder management, health services, genetics, extension services, processing and marketing. Mahatma Gandhi NREGA interventions that can directly enhance livestock production are related to improving feed and fodder availability and quality, provision of drinking water facilities, creating livestock housing infrastructure.

#### **4.1. Improving feed and fodder availability**

The three main sources of fodder in India (Hegde, 2010) are

- Crop residues (54% of total fodder)
- Cultivated fodder (28%)
- Fodder from community resources like permanent pastures and grazing lands (18%)

There is currently a net deficiency of 35.6% green fodder, 10.95% dry fodder and 44% concentrate feed materials in the country (IGFRI Vision, 2050). Feed and fodder accounts for over two-third of total animal production costs (Ginwal et al., 2019), hence, any effort to increase feed and fodder availability and economising the feed cost will result in better remuneration to livestock farmers. Convergence initiatives under Mahatma Gandhi NREGA include promotion of fodder farms in convergence with Department of Animal Husbandry and Dairying.

##### **4.1.1. Pastureland development**

Pastureland development result in environmental benefits such as consumptive water use, fodder generation, carbon sequestration, timber biomass generation and soil erosion control. The area covered by permanent pastures and other grazing land is 10.34 M ha (Directorate of Economics & Statistics, DAC & FW, 2020) and has been decreasing over time. The productivity of pastures has also been falling due to overgrazing (Pathak & Dagar, 2015). One of the reasons for reduction in Rajasthan's camel population and sheep population is shrinking pastureland and fodder resources, as well as drinking water for the animals.

As per the advisory issued on developing pasture land under Mahatma Gandhi NREGA, the activities include selection of species suitable for plantation in a particular location (based on soil, climate and nativity). For this, support for technical inputs is to be taken from local forest and agriculture departments. Soil and water conservation works (such as trenches) would be taken up along with live fencing of the pastureland. Development of pastures is a crucial strategy for livestock development. But growing fodder trees and production of top-feed for browsing species such as goat and camel has many challenges and requires a targeted approach in selection of species for plantation suitable for different livestock species.

---

**Mahatma Gandhi NREGA interventions that can directly enhance livestock production are related to improving feed and fodder availability and quality, provision of drinking water facilities, creating livestock housing infrastructure.**

---

### Case: Common land development A good practice

Successful cases of managing of common lands are documented in state of Rajasthan in Ajmer, Bhilwara, Bundi and Udaipur districts based on the initiatives of non-governmental organisations (NGOs)-, namely, Foundation of Ecological Security and BAIF development research Foundation (SAPPLP, 2009). **Some of the key practices for common land development include ecologically sound regeneration, regulated and rotational grazing, secure tenure to communities and strengthening or creating robust village institutions.** Ecologically sound regeneration includes maintenance of natural diversity of the local ecosystem, promotion of seeding and planting of native species considering need of the people, level of degradation, biotic pressure and institutional strength at the location. The focus was to develop a protected patch with suitable mix of grass and tree species which provides different products to livestock keepers from grass, leaves and pods meeting the feed and fodder needs of both large and small ruminants (SAPPLP, 2009). For managing the common lands, the different stakeholders in the village need to be brought onto a common platform for convergence of respective roles and responsibilities. These stakeholders could broadly include the village forest protection committee, Charagah Vikas Samiti (pastureland development committee), watershed development committee, Gram Panchayat (GP), state government departments and NGOs.

#### 4.1.2. Removal of invasive species for improving quality of pastureland

*Prosopis juliflora* is an aggressive invasive species which results in suppression of native bio-diversity and species richness of habitats such as pastures, woodlands and arable lands. Natural regeneration from the weedy invasion of *P. juliflora* contributes for nearly 70% of the plant density in arid and semi-arid regions of the country. The invasive behaviour of naturally regenerated stands of the weed poses threats to fertile agricultural lands and watersheds in India.

‘An invasive species is an organism that causes ecological or economic harm in a new environment where it is not native. Invasive species can harm both the natural resources in an ecosystem as well as threaten human use of these resources.’  
National Ocean Service, U.S Department of Commerce

Famous grazing tracts, such as the Sevan grass rangelands in Rajasthan’s Barmer, Jaisalmer, Bikaner districts; and the Banni grazing area in Kutch district of Gujrat state have disappeared or changed their character. Infiltration of invasive exotic species, particularly *Prosopis juliflora* and Lantana species, render huge tracts of former grazing land off limits to pastoralists.

In a recent judgement that has possibilities to add new activities under Mahatma Gandhi NREGA, the Madras high court directed the state government to come up with a policy to uproot invasive weed species, namely *Prosopis juliflora* (Vilayati babul), immediately as a drought mitigation measure and suggested that Mahatma Gandhi NREGA workers could be used for the job. In the past, the

forest department of Rajasthan had suggested to hire workers under Mahatma Gandhi NREGA as the removal of the plant is labour-intensive. For this to happen, one needs to find ways to measure the task to fix appropriate wage rates. By including this activity under Mahatma Gandhi NREGA, there could be significant improvement in the pasturelands (especially in areas such as Rajasthan and Gujarat where pasturelands have been lost to the invasive species).

*Prosopis juliflora* (*P. juliflora*) can also be managed as a plantation instead of the more expensive uprooting. To avoid bushy growth, *P. juliflora* seedlings, which often have two or more branches from ground level, require to be cut to single branch. This makes the plants grow straight. **Tending operations can be taken up that include weeding, cleaning, pruning and thinning.**

For establishment of the regeneration and subsequent development of the forest crop up to harvesting, several operations are carried out which are called as tending operations. These operations are carried out in the forest crop at different stages of growth in order to provide a healthy environment for their development. (My agriculture Information Bank, 2018).

All these activities will help in reducing many of its negativities as an invasive species by avoiding bushy thickets in grazing lands and provide new livelihood opportunities from the species. The plant can be used as a source of timber, fuel and livestock feed.

### Case: Potential technologies for use of *Prosopis juliflora* as feed

Mature pods of *P. juliflora* are highly palatable and nutritious. These are rich in proteins and free sugars which are consumed by foraging animals. Central Arid Zone Research Institute (CAZRI) has developed technologies for processing *P. juliflora* pods using modified Multi-Purpose Plot Thresher (MPPT) and Full Circle Hammer Mill (FCHM) (Bohra et al. 2011). These milling products can be used for production of various animal feed products. The milling process involves collection of mature pods, sun drying and milling using MPPT. The MPPT has a capacity to process 60-70 kg pods per hour. The pod milling products include fibrous endocarp, endocarp and amorphous mesocarp, which can be used in production of multi-nutrient feed blocks. The feed blocks comprising of *P. juliflora* milling products were found to have higher gross energy levels as compared to standard feed blocks (Bohra et al. 2011). Milling products can be coarse and fine particles that can be obtained by milling with FCHM. These can be used to produce supplement and complete feed blocks. Similar to preparation of feed blocks, *P. juliflora* milling products can also be used in formulation of multi-nutrient mixtures.

Such technologies can help in converting the negative externalities of the invasive species into positive externalities by developing self-employment opportunities for the youth in the villages in collaboration with CAZRI.

#### 4.1.3. Alternate sources of fodder production (Azolla)

Azolla as cattle-feed supplement is one of the new additional works permitted under Mahatma Gandhi NREGA.

Azolla is a free-floating, fast-growing aquatic fern which looks like leaves. Within cavities of the green upper lobe of the leaves, there live colonies of a photosynthetic bacteria which is called *Anabaena azollae*. These photosynthetic bacteria can capture the atmospheric nitrogen. (Yatskievych).

Azolla has been reported as one of the most economic and efficient feed substitutes for livestock. It is easily digestible by the livestock, owing to its high protein and low lignin content. Azolla can be used to replace 15–20% of commercial feed. Feeding Azolla to poultry birds improves the weight of the broiler chicken and increases the egg production of layers. Azolla can be fed to sheep, goat, pig and rabbits as feed substitute (Kololgi et al., 2009; Mahadevappa et al., 2012; Satish & Usturge, 2009).

#### 4.1.4. Hydroponic fodder production

It involves growing of plants in a greenhouse or polyhouse without soil but in a water or nutrient-rich solution for a short period of time (approximately seven days). This is not listed under permitted Mahatma Gandhi NREGA interventions but has the scope to be included in areas where water is surplus, and availability of fertile land is limited.

#### 4.1.5. Silage units

Silage is a process where undried green fodder is chopped into small pieces, enhanced with fermentation additives, and stored in airtight silos (compact storage). Silage retains moisture content in the range of 65-70%.

Conserving green fodder in the form of silage is one of the best options available to ensure regular supply of quality fodder through different seasons of the year, especially during the lean periods. Fodder crops rich in soluble carbohydrates (maize, sorghum, oats, pearl millet and hybrid napier) are suitable for fodder ensiling.

As per National Dairy Development Board (NDDB), estimated investment to construct surface silo for large farmers or community silo is about INR 12 lakhs to preserve about 100 MT of green fodder and the cost of fodder harvester or chopper would be about INR 1.5 lakhs. For medium farmers, five to seven metric tonnes surface silos would cost INR 25,000 and INR 25,000 for chaff cutter. NDDB has developed different methods for silage making (ensiling) and large-scale demonstrations, involving forage crops such as maize, sorghum and oats which were taken up in many Indian states such as Punjab, Uttar Pradesh, Bihar, Rajasthan, Gujarat, Maharashtra, Karnataka, Andhra Pradesh, Jharkhand.

As part of advisory dated 13 May 2019 from Department of Animal Husbandry and Dairying, Government of India on measures to be taken for increasing availability of fodder to



mitigate the effect of natural calamities, it was suggested that all the beneficiaries who receive or have received chaff cutters under any of the government schemes must be aided assistance under Mahatma Gandhi NREGA for Construction of fodder troughs and Azolla units.

## 4.2. Drinking water troughs

In regions with hot and dry climate and frequent droughts, drinking water shortage badly impacts livestock, especially during summers. Construction of cattle watering troughs can be taken up as part of Mahatma Gandhi NREGA

interventions at strategic locations on community land for improving access to drinking water for livestock. These troughs can be supplied with water through the pipeline from local Rural Water and Sanitation (RWS) bore wells.

A trough is a human-made container from which the animals eat or drink. This is usually constructed as a source of water or food for the animals.

### Case: Drinking water facility for livestock under Mahatma Gandhi NREGA

In Bold and big font in Ichhoda Mandal in Adilabad district of Telangana State, Construction of cattle watering troughs was undertaken under Mahatma Gandhi NREGA. These were created as community assets at strategic locations on community land. Through this initiative, drinking water facility was made available to the entire livestock of the village.

These cattle watering troughs are strategically located in the village on the way to the fields. Internal dimensions of the troughs are length- 4.55 meters, width- 1.55 meters and depth- 0.75 meters with a capacity of around 5,200 liters per unit. The expenditure incurred on Construction of each cattle watering trough is INR 17,857 and has generated 18 person days among three Mahatma Gandhi NREGA job card holders. The pipeline from the local RWS bore well supplies water to the troughs and it is ensured that troughs are always filled up with water.

## 4.3. Housing for animals

Maintenance of hygienic conditions for cattle: Unsanitary conditions of cattle shed, and milking yards leads to mastitis conditions, poor storing quality of milk leading to spoilage and lack of shelters leave them exposed to extreme climatic conditions.

### 4.3.1. Shelter for cattle and buffaloes

Mahatma Gandhi NREGA Pashu Shed Scheme 2022 has been initiated, under which various types of animal related facilities will be constructed on farmers' own land with ventilated roof, urinal tank etc. The main objective of this scheme is to provide financial assistance to such farmers rearing animals, whose only source of income is animals. Under this scheme, financial assistance of INR 80, will be provided to the eligible beneficiaries for Construction of shed on their own land under the supervision of Mahatma Gandhi NREGA.

#### Conditions for availing this scheme is as follows:

- Farmers must have at least three animals
- If a farmer has four animals, then she or he can get financial benefit of INR 1.16 lakhs.
- If a farmer has more than six animals in his number, then she or he can get financial assistance of INR 1.6 lakhs.

The cattle shed scheme was started by the government in four Indian states of Uttar Pradesh, Bihar, Madhya Pradesh and Punjab. After the successful implementation of the scheme in these states, it will be started in all the states of the country.

Construction of cattle platforms and linkages with Bihar State Milk Co-Operative Federation Limited (COMFED) to promote milk production COMFED shall provide plan for linking small milk producers in cooperatives for provision of infrastructure facility of same.

### 4.3.2. Construction of elevated community cattle shed

Elevated cattle sheds can offer a solution to areas with frequent flood risks. Farmers can shift their cattle to these sheds in case of a flood situation. The structures can also be used for other purposes. The shed can accommodate large number of animals, milk collection/testing rooms, dung, and urine collection tanks.

Cattle urine and cow dung are important resources that can be easily and efficiently collected in the case of cattle sheds with pucca (in English means something which is made of durable materials and is permanent) floors made with cement and stones. Urine collected from the tanks could be used to make liquid manure to enhance soil fertility.

#### Case of Cattle sheds under Mahatma Gandhi NREGA in Tamil Nadu

In Ramanagara District, Cattle shed work was designed in convergence under Mahatma Gandhi NREGA and the Animal Husbandry Department of the district. The area of the cattle shed floor for six cattle is 26.95 m<sup>2</sup> (7.7m x 3.5m). For constructing the cattle shed floor in concrete cement of 1 m<sup>3</sup> fodder trough (7.7m x 0.2m x 0.65m) and a cattle urine collection tank of 250 litres, the cost is INR 35,000 per unit. The initiative maintained the unskilled labour cost to material cost ratio of 70:30. The beneficiaries were selected from the GP and the list circulated amongst the Animal Husbandry officers, which in turn visited the farmers to study feasibility of constructing cattle sheds. The cattle are healthier and more protected from mastitis, foot and mouth diseases and are producing more milk.

### 4.3.3. Agriculture related works such as NADEP composting, vermi-composting and preparation of liquid bio-manures (Sanjeevak or Amrit paani)

These can be planned together with construction of cattle sheds like mentioned in above paragraph as they complement each other. NADEP composting, vermi-composting and preparation of liquid bio-manures are all part of Mahatma Gandhi NREGA's newly permitted additional activities (Narendra Kumawat, 2017).

- **NADEP composting**  
Composting is a process of utilising and processing solid waste through which its organic component is biologically decomposed to a humus-like state that can be used as fertiliser. NADEP composting involves the construction of a compost trough (with dimensions of 3.6m x 1.5m x 0.9m), inside which a series of layers of agricultural waste, dung and soil are successively heaped upon each other. It has been estimated that by the NADEP method, one head of cattle produces 80 tonnes of manure in a year. The unit cost of a NADEP pit is estimated at around INR 8,000. The unskilled labour to material ratio is 25:75.
- **Preparation of liquid bio-manures (Sanjeevak or Amritpani)**  
Sanjeevak is a Hindi word which means a restorative drug. Sanjeevak is a liquid manure which is formed from cattle urine. Preparation of this requires a brick masonry pit (dimensions of 1m x 1m x 1m) in which 50 kg of cow dung, 20 litres of cattle urine, 1 kg jaggery and 1 kg of chickpea flour is mixed with 1000 litres of water and the solution fermented for 5 to 7 days. The unit cost of one Sanjeevak pit is around INR 2,000 with unskilled labour to material ratio is 30:70.

#### Case of first multipurpose elevated community cattle shed in Kerala

The construction of the first multipurpose elevated community cattle shed at Kuttanad region of Kerala state was initiated at Chembumpuram locality in Nedumudi GP a cost of INR 1.8 crore. The three-storey elevated cattle shed is being built on 15 cents (1 Cent equals 435.6ft<sup>2</sup>) of land provided by the Chembumpuram Dairy Cooperative Society. The shed, with a total area of 5,496 ft<sup>2</sup>, will have facilities to keep 100 cattles, office room, milk collection/milk testing rooms, and a conference room. A tank for collecting dung and urine of animals along with a rainwater harvesting tank will also be arranged.

#### 4.3.4. Poultry shelters

Backyard poultry can be reared in small numbers (10-20) under free range conditions or semi-intensive system. Birds can be free to forage/scavenge during the day and shelter can be provided during night. Poultry shelters provide clean provide, protection from weather, and predators. Additionally, it helps in converting poultry litter into manure and also reduces disease risks.

Construction of a poultry shelter of 7.50 m<sup>2</sup> (length 3.75m and width 2m) suitable for 100 birds with total cost of

around INR 40,000 per shelter is part of new additional activities permitted under Mahatma Gandhi NREGA with focus on landless households. This in a way would promote poultry rearing from backyard free range poultry rearing to intensive type of rearing, which has its own pros and cons. Poultry shelters with specifications that suit lower number of birds should also be taken into consideration. Given the increased emphasis and support to backyard poultry rearing in the country and also in the selected states (as reflected in the increased backyard poultry populations between 2012-19), the demand for poultry shelters could go up.

#### Case: Importance of poultry housing: Case of promoting Kadaknath breed birds in Jhabua, Madhya Pradesh

Kadaknath (in Hindi language) is an indigenous breed of poultry endemic to Jhabua and Dhar districts in western Madhya Pradesh. Birds of the breed do not fatten and retain lean body conformation with dark coloured meat which is considered a delicacy. In the market, Kadaknath birds command a higher price as compared to other breeds. South Asia Pro-Poor Livestock Policy Programme (SAPPLPP) undertook a project for strengthening desi and indigenous poultry-based livelihoods in selected village cluster in Rama block of Jhabua district in Madhya Pradesh, with Sampark, an NGO, as the local implementing partner. Support was given to selected households that were interested in rearing Kadaknath birds by providing units of 50 chicks, and material costs involved in construction of a bird shelter. A total of 57 units were provided in seven villages, with distribution of 2,850 Kadaknath chicks. Out of the total chicks distributed, about 37% of chicks died of predation and 17% died due to diseases. This indicates the importance of provision for housing as night shelters with proper specifications and appropriate rearing practices (more risks involved under the scavenging system).

#### 4.3.5. Goat shelters

In the case of goat rearing, semi-intensive system is being promoted wherein animals are grazed on land followed by feeding in the shed. This gives scope for concentrate feeding to get the desired body weight for the market. Dry fodder like hay, straw, roughages and crop bi-products are efficiently consumed by goats. Conserved fodder like silage and hay can also be fed to goats. Mineral mixture feeding will improve health status and feeding of urea molasses blocks will increase salivation and digestion of fibres.

Construction of goat shelters will facilitate such rearing practice. A goat shelter of 7.5m<sup>2</sup> (length 3.75m and width 2m), suitable for 10 animals at a cost of around INR 35,000 per shelter, is permitted under Mahatma Gandhi NREGA with focus on landless households. The goat shelter will have an unskilled labour to material ratio of 25:75.

#### 4.4. Skilling and Capacity Building under Mahatma Gandhi NREGA

The capacity building of Mahatma Gandhi NREGA functionaries and skilling of Mahatma Gandhi NREGA

workers is important for effective implementation of the programme. The capacity building activities include barefoot technicians (BFT) trainings, project Livelihoods in Full Employment (Project LIFE-MGNREGA), skilling of masons, training of technical persons on SAKSHAM (a digital learning platform for Mahatma Gandhi NREGA), capacity building of resource persons of Social Audit Units and of the village resource persons from women Self Help Groups (SHGs), amongst others. The customised training modules (for barefoot technicians), state skilling plans (as prepared by State Rural Livelihoods Missions), training modules for technical persons (as conducted by National Institute of Rural Development and Panchayati Raj, NIRD) would need to be updated to incorporate livestock development related activities. Training need assessment and preparation of annual capacity building plan for the functionaries directly involved in implementation of Mahatma Gandhi NREGA at district, block and GP level should also be sensitised to the new additional works permitted under Mahatma Gandhi NREGA specific to livestock related activities for incorporation in their plans.

#### 4.5. Focus on women empowerment in Livestock based livelihoods

Most of the animal husbandry activities like fodder collection, feeding, watering, health care, general management, compost making, milking, household-level processing and value addition are performed by women. But their contribution in livestock rearing has not been given due place and their share in income from livestock is considered negligible (Kuldeep Dudi et. al. 2019).

The Mahatma Gandhi NREGA prioritises women in such a way that at least one-third of those who have registered, applied for and been given work, are women. Women can also be given priority in the skill building activities. Many of the activities under Mahatma Gandhi NREGA, that enhance livestock-based livelihoods, directly impact women both positively (reduce drudgery due to housing facilities and easy access to fodder) and negatively (increased workload due to possible increase in livestock numbers due to various schemes of government). Therefore, it is important to make provisions for organising gender sensitisation workshops and training events at the activity planning stage itself (where both women and men

participate). These events could focus on seven important pillars of women empowerment such as decision making, access to knowledge, self-esteem, credit facility, livestock services, social support, market accessibility and asset ownership. This will pave way for balanced workload sharing at household level between women and men.

#### 4.6. Scope for livestock feed and fodder-based entrepreneurship

There is ample scope to develop entrepreneurship strategies by adopting feed product technologies. Feed technologies and practices developed by research organisations such as CAZRI and Indian Grassland and Fodder Research Institute (IGFRI) can be utilised to develop business models.

The complete feed is a quantitative mixture of all dietary elements, completely blended to avoid separation and selection, provided as sole source of nutrients (excluding water), and designed in the necessary proportion to fulfil the individual nutrient requirements. Innovative technologies like the complete feed system can be a source of entrepreneurship with proper business model as well as a solution to cope with fodder scarcities.

#### Case: Technology to produce complete feed blocks

A project on livestock centric intervention for livelihood improvement was initiated in Nagaur district of Rajasthan in consortia mode involving CAZRI, Rajasthan Livestock Development Board (RLDB) and Gramin Vikas Trust (GVT) with support from the National Rainfed Area Authority during 2000-14. A Complete Feed Block (CFB) machine with feed-fodder mixture and feed grinder was installed at Sant Bhuria Baba Gaushala in Harsolav village. These feed blocks are comprised of all the essential feed ingredients in suitable proportion and can be fed to productive animals as complete ration.

The components used for the preparation of CFB are mentioned below.



The CFB on dry weight basis contained 83.7% organic matter, 11.8% crude protein, 4.5% ether extract, 16.3% minerals, 67% total carbohydrates and 389 kcal gross energy.

Large number of farmers from twelve villages benefited from the technology. The total expenditure of ten lakh rupees was incurred for installing the machine. Machine has capacity to produce 25 blocks each of four kilograms of weight in one hour time which makes the machine capacity as 100 kg/hr. The farmers paid a nominal charge of rupee one per block

(four kilograms) which includes the electricity and operational cost of the machine. The straw used in preparation of fodder blocks was brought by the farmers and ingredients were supplied from the project.

In the case of goats, multi-nutrient feed blocks and multi-nutrient-mixture powder were formulated in the Feed Technology Unit of CAZRI using molasses, urea, common salt, vitamin-mineral mixture, dolomite, wheat bran, clusterbean meal and organic binder.

---

**Innovative technologies like the complete feed system can be a source of entrepreneurship with proper business model as well as a solution to cope with fodder scarcities.**

---



©Unsplash/Shruti Singh

# 5

---

**Enabling environment for livestock production from other intersecting programmes and schemes**

Conflict or parallel programs among various government ministries such as those related to

- Agriculture (with emphasis on food production)
- Rural development (with emphasis on employment generation & poverty alleviation)
- Forests (with emphasis on maintaining biodiversity & wildlife),
- Animal husbandry (with emphasis on improving income from livestock)

is a major problem in natural resource or watershed management programmes, which require to be resolved on a priority basis.

Mahatma Gandhi NREGA provides a platform for exploring and planning for complementarities between the programs of different ministries. Focus on institutional convergence should be taken into consideration at the planning, implementation management stages of Mahatma Gandhi NREGA interventions. Convergence of livelihood activities of different National and State government programmes of Ministry of Rural development (Mahatma Gandhi NREGA, NRLM, National Livestock Mission (NLM), Start-up Village Entrepreneurship Programme (SVEP), Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY), etc.), Ministry of Environment, Forests and Climate Change, Ministry of Agriculture and Farmers Welfare has already been addressed to some extent as per convergence strategies of various departments and programmes.

### 5.1. Breed improvement programmes

The Rashtriya Gokul Mission (RGM) is being implemented by the Department of Animal Husbandry and Dairy, Government of India with objectives of enhancing productivity of bovines and increasing milk production, using high genetic merit bulls for breeding purposes, delivery of Artificial insemination services at farmers doorstep and promote indigenous cattle & buffalo rearing and conservation. The programme is implemented through State implementing agencies, Central Frozen Semen Production and Training Institute, Central Cattle Breeding Farms, Central Herd Registration Scheme, National Dairy Development Board (NDDB)/Indian Council of Agricultural Research (ICAR) and its Institutes/Central Universities.

The sub-mission on 'Breed Development of Livestock & Poultry' under National Livestock Mission focuses on entrepreneurship development and breed improvement in poultry, sheep, goat and piggyery by providing the

incentivisation to the individual, Farmer Producer Organisations (FPOs), SHGs, Section 8 companies under The Companies Act, 2013 for entrepreneurship development and to the state government for breed improvement infrastructure.

### 5.2. Animal health care services

The Livestock Health & Disease Control scheme is implemented by Department of Animal Husbandry and Dairy, Government of India with an aim to improve the animal health sector by implementing prophylactic vaccination programmes against various diseases of livestock and poultry, capacity building, disease surveillance and strengthening of veterinary infrastructure. The programme is implemented through the state implementing agencies.

Prophylactic vaccination programmes are the measures designed to preserve health and prevent the spread of disease.

### 5.3. National schemes that converge with Mahatma Gandhi NREGA for enhancing livestock based livelihoods

#### 5.3.1. National Livestock Mission

The Department of Animal Husbandry & Dairying, Government of India is implementing a scheme under National Livestock Mission (NLM). The revised scheme of NLM aims towards employment generation, entrepreneurship development, increase in per animal productivity and thus targeting increased production of meat, goat milk, eggs and wool under the umbrella scheme Development Programme. The scheme will be implemented all over India from 2021-22. The NLM will be implemented through the State Implementing Agency established under the State Animal Husbandry Department.

**The realigned NLM will have following three sub-missions:**

- (a) Sub-mission on Breed Development of Livestock and Poultry
- (b) Sub-mission on Feed and Fodder Development
- (c) Sub-mission on Innovation and Extension

The sub-mission on Fodder and Feed aims towards strengthening of the fodder seed chain to improve availability of certified fodder seed required for fodder production and encouraging entrepreneurs for establishment of fodder block or hay bailing or silage making units through incentivisation. This could be an

important converging point with Mahatma Gandhi NREGA interventions of pastureland development as well as agriculture interventions wherein the crop residues can be converted to animal feed through silage making.

Poultry entrepreneurship in rural educated and unemployed youth is promoted under Innovative Project of 'Productivity Enhancement' component of sub-mission on Livestock Development under NLM. This can be very much complemented with poultry shelters under Mahatma Gandhi NREGA.

### 5.3.2. National Rural Livelihood Mission

The importance of promoting convergence with other rural development programs, as well other ministries, is enshrined in the framework of National Rural Livelihood Mission (NRLM) (South Asia Agriculture and Rural Growth Discussion Note Series, March 2020). The NRLM focuses on training, capacity building and enabling women to prepare and implement their livelihoods plans through access to financial resources from their own institutions and from banks. The Intensive Participatory Planning Exercise (IPPE) gave voice to the poor, including SHGs and their federations, in preparation of Mahatma Gandhi NREGA's labour budget and the SHGs play a key role in the preparation of GP Development Plans (GPDPs).

The areas of cooperation between the NRLM and Department of Animal husbandry, Dairying and Fisheries (DADF) includes

- (a) Providing milch animals to poor landless farmers, widows and other vulnerable sections of the society
- (b) Supporting the productivity enhancement of small ruminants and poultry; and
- (c) Developing micro-level infrastructure at the village and the household level.

The NRLM converged with Mahatma Gandhi NREGA with the aim of strengthening livelihoods by the creation of durable and productive community infrastructure. Specifically, this initiative is expected to facilitate the following

- (a) Development of storage sheds for custom hiring centres/tool banks
- (b) Godowns for producer groups/companies
- (c) Sheds for milk collection centres
- (d) Sheds/storage units for tasar interventions
- (e) Construction of vermi/NADEP compost pits/tanks
- (f) Setting up rural haats (markets).

NABARD is the subsidy channelising agency for following schemes, under Entrepreneurship Development & Employment Generation (EDEG) component of National Livestock Mission, namely

- Poultry Venture Capital Fund
- Integrated Development of Small Ruminants and Rabbit
- Pig Development
- Salvaging and Rearing of Male Buffalo Calves
- Effective Animal Waste Management
- Construction of Storage Facility for Feed and Fodder.

### 5.3.3. Deendayal Antyodaya Yojana-National Rural Livelihood Mission (DAY-NRLM)

Under this programme, focus is towards improvement of social status and economic capabilities of rural women through mobilising them into women Self Help Groups (SHGs), Village Organisation (VO) and Cluster Level Federations (CLF). More than 50,000 trained SHG members are actively engaged in providing extensions services as Krishi Sakhi (agriculture resource person) and Pashu Sakhi (livestock resource person) at the doorsteps of these SHG members.

To strengthen household level livelihood activities promoted by DAY-NRLM, convergence efforts have been initiated with Mahatma Gandhi NREGA along with other ministries. As part of convergence opportunities, it was indicated that creation or/and strengthening of individual livelihood asset base of SHG women can be done under Mahatma Gandhi NREGA which may include farm pond, all animal sheds, poultry shed, compost pits, agri-nutrition garden, land development/terracing etc. Through Mahatma Gandhi NREGA, creation or/and improvement of common village infrastructure may also be taken up, for example, sheds for Custom Hiring Centres (CHCs)/Tool banks, godowns for Producer Groups (PG)/Producer Companies (PCs), sheds for Milk collection centers, storage units for Tasar intervention, plantations etc.

Recently, an advisory issued to State Rural Livelihoods Missions (SRLMs) by Additional Secretary, Rural Development Department on 1 June 2020 to converge with Mahatma Gandhi NREGA for creation of individual livelihood assets or SHG women through Individual Beneficiary Schemes (IBS) of Mahatma Gandhi NREGA.



#### 5.3.4. Project Livelihoods in Full Employment under Mahatma Gandhi NREGA

It is a convergence initiative to proactively prioritise willing youth from households largely dependent on Mahatma Gandhi NREGA for livelihood, to be supported through skilling programmes by DDU-GKY, livelihood interventions of DAY-NRLM and Entrepreneur Development Programmes of Rural Self Employment Training Institutes (RSETI).

SVEP is a part of the DAY-NRLM with the objective to help the rural poor come out of poverty by helping them set up enterprises and provide support till the enterprises stabilise. SVEP will give a push to non-farm livelihoods, especially skill based work and small enterprises, thereby creating jobs and stimulating long-term economic growth and produce social benefits.

The SRLMs shall be the overall implementing agencies for this project. SRLM shall prepare State Skilling Plans that shall have three separate plans, one for each broad category mentioned above.

### 5.4. State specific livestock schemes in convergence with Mahatma Gandhi NREGA

#### 5.4.1. Government of Bihar

Programmes to be implemented under Agriculture Road Map 2017-2022, as part of Bihar Vikas Mission Govt. of Bihar, include poultry farming scheme, goat development scheme, scheme for cattle development, scheme of fodder production and monitoring apart from breed improvement and health care services.

In Bihar, Integrated Goat and Sheep Development Scheme is launched for establishing goat and sheep units in the state wherein 40 sheep/goats shall be provided to the beneficiaries from Schedule Caste (SC) and Schedule Tribe (ST) category farmers. This can be complemented by goat shelters under Mahatma Gandhi NREGA.

In the past, as part of road map for convergence with Mahatma Gandhi NREGA scheme, construction of cattle platforms was envisaged with linkages with COMFED to promote milk production with GPs as Project Implementing Agencies (PIAs) and cooperatives to coordinate and monitor construction activities. This plan is still viable in the present scenario.

#### 5.4.2. Government of Jharkhand

The Animal Husbandry Directorate, Government of Jharkhand undertook schemes for goat development (Bakra PrajanganIkai), Pig development (Sukar PrajanganIkai), Backyard poultry along with commercial layer poultry farming and broiler rearing scheme (as per proposed budget plans for 2018-19).

##### Under the goat development scheme:

Four does and one buck of Black Bengal breed goats were to be given to 25,000 below poverty line (BPL) families and it was indicated that provision for goat shelters will be through Mahatma Gandhi NREGA.

##### Under Pig development scheme:

Four sows and two boars were to be provided with housing facilities to be supported under Mahatma Gandhi NREGA.

For backyard poultry 1,000 units (with each unit of 400 chicks) were planned to be promoted. In all such livestock development schemes, animal shelters

In 2021, Chief Minister Livestock Development Scheme was launched wherein previously operated schemes under the Animal Husbandry Division and various schemes under Welfare Department and Rural Development Department are converged under Chief Minister Livestock Development Schemewith emphasis in self-employment. Under this scheme, goat farming, pig farming, backyard layer poultry farming, broiler poultry farming, duck-chick distribution, distribution of two cows under Cattle Development Scheme, five to ten cow distribution under Kamadhenu Dairy Farming Scheme, distribution of hand and electric chaff cutters, assistance to progressive dairy farmers and technical input materials are being provided to the beneficiaries.

---

**SVEP is a part of the DAY-NRLM with the objective to help the rural poor come out of poverty by helping them set up enterprises and provide support till the enterprises stabilise.**

---

### 5.4.3. Government of Madhya Pradesh

The Madhya Pradesh livestock development policy has distinct sections on dairy and poultry development. The expansion of village level milk collection, creation of pasteurisation facilities at district level milk unions and the promotion of public-private partnership models for both market access and input delivery has been stressed upon. The section on poultry rearing recognises the key role of backyard poultry rearing in the livelihoods of small holders. Special efforts will be made to promote the indigenous Kadaknath poultry breed. The importance of regular vaccination in reducing poultry mortality has been recognised.

The Madhya Pradesh State Livestock and Poultry Development Corporation supplies different category of genetically superior livestock (milch cattle and buffalo, draught animals, goat) and other breeding activities targeting dairy farmers, production of frozen semen of different breed of livestock and production of balanced feed for poultry and piggery. One of the targets is also to get Madhya Pradesh declared as a goat state of the country.

### 5.4.4. Government of Rajasthan

The main activities and programmes of the Department of Animal Husbandry, Government of Rajasthan are

- Breed improvement programme using superior germplasm
- Castration of non-descript bulls/calves & infertility camps

- Veterinary health care & disease control programme
- Extension activities.

Goat Development Scheme in Rajasthan is aimed to help in improving the weaker sections of society. Goat farms of the animal husbandry department working at Ramsar village in Ajmer district, and Cattle Breeding Farm in Nagaur district are developing Sirohi breed wherein Sirohi breed kids of about four to six months age are selected from the home tract and are reared. The goat development programme is aimed to develop Sirohi goats in ten districts of South-Western regions of the State viz.: Ajmer, Pali, Sirohi, Bhilwara, Rajasmand, Chittorgarh, Dungarpur, Banswara, Nagaur and Udaipur. The bucks of Jamunapari breed of a goat are reared at Cattle Breeding farm, Kumher in Bharatpur district. These bucks are distributed in Bharatpur, Dholpur, Karauli, Alwar and Sawai Madhopur districts. These elite Sirohi and Jamunapari bucks after attaining breeding age are distributed to goat breeders to BPL/ST/SC families and to others at a nominal price.

### 5.5. Summary of programmes and schemes that converge with Mahatma Gandhi NREGA for enhancing livestock-based livelihoods

The following table maps the various government schemes (national and state) and departments and institutions that have converging objectives on various livestock related activities.

## Stakeholder mapping for livestock development and convergence points

Issues	Convergence with Mahatma Gandhi NREGA	State Government departments	National programmes/ Schemes	Departments/ Institutions
 <b>Feed and fodder</b>	Yes	State Implementing Agencies Bihar Vikas Mission (Agriculture Sub-mission) SRLM	National Livestock Mission (Sub-mission-2); Rashtriya KrsihiVikas Yojana (RKVY), National Food Security Mission (for coarse grain) DAY-NRLM	Department of Animal Husbandry and Dairying; Regional Fodder Stations; Ministry of Agriculture and Farmers Welfare (MoA&FW); Directorate of Millets Development, Jaipur, MoA&FW, NDDB IGFRI CAZRI
 <b>Drinking water</b>	Yes			

Issues	Convergence with Mahatma Gandhi NREGA	State Government departments	National programmes/ Schemes	Departments/ Institutions
 <b>Housing</b>	Yes	<b>Bihar:</b> Bihar Vikas Mission (Agriculture Sub-mission) COMFED Integrated Goat and Sheep Development Scheme in Bihar (goat units) <b>Jharkhand:</b> Chief Minister Livestock Development Scheme Goat development scheme and Pig development scheme (Animal Husbandry department, Jharkhand) <b>Madhya Pradesh:</b> MP State Livestock and Poultry Development Corporation <b>Rajasthan:</b> Goat development and poultry schemes SRLMs	NLM NRLM DAY-NRLM	NABARD
 <b>Health</b>			Livestock Health and Disease Control	Department of Animal Husbandry and Dairying;
 <b>Genetics</b>		Bihar Vikas Mission (Agriculture Sub-mission)	Rashtriya Gokul Mission; National Livestock Mission (sub-mission 2 for poultry, goats, sheep and pigs)	Department of Animal Husbandry and Dairying;
 <b>Extension</b>	Yes	State Animal Husbandry Departments SRLMs	National Rural Livelihood Programme Mahila Kisan Sashaktikaran Pariyojana- DAY- NRLM DDU-GKY, RSETI, NIRD Krishi Vignan Kendras	MoRD
 <b>Research</b>			NLM (Sub-mission 3-Research and Development activities related to sheep, goats, pigs and feed and fodder)	Department of Animal Husbandry and Dairying;
 <b>Processing and marketing</b>	Yes	SRLM; State Cooperative Dairy Federations	NRLM; National Programme for Dairy Development (NPDD); Animal Husbandry Infrastructure Fund;	Department of Animal Husbandry and Dairying;



©Pixahive/Devendra

# 6

---

## Process of implementation and convergence

Important activities for planning as indicated in the guidelines/framework for 'planning for works and preparation of labour budget' under Mahatma Gandhi NREGA for the FY 2021-22 indicate that District Project Coordinator (DPC) ensures strict adherence to the principle of bottom-up approach from the stage of planning to the approval of selected shelf of projects by each Gram Sabha or Ward Sabha in the district.

Key functionaries for effective implementation of the Mahatma Gandhi NREGA scheme are

- **Employment Guarantee Assistant', or 'Gram Rozgar Sahayak' (GRS) at the GP level** - Responsible for the entire processes of registration, distribution of job cards etc., facilitating Gram Sabhas and ensuring Integrated Natural Resource Management (INRM) practice in planning and execution of works
- **Technical Assistant** - Assist the GP in identifying and conducting measurement of works pertaining to watershed development, natural resource management, agriculture, horticulture etc.
- **Programme Officer at the block level** - For identification and planning of works, facilitating in the planning, feasibility, site selection and execution of natural resource management works.

The State Government designates a DPC who is responsible for the implementation of the scheme in the districts and also identify possible avenues for convergence with other schemes to ensure better outcomes.

For planning of works related to NRM, agriculture and allied activities and livelihood related works on individual's

land leading to sustainable livelihoods, the DPC will facilitate and ensure that NRM related works and Mahatma Gandhi NREGA are taken up in convergence with Pradhan Mantri Krishi Sinchayi Yojana (PMKSY), Integrated Watershed Management Programme (IWMP) and Command Area and Water Management (CAD & WM) schemes for better outcomes of water conservation and water harvesting measures. For planning NRM works, technical inputs will be drawn from the joint pool of technical personnel of IWMP in Watershed Cell Cum Data Centre (WCDC), Mahatma Gandhi NREGA unit, Water Resources Department and the Agriculture Department as well as Regional office of Central Groundwater Commission. The role of SHGs and Community Based Organisations (CBOs) is also specified wherein SHGs under DAY-NRLM will be closely involved in planning especially in case of watershed projects under Mahatma Gandhi NREGA. There is also an effort to pro actively reaching out to landless and manual casual labour households for covering them under Mahatma Gandhi NREGA wherein job cards are issued on priority basis. For such households, promoting livestock-based livelihoods provide one good complementary or alternate source of income.

In the current planning process in the NRM works, greater focus is on infrastructure related to soil and water conservation with priority to crop production. Planning for livestock-based livelihoods would also have to be given equal importance at all stages of planning to engage landless and other such households in the current planning process. For this to happen, it is important for the key functionaries to be oriented and trained (as part of skill development or capacity building) to the works related to livestock-based livelihoods and work in close collaboration with animal Husbandry Department along with other departments.

---

**The role of SHGs and Community Based Organisations (CBOs) is also specified wherein SHGs under DAY-NRLM will be closely involved in planning especially in case of watershed projects under Mahatma Gandhi NREGA.**

---



©Unsplash/Rylee Pearson

7

---

Recommendations

- Mahatma Gandhi NREGA interventions that can directly enhance livestock production are related to improving feed and fodder availability and quality, provision of drinking water facilities and creating livestock housing infrastructure.
- Mahatma Gandhi NREGA for improving feed and fodder availability
  - a Pastureland development under Mahatma Gandhi NREGA includes soil and water conservation works (such as trenches) along with live fencing. Selection of species suitable for plantation in a particular location (based on soil, climate and nativity) can be undertaken with technical inputs from local forest and agriculture departments.
  - b Inclusion of new activities, such as uprooting of invasive weed species, namely *Prosopis juliflora* (Vilayati babul), or its management under Mahatma Gandhi NREGA could result in significant improvement in the pasturelands especially in areas such as Rajasthan and Gujarat where pasturelands have been lost to the invasive species.
  - c Silage units can be promoted under Mahatma Gandhi NREGA wherein green fodder can be conserved in the form of silage to ensure regular supply of quality fodder through different seasons of the year.
- Agriculture related works such as NADEP composting, vermi-composting and preparation of liquid bio-manures (Sanjeevak or Amrit paani) can be planned together with construction of these cattle sheds as they complement each other. NADEP composting, vermicomposting and preparation of liquid bio-manures are all part of Mahatma Gandhi NREGA newly permitted additional activities.
- Feed technologies and practices (such as complete feed systems) developed by research organisations such as CAZRI and the IGFRI can be utilised to develop business models.
- The customised training modules (for barefoot technicians and others), state skilling plans (as prepared by SRLMS), training modules for technical persons (as conducted by NIRD) would need to be updated to incorporate livestock development related activities.
- Most of the animal husbandry activities are performed by women. The Mahatma Gandhi NREGA provides that priority be given to women in such a way that at least one-third of those who have registered, applied for and been given work, are women. It is important to make provisions for organising gender sensitisation workshops and training events at the activity planning stage itself (where both women and men participate). This will pave way for balanced workload sharing at household level between women and men.
- Convergence of livelihood activities of different National and State government programmes of Ministry of Rural development (MGNREGA, NRLM, NLM, SVEP, DDU-GKY, etc.), Ministry of Environment, Forest and Climate change, Ministry of Agriculture and Farmers Welfare has already been addressed to some extent as per convergence strategies of various departments and programmes. Mahatma Gandhi NREGA provides a platform for exploring and planning complementarities between the programs of different ministries.
- Many of the State specific livestock schemes such as Poultry Farming Scheme, Goat Development Scheme, scheme for cattle development focus on improving breeds and distribution of animals or birds to the beneficiaries from SC and ST category farmers. These units can be complemented by respective animal shelters under Mahatma Gandhi NREGA.
- To mainstream livestock-based livelihoods into the planning processes under Mahatma Gandhi NREGA, it is important for the key village level functionaries (barefoot technicians) to be oriented and trained (as part of skill development or capacity building) in the works related to livestock development and work in close collaboration with Animal husbandry department along with other concerned departments.

---

**Mahatma Gandhi NREGA interventions that can directly enhance livestock production are related to improving feed and fodder availability and quality, provision of drinking water facilities and creating livestock housing infrastructure.**

---

# References

- My agriculture Information Bank. (2018, April 6). Retrieved from agriinfo.in: <https://agriinfo.in/tending-operations-in-silviculture-1622/>
- Narendra Kumawat, I. S. (2017). Preparation of NADEP Compost for Sustaining Farming Community. Popular Kheti.
- Yatskievych, G. (n.d.). Mosquito fern. Retrieved from Britannica.com: <https://www.britannica.com/plant/mosquito-fern#ref1007738>
- Bohra, HC, LN Harsh, BK Mathur, Anil Sharma and MM Roy. 2011. Utilization of value added Prosopis juliflora pod milling products for production of livestock feeds. Central Arid Zone Research Institute, Jodhpur, Rajasthan.
- Deo Narayan Singh, Jitendra S. Bohra, Vishal Tyagi, Tejbal Singh, Tej R. Banjara, Gaurendra Gupta. A review of India's fodder production status and opportunities. Grass and Forage Science • January 2022
- Government of Bihar. Animal & Fisheries Resources Department, The Bihar Livestock Sector Analysis Technical support: International Livestock Research Institute (ILRI) Program support: Bill & Melinda Gates Foundation
- Government of Jharkhand. Animal Husbandry Directorate.
- Government of India. Ministry of Fisheries, Animal Husbandry and Dairying Department of Animal Husbandry and Dairying. 2021. Operational Guidelines for National Livestock Mission July- 2021
- Government of India. Department of Animal Husbandry and Dairy. Ministry of Fisheries, Animal Husbandry and Dairying. Basic Animal Husbandry Statistics. 2020.
- Government of India. Department of Animal Husbandry & Dairying under Ministry of Fisheries, Animal Husbandry & Dairying. 20th Livestock Census.
- Government of India. Department of Animal Husbandry and Dairy. Ministry of Fisheries, Animal Husbandry and Dairying. Advisory on Measures to be taken for Increasing Availability of Fodder to Mitigate the Effect of Natural Calamities (Issued on 13.5.2019)
- Government of Rajasthan. Department of Animal Husbandry. State Livestock Development Policy.
- Department of Rural Development, Ministry of Rural Development. Guidelines/ framework for "Planning for works and preparation of labour budget" under MGNREGA for the FY. 2021-22".
- Department of Rural Development, Ministry of Rural Development. Mahatma Gandhi National Rural Employment Guarantee Act, 2005. Master Circular A guide for programme implementation FY 2018-2019 Available at: [https://nrega.nic.in/Netnrega/WriteReaddata/Circulars/AMC\\_2018-19\\_nk\\_v3\\_21.03.18.pdf](https://nrega.nic.in/Netnrega/WriteReaddata/Circulars/AMC_2018-19_nk_v3_21.03.18.pdf)
- Department of Rural Development, Ministry of Rural Development. Mahatma Gandhi National Rural Employment Guarantee Act, 2005. Guidelines for The New/Additional Works Permitted Under MGNREGA.
- Department of Rural Development, Ministry of Rural Development. Farm Livelihoods Interventions under DAY-NRLM (Strategy, Convergence Framework, Models)
- ICAR-IGFRI (2021). Fodder Resource Development Plan for Rajasthan. ICAR-Indian Grassland and Fodder Research Institute, Jhansi
- Kuldeep Dudi and Indu Devi Raj Kumar, Contribution and Issues of Women in Livestock Sector of India: A Review. Vol 9(8), 37-48
- Madhya Pradesh Livestock Development Policy approved by the Agriculture Cabinet <http://www.sappp.org/news/MP-livestock-development-policy-approved-by-the-agriculture-cabinet.html#>. YgSMj99BxPY
- Patidar, M., Patel, A.K., Misra, A.K., Sirohi, A.S., Kumawat, R.N., Meghwal, P.R. and Roy, M.M. 2014. Improving Livelihood of Farmers through Livestock Interventions in Nagaur District of Rajasthan. Central Arid Zone Research Institute, Jodhpur, 56 p.
- Sachin Malve et al. 2016. Development of Environmental Matrix for NRM Works in MGNREGA Based on Selected 13 Gram Panchayats in Andhra Pradesh, Chhattisgarh and Rajasthan. Technical Report 1. ICRISAT Development Centre, GIZ, 2016.
- <https://nrega.nic.in/netnrega/writereaddata/Convergence/SCP/2014-2015/SCP%20Bihar.pdf>
- Rosamma Thomas. 2017. Rajasthan foresters seek NREGA help to clear invasive juliflora. Jaipur Times, The Times of India. March 16, 2017. Available at: <https://timesofindia.indiatimes.com/city/jaipur/rajasthan-foresters-seek-nrega-help-to-clear-invasive-juliflora/articleshow/57670582.cms>
- SAPPLP (2009) Code: SAGP02, 'Innovations in common land development: Strengthening institutional and physical spaces for poor livestock keepers. Good Practice Note, Delhi, India.
- Suresh kumar. 2022. Bring in policy to uproot invasive weed, says high court to Tamil Nadu. The Times of India. 3rd Feb. 2022. Available at: <https://timesofindia.indiatimes.com/city/chennai/hc-to-tn-bring-in-policy-to-uproot-invasive-weed/articleshow/89309079.cms>
- Construction of first elevated community cattle shed begins, The Hindu. Available at: <https://www.thehindu.com/news/national/kerala/construction-of-first-elevated-community-cattle-shed-begins/article32930938.ece>
- Soren Govt brings scheme for cattlemen, farmers. The Pioneer. 10 February 2021 <https://www.dailypioneer.com/2021/state-editions/soren-govt-brings-scheme-for-cattlemen--farmers.html>



# Notes

A series of horizontal dashed lines for writing notes.

# Notes

A series of horizontal dashed lines for writing notes.





# ERADA

Enhancing Rural Resilience through  
Appropriate Development Actions

FOR A **GOLDEN** TOMORROW

Deutsche Gesellschaft für  
Internationale Zusammenarbeit  
(GIZ) GmbH

A2/18 Safdarjung Enclave  
New Delhi-110029 India

T: +91-11-49495353  
E: [info@giz.de](mailto:info@giz.de)  
[www.giz.de/india](http://www.giz.de/india)