A STUDY ON

IMPACT OF LIVESTOCK ON SUSTAINABLE LIVELIHOOD AMONG RURAL AREA WITH REFERENCE TO NALBARI DISTRICT, ASSAM

A dissertation submitted to the Department of Social Work in partial fulfilment of requirement for the award of the Degree of Master of Social Work



Submitted To:

Department of Social Work
MSSV, Guwahati Unit

Submitted By:

Priyanka Sarmah MSW 4th Semester

Registration No: MSSV-0023-008-001207

Roll No: MSW-24/23

Session: 2023-2025

MAHAPURUSHA SRIMANTA SANKARADEVA VISWAVIDYALAYA GUWAHATI UNIT, RUPNAGAR-781032, ASSAM 2025

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মহাপুৰুষ শ্ৰীমন্ত শঙ্কৰদেৱ বিশ্ববিদ্যালয় MAHAPURUSHA SRIMANTA SANKARADEVA VISWAVIDYALAYA

[Recognised Under Section 2(f) of UGC Act 1956]

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Department of Social Work

CERTIFICATE

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I wish her a bright future.

Dr. Deepshikha Carpenter) HOD (i/c)

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The work reported in this research has not been submitted elsewhere and the facts presented here are true to the best of my knowledge.

I wish her all the very best for her future endeavour.

(Dr. Monalisha Phukan Roy)

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DECLARATION OF ORIGINALITY

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I affirm that this research study has not been previously submitted for academic credit or publication, nor has it been copied or plagiarized in whole or in part from any other source.

I confirm that all data collected for the research study has been obtained through ethical means, and that all participants involved in the study were informed about the purpose and nature of the research and gave their informed consent to participate.

Priyarka Sarmah

A second successful appreciation goes to the Chimeter Manual Action to the Priyanka Sarmah

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ABSTRACT

Livestock plays a pivotal role in sustaining rural livelihoods, particularly in agrarian economies like India. This study explores the critical function of livestock in enhancing sustainable livelihoods among rural households in the Nalbari district of Assam. Recognizing the multidimensional nature of rural livelihoods, the researcher adopts a mixed-method approach, combining quantitative surveys and qualitative interviews with 25 livestock farmers as respondents to uncover both statistical trends and personal narratives. The analysis reveals that livestock contributes significantly to household income diversification, women's empowerment, and overall livelihood resilience. Socioeconomic variables such as education, landholding, and years of involvement in livestock activities are found to influence livelihood outcomes strongly. Complementing the quantitative data, the qualitative component employs indepth interviews and thematic analysis to delve into the lived experiences, challenges, and aspirations of rural livestock farmers. Emerging themes such as institutional support, traditional knowledge, and gender roles are identified as critical factors shaping the livestock-livelihood dynamic. Grounded in the Sustainable Livelihood Framework of Chambers and Conway, the study interprets how various forms of capital natural, physical, human, financial, and social, are influenced by livestock activities. It further examines the contributions of livestock to economic stability, food security, social status, and resilience against external shocks. By bridging empirical data with theoretical perspectives, the study not only highlights alignments and contradictions with existing global, national, and regional literature but also puts forth actionable recommendations aimed at enhancing veterinary infrastructure, improving access to rural credit, and strengthening targeted extension services. Overall, the research presents a comprehensive and holistic understanding of livestock as a dynamic force in sustainable rural development and a strategic asset for ensuring livelihood security in Nalbari, Assam.

Key words: Livestock, Sustainable livelihood, Mixed-methods, research, Rural Assam, Women empowerment, Veterinary services.

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CHAPTER I INTRODUCTION

1.0. INTRODUCTION

Livelihood is a means of living that include the capabilities and level of experience or competence that one lives at with the resources one uses to make a living. A sustainable livelihood system is one that is able to absorb shocks and stresses and recover from shocks and stresses, to enhance its capabilities and assets and to provide opportunities to the next generation, without undermining the natural resource base (Chambers & Conway, 1992). Livelihood systems of rural India are multidimensional and include based agricultural and non based agricultural activities. These include livestock rearing which plays a central role as a means of household sustenance, income diversification and resilience to external shocks. In agrarian economies like Assam, livestock is particularly important to household food and nutritional security and is an important source of economic empowerment (including market linked production as well as asset accumulation). A number of policy measures and schemes at central and state levels are introduced to strengthen the livestock sector as well as encourage the rural livelihoods. The National Livestock Mission (NLM) at national level aims at creating an overall development in livestock productivity, helping in fodder development and promotion of livestock entrepreneurship (Department of Animal Husbandry & Dairying, 2020). Other complementary programs like the Rashtriya Gokul Mission and the Dairy Entrepreneurship Development Scheme (DEDG) as well as the Animal Husbandry Infrastructure Development Fund (AHIDF) are intended to boost indigenous breeds, make the dairy sector economically viable and develop the necessary infrastructure (Government of India, 2021), respectively.

So far in Assam one recognizes the importance of livestock for its socio economic purposes and hence the state government has taken various targetted initiatives such as the Chief Minister's Flagship Programme for Self Sufficiency in Egg Production (SPEED) and the Livestock Development Mission. In order to increase local egg production, reduce dependence on imports and make the state self sufficient, these schemes are designed (Government of Assam, 2023).

The concept of sustainable livelihood provides a holistic framework for the assessment of the viability as well as the impact of such activities. A livelihood is sustainable when it can cope with and recover from stresses and shocks (resilience), maintain or enhance its capabilities and assets (robustness) and provide for fairly equitable distribution of benefits (fairness). The approach used for analyzing rural livelihoods is the Sustainable Livelihood Framework developed by the Department for International Development (DFID, 1999).

The six core principles are emphasized.

- a) People centered based on people's priorities, strengths and knowledge.
- b) Responsive and participatory promoting local participation in identifying needs and solutions.
- c) Multi-level (from the local to the national institutions).
- d) Partnered realizing that stakeholders have important roles in the conduct of solutions.
- e) Is sustainable that it has withstood the test of time, ensuring environmental, economic and institutional stability.
- f) Mobile taking into account changing livelihood systems.

Given this, the principles are particularly important to the sustainable rural development role of livestock. Household strategies, institutional support and ecological conditions influence the dynamic interaction of livestock related livelihood systems. As income sources and buffers against uncertainty they are embedded in the rural economy and critically central to any developmental discourse on sustainability.

Although animal and livestock issues are gaining more attention in regard to rural transformation and poverty alleviation, livestock as a sector is often largely overlooked in formal planning and support mechanisms. These include lack of access to feed, low level of veterinary support infrastructure and inadequate related financial services, low market connectivity and other related structural barriers to those households that keep

animals and are rural. Furthermore, awareness and access to government schemes designed to support livestock development is often much lacking at the grassroots level.

Livestock rearing is becoming an important livelihood strategy in the Nalbari district of Assam which is characterized by high rural dependence on traditional occupations. For families that have very little cultivable land, livestock serves as a portable and productive asset that produces daily economic returns and represents long—term security. Piggery, poultry, goatery and dairy farming are widely practiced in different forms, usually integrated with agriculture or as a stand alone business. Aside from creating employment opportunities such practices promote self reliance among the local rural populations.

Thus, the present study attempts to find out the effect of livestock on sustainable livelihood in Nalbari district, Assam. The initial part of all research relates to the realization that livestock provides not only significant potential for uplifting rural people out of poverty but also for reducing vulnerability and supporting inclusive growth, given supportive policies, effective participatory strategies and appropriate support systems, can be integrated in local realities.

1.1. OPERATIONAL DEFINITIONS

1. Impact

Refers to the positive changes in the lives of rural individuals as a result of engaging in livestock rearing. This includes improvements in income, financial independence, food and nutritional security, and overall well-being.

2. SustainableLivelihoods

Livelihoods that can consistently meet basic needs such as income, food, and shelter over time without depleting natural resources or limiting the ability of future generations to achieve similar well-being. It includes economic stability, environmental responsibility, and social resilience.

3. Livestock

Domesticated animals are raised by rural households for various purposes,

including the production of milk, meat, eggs, and manure, as well as assistance in agricultural activities such as plowing or fertilizing fields. Livestock serve as a vital asset in sustaining livelihoods through food, income, and agricultural support.

4. Rural Individual

Persons residing in rural areas, defined as non-urban regions, who are primarily involved in agricultural, livestock, or related income-generating activities. These individuals contribute significantly to household economic decisions and rural community dynamics.

1.2. STATEMENT OF THE PROBLEM

In India's rural economy, livestock have traditionally been a valuable asset, contributing not only to food and nutritional security but also to employment and income generation. In regions like the Nalbari district of Assam, where agriculture remains the dominant occupation, livestock farming has emerged as a key strategy to diversify income sources and stabilize livelihoods. However, despite its potential, the full benefits of livestock rearing remain constrained by structural and socio-economic challenges.

Many rural households continue to face limitations in accessing quality veterinary services, technical training, reliable market linkages, and affordable feed. While government and NGO-led programs are in place, their implementation and outreach have been inconsistent at the grassroots level. These challenges hinder the ability of rural families to fully capitalize on livestock as a tool for sustainable livelihood.

The broader context of sustainable livelihoods calls for research into how rural communities adapt to challenges, manage resources, and pursue economic well-being over time. Livestock, in this framework, represents a potential pathway to resilience and rural empowerment. However, a localized and evidence-based understanding was necessary to evaluate its real contributions and limitations.

This study addressed that gap by focusing on livestock rearers in the Nalbari district. It examined how livestock contributes to household income, economic stability, and

quality of life, and assessed the institutional and practical barriers affecting this impact. Grounded in the Sustainable Livelihood Framework, the research offered both academic insight and practical recommendations for enhancing rural development through livestock-based livelihoods.

1.3. SIGNIFICANCE OF THE STUDY

This study holds academic, policy, and practical significance. It contributes to rural development literature by applying the Sustainable Livelihood Framework to the specific context of Nalbari district, an under-researched region in northeastern India. While broader studies exist on agriculture and rural income, this research added a focused, field-based understanding of livestock's role in sustainable livelihood systems.

From a policy perspective, the findings provide valuable insights into the real experiences of livestock farmers, also highlighting what supports their success and what constraints still exist. These insights can inform government departments, NGOs, and extension workers in designing more effective programs, especially related to veterinary access, market development, and training delivery.

The study also underscored livestock's potential as a livelihood strategy for economically vulnerable households, particularly where land ownership is limited. For such families, livestock functions as a flexible, productive, and sustainable asset. By documenting these dynamics, the study contributes evidence that may be useful for scaling up inclusive and locally-adapted livestock initiatives.

Finally, the research encourages further inquiry into integrated rural livelihood models, helping to bridge academic theory and ground-level practice. It opens avenues for replication in other districts and may support policy frameworks aimed at strengthening rural economies through livestock-based development.

1.4. OBJECTIVES OF THE STUDY

The researcher uses three specific objectives to guide the direction of the study and examine the role of livestock in promoting sustainable livelihoods among rural communities in the selected area. These objectives are:

- 1. To evaluate the economic impact of livestock rearing on rural household income.
- 2. To identify challenges in livestock management and explore opportunities for improving livelihoods.
- 3. To evaluate the effectiveness of government schemes and initiatives by non-governmental organizations (NGOs) in enhancing livestock rearing practices.

1.5. RESEARCH QUESTIONS

- 1. What kind of income and employment do rural households get from livestock farming?
- 2. What are the biggest difficulties that livestock farmers have while managing their animals?
- 3. How much does government action and NGO involvement benefit the way livestock are reared?

CHAPTER II REVIEW OF LITERATURE

2.0. REVIEW OF LITERATURE

To understand the broader and localized impact of livestock on sustainable livelihoods, the researcher reviewed relevant literature encompassing international, national, and regional perspectives.

Akash, Hoque, Mondal,& Adusumilli (2022), in their chapter 'Sustainable Livestock Production and Food Security' discuss the key role of livestock in achieving global food security especially for the rural poor. Livestock provides many animal source foods rich in essential nutrients, manure for crops and income to purchase food, all of which complement crop production vital for nutrition, income and sustainable development of agriculture. Clean and safe food production, they stress, depends on adopting good management and farming practices. The chapter identifies major yield gap reduction strategies, including reduction in food waste, promotion of crop livestock integration, use of climate resilient technologies among others which improve productivity and sustainability. It also stresses empowerment of smallholders and unemployed youth through modern breeding techniques and institutional support. Livestock systems have many advantages, but, the authors warn, could expand into dangerous environmental risks such as pollution and land degradation, if not used carefully. Finally, the chapter proposes inclusive, well regulated livestock policies towards sustainable & long term food security.

Kumar et al. (2012), in their article 'Role of Livestock Sector in Sustainable Livelihood Security in Bihar: Status and Opportunities,' explore the possibility of how the livestock sector can contribute in uplifting the rural livelihoods of Bihar. The study which is based on a 2006–07 survey across nine agro-climatic districts, showed the contribution to household income from livestock, particularly dairy, is the second highest source of income, accounting for 22.39% of income in sample villages, after crop farming. Findings emphasize the economic stability livestock provides to landless and marginal farmers via contributions to income and family labor. However Bihar is still suffering from deficit with respect to the availability of livestock products despite having a substantial number of livestock because of lack

of veterinary services for animals, limited access to artificial insemination and dominance of low yielding breed. Private veterinary practitioners are recognized as playing an essential role and the importance of development of public animal health services such as veterinary extension should be expanded particularly for smallholders. Further, it speaks of rural women's role in animal husbandry and proposes inclusive development. Based on these preliminary findings the authors conclude that investing primarily in animal health care, breeding infrastructure and training will improve livestock productivity, contribute towards reducing poverty and guarantee sustainable livelihood security in Bihar.

Hegde (2023), in his article 'Livestock Development for Sustainable Livelihood of Small Farmers, 'emphasizes the essential function an livestock plays in improving food security and livelihoods for small scale farmers in creating countries. However, technical support, infrastructure and access to markets in many regions are inadequate and livestock productivity is too low. The Article has outlined a few of the key strategies for improving livestock outcomes, using global examples and Indian experiences, drawing on the need for genetic enhancement, adoption of appropriate technologies and building robust value chains to improve the livestock outcomes. Examples such as India's programs of livestock development (cattle and goat husbandry) show that empowering small livestock holders with mentorship and infrastructure development can be a powerful channel for transforming the welfare of the poor. He argues that livestock is uniquely suited to support year round employment in rural families due to its mobility and adaptability to vary climates. But if investment and supporting policies do not exist to produce the appropriate investment environment, livestock can become a liability rather than an asset. The article advocates for a livestock development that strengthens capacities of farmers and generates income. In its conclusion, it proposes that inclusive and scalable livestock initiatives are a means to develop sustainable, rural development and achieve poverty alleviation.

Millar & Photakoun (2011), in their article 'Livestock Development and Poverty Alleviation: Revolution or Evolution for Upland Livelihoods in Lao PDR?' examine the dual Role of Livestock in Rural Southeast Asia: examining the dual role of livestock as both an economic and livelihood asset in rural Southeast Asia. Aiming its attention at the case of Lao PDR which currently has limited involvement in the regional livestock market, the authors discuss how these opportunities and challenges from increasing demand for meat and live animals in bordering countries will influence poverty alleviation efforts associated with livestock intensification. Making reference to two upland provinces, their research shows that the introduction of improved forages has changed some farming communities' livelihoods in a positive way. Yet, the intervention benefits are also shown to be quite localised, particularly to the lowest income households. Uncertain impacts of shifting domestic and export markets are critically discussed as to the need of inclusive strategies that are environmentally sustainable, consider cultural practices and public health. Livestock development is not only transformative, but nonetheless must be supported though targeted support systems for its benefits to be equitable. It informs this study and presents valuable insights about the role of livestock based livelihood strategies as a revolutionary and evolutionary rural development agent in a transitional economy (Lao PDR).

Marcelino-Aranda et al. (2017), in their study 'Theoretical-Practical Bases of a Sustainable Development Model for Rural Communities with Agricultural and Livestock Activities,' present a sustainable development model tailored to the realities of rural family units involved in agriculture and livestock. Through a participatory case study approach, the authors worked closely with rural producers to identify needs and assess the socioeconomic and environmental impacts of their practices. The model incorporates traditional knowledge and contemporary strategies such as agroecology, forest grazing and fair trade with the goal of producing resilient, inclusive rural economies. Sustainable models can't promise immediate high profitability, but it is guaranteeing efficient resource use and long term ecological and social stability, the paper adds. The authors argue for a shift away

from industrial metrics of success, advocating for development that aligns with environmental integrity and social equity. This research underscores the need for transformative, locally adapted models that empower small producers and challenge prevailing unsustainable paradigms, making it a valuable contribution to rural development and sustainability discourse.

Kaasschieter et al. (2011), in their article 'Towards a Sustainable Livestock Production in Developing Countries and the Importance of Animal Health Strategy Therein, 'argue that many livestock development projects in developing countries have failed to enhance productivity or farmer welfare due to an insufficient understanding of complex production systems. Emphasizing a systems approach, the authors highlight the need to integrate animal health, nutrition, breeding, biotechnology, and resource optimization for sustainable livestock development. They stress the critical role of animal health strategies within this framework, linking them to environmental conservation, food security, and rural livelihoods. The paper identifies different strategies suited to varied livestock systemspastoral, mixed, resource-poor, and commercial and underscores that sustainability depends on tailoring interventions to specific socio-economic and ecological contexts. Importantly, it calls for long-term government commitment, supportive legislation, and a shift away from unsustainable subsidies. It also emphasizes the interdependence of farming systems, urging that animal health be seen not in isolation but as part of a broader development and institutional agenda. This study provides essential insights into how sustainable livestock production must be planned, managed, and supported to align with global food security and environmental goals.

Ali (2007), in the article 'Livestock Sector Development and Implications for Rural Poverty Alleviation in India,' provides an in-depth analysis of the multifaceted role of the livestock sector in enhancing the socio-economic conditions of rural households in India. The study emphasizes that livestock rearing significantly contributes to income equity and poverty reduction, particularly because livestock

ownership is more evenly distributed among rural populations than land. Over 70% of rural households in India own livestock, with a large proportion comprising small, marginal, and landless farmers. Notably, small animals such as goats, sheep, pigs, and poultry are preferred by the land-poor due to their low capital requirements and operational costs. The paper highlights the growing demand for livestock-based products, driven by rising incomes, urbanization, changing food preferences, and increased nutritional awareness. This trend positions livestock as a potential engine for future agricultural growth and export income. Ali analyzes data on livestock population, production, employment, and trade, indicating that the sector contributes around 6% to India's GDP and 25% to its Agricultural GDP. Regression analysis further confirms that growth in livestock income has a more substantial effect on rural poverty reduction compared to other sectors. However, the study warns of a concerning decline in livestock holdings among landless households, who represent 32% of rural India. To address this, Ali advocates for policies that ensure access to common property resources and targeted support for smallholder and landless livestock farmers. The article concludes that sustainable development of the livestock sector is crucial for achieving inclusive rural development and effective poverty alleviation in India.

Randolph et al. (2007), in their article 'Role of Livestock in Human Nutrition and Health for Poverty Reduction in Developing Countries,' provide an in-depth examination of the multifaceted contributions of livestock to the livelihoods of poor households in developing nations, emphasizing their significance beyond mere income generation. The authors argue that livestock are deeply integrated into rural household strategies, serving diverse roles such as sources of food (especially animal-source foods rich in essential micronutrients), income generation, manure for soil fertility, traction for agriculture, financial security in the absence of formal banking institutions, and symbols of social status. Importantly, the paper focuses on how livestock contribute to human capital by improving nutrition and health key prerequisites for lifting households out of poverty. However, they also identify major gaps in how livestock-related development programs are currently conceived and

implemented, noting that many such efforts prioritize productivity-enhancing technologies without sufficient regard for the local socioeconomic context, informal markets, and public health challenges such as zoonotic diseases and foodborne illnesses. The authors critically analyze misconceptions surrounding livestock interventions and underscore the need for integrated, context-specific approaches that combine veterinary and public health efforts, particularly given the weak institutional support in many developing countries. They advocate for a systemsthinking perspective that incorporates environmental, economic, and social dimensions into livestock research and development initiatives, aiming to maximize the role of livestock in achieving long-term, sustainable poverty reduction. The paper concludes with a strong call for cross-sectoral collaboration, empirical research, and institutional innovation to enhance the design and delivery of livestock-based interventions that genuinely improve human well-being and food security among the poor.

Bori & Das (2023), in their study 'Farmers' Awareness and Perception of Sustainable Agricultural Practices: A Case of Integrated Livestock-Fish Farming System in the State of Assam, India,' investigate the extent to which farmers in Assam comprehend and engage with integrated livestock-fish farming as a sustainable agricultural approach. The research adopts an exploratory and descriptive design, evaluating farmers' awareness across technical, economic, and environmental dimensions of the system using yes/no (true/false) responses, and gauging perception through a pretested standardized scale. Findings reveal that farmers exhibit high levels of awareness, especially regarding the economic advantages of the system. Many perceive integrated livestock-fish farming as a promising opportunity for self-employment and livelihood improvement. The study further identifies age, education, farming experience, pond size, and extension contact as key variables influencing both awareness and perception. A positive and statistically significant correlation between awareness and perception suggests that enhancing farmer knowledge can improve adoption and practice of sustainable farming systems. The authors emphasize that such systems not only promote

ecological sustainability through efficient recycling of farm waste but also contribute to socio-economic upliftment in rural areas. This research provides valuable insights into how integrated farming practices can be effectively promoted through targeted capacity building and extension interventions, especially in regions like Assam where traditional farming systems are gradually transitioning toward more sustainable models.

Vijayalakshmy et al. (2023), in their article 'The Role of Rural Indian Women in Livestock Production, 'highlight the pivotal role played by rural women in India's livestock sector, a key component of agricultural livelihoods. The authors emphasize that women constitute the backbone of livestock management, especially among tiny, marginal, and landless farming households, who collectively own over 70% of the country's livestock. At household level women are engaged in a wide variety of activities in relation to livestock feeding and watering as well as healthcare, animal supervision, milking, processing animal product within the household, hence contributing significantly to economic and nutritional value for rural households. Although it is rural women that contribute so much, they are hardly involved in crucial decision making with regard to livestock resources in such a way that they can at least have some agency and control over the same resources. Livestock is not just a food but a non-land productive asset that is essential to household food security and also women's economic independence, the study says. However, structural barriers such as limited access to training, extension services, financial support, and land rights hinder women's full participation and recognition in the livestock economy. The authors call for targeted interventions to address these challenges through inclusive policies, skill-building programs, and enhanced institutional support. By recognizing and investing in women's roles in livestock, the sector can be a powerful vehicle for poverty alleviation, gender empowerment, and sustainable rural development in India.

Das (2017), in her study 'Transition in Ethno-Cultural Livestock Preferences among Farmers in Kamrup (Rural) District of Assam, 'explored how traditional livestock

rearing practices have undergone transformation in response to socio-cultural, economic, and ecological changes. The study was conducted on four developmental blocks Bejera, Hajo, Rangia and Boko, where total 100 randomly selected farmers having milch cow were included to study. Research used a pre-tested interview schedule to investigate various aspects including personal profile of farmers, traditional livestock types, ethno cultural values assigned to these livestock and observed changes in livestock preference vis a vis last generation livestock preference and factors leading to such changes. Findings revealed that cattle remained the most preferred livestock (40.83%), primarily due to their utility in agriculture and manure production, while pigs, goats, and buffaloes had varied levels of preference based on cultural associations. The majority of respondents belonged to the middle age group, had medium herd sizes, and derived modest income from livestock. Educational qualification, landholding, and social participation significantly influenced livestock preference and income levels. The study also found that herd size increased statistically significantly during five years and therefore sheep dependency in terms of livestock increased. Therefore, regression analysis was performed which showed that family size, occupation, extension contact and risk orientation were statistically significant predictors of livestock rearing purpose.. The findings underscore a notable shift in ethno-cultural attitudes towards livestock, with modern factors like income diversification and exposure to extension services playing a key role in altering traditional preferences. This study is critical in understanding how livelihood strategies in Assam are being redefined through evolving livestock practices, and how cultural legacies interact with economic rationality in shaping sustainable rural livelihoods.

Enahoro et al. (2019), in their study 'Supporting sustainable expansion of livestock production in South Asia and Sub-Saharan Africa: Scenario analysis of investment options,' examine the potential impacts of strategic investments in the livestock sector within two critical regions South Asia and Sub-Saharan Africa. Through scenario analysis using a multi-market model projected to 2050, the study evaluates the outcomes of technology-focused and market-improving interventions. The

findings reveal that boosting livestock productivity through targeted investment in genetics, feed efficiency, and animal health can simultaneously enhance food security, raise rural incomes, and limit greenhouse gas emissions and water usage. However, market-improving strategies, though beneficial in terms of welfare, may cause adverse environmental consequences if not accompanied by mitigating policies. The authors highlight how externalities management require the integrated complementary investments and policy frameworks. Further, the study argues for the integration of nutritional, public health and food safety dimensions into livestock development strategies. Enahoro et al. proposes a region specific investment approach that can achieve multiple sustainable development goals in a balance. By viewing livestock sector development from a systems perspective, the research links broader global development priorities with their linkages to livestock and provides a nuanced view of how carefully designed livestock sector interventions can contribute to global development goals while being environmentally and socially sustainable.

Thorne and Conroy (2017), in their chapter 'Research on Livestock, Livelihoods, and Innovation,' provide a comprehensive overview of participatory research approaches in livestock development, emphasizing its role as a complement to traditional, technology-driven research. The authors explore how participatory methods generate context-specific and user-focused solutions, particularly relevant to smallholder farmers in least developed countries (LDCs). Livestock in these settings perform multiple roles beyond food production, including providing draught power, organic manure, and contributing to household income stability. The chapter stresses that livestock are intricately integrated into smallholder farming systems, making research approaches that recognize these interlinkages essential. Thorne and Conroy challenge the often overemphasized negative environmental narratives associated with livestock by suggesting that well-managed systems can lead to beneficial ecological outcomes. As livestock populations are projected to increase in LDCs, the authors underscore the necessity for ongoing, participatory research that focuses on improving productivity while ensuring environmental sustainability.

They advocate for research frameworks that are holistic, inclusive, and aligned with the needs of smallholder communities. This chapter contributes significantly to understanding how innovation in livestock research must adapt to local realities and priorities for achieving sustainable livelihoods and development.

Rajkumar et al. (2021), in their study 'Backyard poultry farming for sustained production and enhanced nutritional and livelihood security with special reference to India: A review, 'provide a detailed examination of backyard poultry farming (BYPF) in the Indian context. The review traces the historical roots of BYPF as a traditional practice and explores its transformation into a high-potential livelihood strategy. Contributing approximately 17.8% to the country's total egg production, BYPF is shown to play a vital role in alleviating rural poverty, enhancing nutritional security, empowering women, and providing employment in underserved areas. The authors classify BYPF into four categories: traditional, small-scale rural, small-scale intensive, and native chicken farming. They thoroughly discuss breeding approaches, nutritional practices, housing systems, and healthcare management techniques that influence productivity and sustainability. Additionally, the study elaborates about the growing taste for backyard poultry products across India which offers a great scope for the business to expand this model further. BYPF has low input requirements and high social acceptability such that they are viewed as a key enabler of sustainable rural development. The review ends with an emphasis that with strategic support and policy interventions, backyard poultry can contribute significantly to increasing rural livelihoods and national food security.

Khan (2010), in his study 'Livestock Husbandry in India: A Blessing for Poor,' examined the crucial role of livestock in enhancing the livelihood security of the rural poor across India. The study emphasized how livestock rearing serves as a vital economic activity for marginal and smallholder farmers by offering a reliable source of food, income, and farm labor support. Khan structured his research into well-defined academic sections, including objectives, methodology, results, and conclusion, allowing for a comprehensive analysis of the contribution of livestock

to rural life. Livestock played multiple roles providing milk, meat, manure, draught power and being a form of financial insurance when needed. Moreover, it demonstrated the potential of livestock activities to be high return, low investment activities which offered great opportunity for the resource poor farming community. But the paper also found that livestock productivity is hampered by such major constraints as inadequate veterinary services, inadequate feed resources and poor access to markets. Khan ended with calls for veterinary care, market infrastructure and farmer training policy reforms. It was overall a study in which livestock husbandry is presented as a powerful tool of poverty alleviation and sustainable rural development in India.

Barua et al. (2021), in their study 'Sustainable value chain approach for livestockbased livelihood strategies for communities of the southeastern coast of Bangladesh,' present an in-depth analysis of how livestock-based livelihood strategies, particularly goat rearing, are instrumental in sustaining the socioeconomic fabric of marginalized coastal communities. The authors highlight that livestock, especially goats often referred to as the "poor man's cow" serve not only as a vital source of nutritious and easily digestible milk but also as a steady incomegenerating asset for poor, landless, and marginal farmers. The study emphasizes the significant role of women in managing goats, which requires low capital investment, minimal infrastructure, and simple care practices, making it highly compatible with rural household structures. The research underscores the contribution of goat farming to food security, nutritional support, and financial stability, particularly among women who are able to participate actively in household income generation while staying at home. The paper further analyzes the livestock value chain in these coastal areas, outlining the existing marketing channels and identifying gaps in fair pricing, coordination, and market access. It proposes a sustainable value chain framework that includes strengthening private and public partnerships, reducing governance imbalances, addressing financial and institutional constraints, and ensuring equitable market environments. The study of the authors suggests that transforming livestock farming to become a powerful tool for poverty eradication

and climate change adaptation in vulnerable coastal regions, requires a well structured, responsive and a coordinated value chain. Formalizing financial systems, improved farming systems, appropriate institutional monitoring and linkage of stakeholders are advocated as key areas for competitiveness, profitability and long term viability of livelihoods in livestock. According to the study, rural household income, food security and socio economic development can become real and sustainable only through integrated value chain sustainability in the context of Bangladesh's coastal zone characterized with socio political and environmental challenges.

Misra et al. (2009), in their study 'Improving Dairy Production in India's Rainfed Agroecosystem: Constraints and Strategies,' investigate the challenges and opportunities within smallholder dairy production systems in India's rainfed regions, which constitute 68% of the country's cultivated area and support a significant portion of both human and livestock populations. Utilizing a participatory systems approach that combines diagnostic surveys with participatory rural appraisal techniques, the authors delve into the complexities of traditional dairy systems shaped by socioeconomic factors and the availability of feed resources. The study identifies critical constraints to productivity, including the scarcity and poor quality of feed and fodder, limited access to timely inputs and veterinary services, and inadequate capital and market linkages. These factors collectively hinder the productivity of dairy animals, resulting in low milk yields and restricted income generation potential for farmers in rainfed agroecosystems. Misra et al. argue that effective dairy development in these regions depends heavily on active farmer participation in designing and implementing interventions tailored to local conditions. The study further stresses the necessity of creating a conducive policy environment that facilitates access to microcredit, reliable veterinary care, and assured market opportunities to overcome socioeconomic and technical barriers. The authors recommend conducting animal health camps and on-farm trials to promote awareness and adoption of improved dairy management practices. Overall, the research highlights the multifaceted nature of dairy production challenges in

rainfed areas and provides a roadmap for sustainable enhancement of livelihoods through integrated, participatory approaches and supportive institutional frameworks.

Roy et al. (2021), in their study 'The Patterns of Livestock Products Consumption in India: A Recent Trends and Future Prospects, 'explore the evolving consumption and production trends of livestock-based products in both rural and urban India. The authors identify a significant structural shift in dietary preferences from staple cereals to high-value commodities (HVCs), prominently including milk, meat, and other livestock-derived products. This transformation, driven by rising income levels, urbanization, market development, and infrastructural improvements, reflects a broader diversification within Indian agriculture. The study emphasizes that the livestock sector, which contributes approximately 6% to the national GDP and 25% to the Agricultural GDP, has shown a higher annual growth rate (5.6%) compared to the overall agricultural sector (4%). This underscores livestock's emerging role as a key engine of agricultural and rural economic growth. The authors argue that India's domestic supply of livestock products may struggle to meet the rapidly increasing demand, especially for milk and milk products, which dominate consumption patterns. The paper's supply-side analysis reveals that technological progress, particularly in production, processing, and value addition, will be instrumental in achieving a "livestock revolution." High expenditure elasticity for livestock products indicates a favorable environment for sectoral expansion, especially in light of continued income growth and changing dietary behavior. To sustain this momentum, the authors recommend policies that enhance fodder supply, ensure remunerative pricing, and prioritize investments in technological upgrades across the livestock value chain. This study offers valuable insight into how livestock development is poised to play a transformative role in India's agricultural future.

Das et al. (2020), in their comprehensive review 'Present Scenario and Role of Livestock Sector in Rural Economy of India: A Review,' explore the multifaceted

contributions of livestock to rural livelihoods, poverty alleviation, income distribution, and socio-economic development in India. The study highlights that livestock is a vital component of farming systems, particularly among marginal and smallholder farmers more than 62% of whom are directly engaged in livestockrelated activities. The authors emphasize that households involved in livestock rearing are less likely to fall into poverty due to the sector's ability to generate sustainable income and provide nutritional security, especially through the consumption of dairy and poultry products. An important finding is the livestock sector's role in reducing income inequality; this is evidenced by the declining Gini coefficient for livestock ownership, which dropped from 0.16 in 2006–07 to 0.09 in 2011–12 contrasting sharply with land ownership's persistent inequality. The paper underscores that livestock ownership is more equitably distributed than land and is becoming increasingly inclusive, providing economic opportunities marginalized groups, including landless laborers. The review also identifies key factors influencing livestock adoption, such as farmers' experience, occupation, landholding size, labor availability, and socio-economic variables including access to credit, media exposure, and social group membership. Livestock also plays a significant role in integrated farming systems, offering solutions to sustainability issues when properly linked with crop production. The study suggests that livestock can function as a form of social and economic insurance in rural areas, making it a resilient livelihood strategy. With increasing livestock populations and growing demand for animal-based products, the sector holds substantial promise for enhancing rural income and reducing vulnerability. Furthermore, government initiatives, such as those by NABARD and other rural development programs, have been instrumental in supporting livestock-based livelihood strategies, emphasizing the importance of policy support and institutional backing for sectoral growth.

Birthal & Taneja (2012), in their paper 'Operationalizing the pro-poor potential of livestock: Issues and strategies,' discuss the significant role of livestock in enhancing the livelihoods of the rural poor in India. The authors emphasize that livestock contributes about one-fourth of the agricultural Gross Domestic Product

(GDP) and has consistently grown faster than the crop sector. The study has a key highlight that livestock resources are more equally distributed than land and are becoming increasingly concentrated among the small and marginal landholders making the sector particularly suited for poverty reduction. With urbanization, the rising incomes and the changing food preferences, there is demand for animal based food products which is yet to be tapped to harness the pro poor potential of this sector. According to the study, India's livestock productivity is still far behind of the developed countries. For instance, while the average annual milk yield of a cow in India is 1.2 tons, it is substantially higher in countries like the USA (9.3 tons) and Israel (10.2 tons). Additionally, productivity growth rates have been declining over the years across all major livestock categories. To reverse this trend and fully operationalize the poverty-reducing potential of the livestock sector, the authors argue for comprehensive investments in technological advancements, particularly in areas such as genetic improvement, animal health, and feed and nutrition. Furthermore, strengthening institutional frameworks, infrastructure, and service delivery mechanisms is crucial to enabling smallholders to benefit from emerging market opportunities. The study provides a strategic roadmap emphasizing that enhancing productivity, coupled with equitable access to resources and services, is essential to realizing the livestock sector's potential for inclusive and sustainable rural development.

Njuki et al. (2011) in their study 'Gender, livestock and livelihood indicators' aimed to establish a set of standardized indicators to monitor and assess the role of livestock in livelihood systems, with particular focus on gender-disaggregated data. Conducted by the International Livestock Research Institute (ILRI), the research utilized a comprehensive review and synthesis of existing surveys and livelihood assessment tools, framed within the Sustainable Livelihoods Framework. The study emphasized livestock's role as both a productive asset and a pathway out of poverty. It proposed indicators related to asset ownership, productivity, income, and welfare—highlighting the importance of capturing gender-specific ownership of livestock to assess household welfare, bargaining power, and developmental

outcomes. The guide also stressed the need for consistent application of these indicators in baseline surveys, evaluations, and impact assessments to improve comparability across projects. A major finding was that ownership and control of livestock by women have strong links with improved education, nutrition, and economic outcomes, and that livestock assets serve as a more stable welfare indicator than income.

Joshi (2021) conducted a study 'Multidimensional Analysis of Veterinary Clinical Care Practices Towards Development of a Mobile App,' aiming to analyze the current veterinary clinical care practices to inform the creation of a mobile application for improved service delivery. The research adopted a multidimensional approach, examining the livestock sector's role in India's economy, challenges in livestock productivity, and the delivery of veterinary services. The study showed that although India has a large livestock population responsible for a considerable portion of the agricultural GDP and rural livelihood, productivity is very low because of the poor management, indiscriminate breeding and feed shortage, lack of awareness and inefficient veterinary services. Veterinary care was, however, underscored as key to increasing livestock productivity and that the public sector is the main provider of these services particularly for large animals. Based on the findings, it is apparent that several challenges can be addressed through technological innovations such as Mobile apps in supporting the delivery of veterinary services and thereby assist livestock owners, especially small and marginal farmers, to maximize livestock productivity and income.

CHAPTER III RESEARCH METHODOLOGY

3.0. INTRODUCTION

Research methodology refers to the systematic framework used to conduct a study, involving the selection of suitable approaches for gathering, analyzing, and interpreting data in relation to the research objectives. For this study, the researcher has employed a mixed methods approach, which integrates both quantitative and qualitative strategies to ensure a comprehensive exploration of the impact of livestock on sustainable livelihoods in rural areas.

This methodological choice allows for the combination of numerical data with contextual insights, capturing both general patterns and deeper socio-economic dynamics. The quantitative aspect provides measurable evidence on livelihood factors, while the qualitative aspect contributes a nuanced understanding of the lived realities of livestock farmers.

By integrating both types of data, the study ensures a balanced analysis, quantitative data offers general trends and patterns, while qualitative data adds depth and context. This combination enhances the reliability and validity of the research findings and offers a holistic perspective on how livestock contributes to sustainable livelihoods in the study area.

3.1. THEORETICAL FRAMEWORK

A theoretical framework helps guide research by offering a structured way to understand the relationships between key concepts. For this study, the researcher has adopted the Livelihood Approach developed by *Chambers and Conway (1992)*, which serves as the core foundation. This is supported by the Sustainable Livelihood Framework (SLF), which builds upon the livelihood perspective to analyze how rural households manage resources and strategies for survival.

a) Livelihood Approach (Chambers & Conway, 1992)

The Livelihood Approach was introduced by Robert Chambers and Gordon Conway in 1992 to describe how people make a living, especially in rural areas. They define a livelihood as:

"The capabilities, assets (including both material and social resources), and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base."

This approach emphasizes that livelihoods are not just about income, but also about well-being, security, and sustainability. In rural contexts like Nalbari District, where livestock plays a central role in people's daily lives, this approach helps to assess how different forms of capital, such as livestock as a natural and financial asset, contribute to livelihood outcomes like food security, income stability, and resilience to economic shocks.

The strength of this approach lies in its people-centered nature. It focuses on how rural households use their available resources, adapt to changes, and interact with the broader institutional and policy environment. It encourages development strategies that are participatory, locally appropriate, and sustainable in the long term.

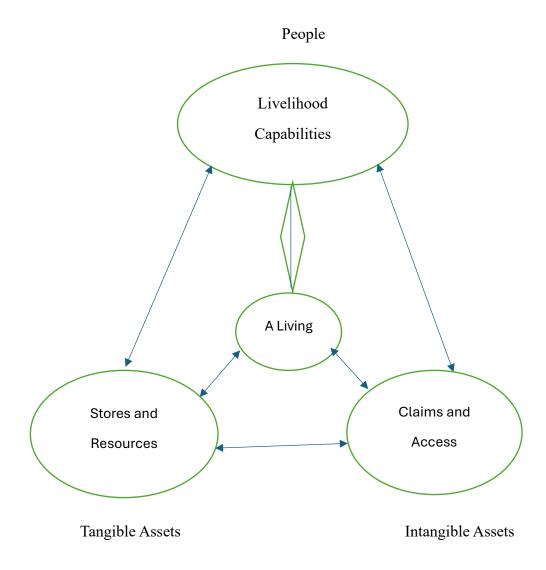


Fig:3.1. Livelihood Approach (Chambers & Conway, 1992)

b) Sustainable Livelihood Framework (SLF)

To operationalize the Livelihood Approach, the Sustainable Livelihood Framework (SLF) provides a detailed model for analysis. The SLF includes five main components:

- 1.Livelihood Assets Human, natural, financial, social, and physical capital that households depend on.
- 2. Vulnerability Context External shocks, trends, and seasonality that affect livelihood security (e.g., livestock disease, market fluctuations).
- 3.Transforming Structures and Processes Institutions, policies, laws, and culture that shape access to resources and services.
- 4.Livelihood Strategies Activities households engage in to meet their needs, such as livestock rearing or crop farming.
- 5.Livelihood Outcomes The goals people strive for, including increased income, food security, reduced vulnerability, and sustainable use of resources.

Together, the Livelihood Approach and SLF provide a holistic and flexible tool to assess how livestock impacts rural livelihoods. They are particularly relevant for this study as they allow for understanding the dynamic interplay between resources, institutions, risks, and outcomes in the lives of livestock farmers in Nalbari.

3.2. UNIVERS OF THE STUDY

The universe of the present study comprises the rural areas of Nalbari District in the state of Assam, India. Nalbari is primarily an agrarian district, where a significant portion of the rural population is engaged in farming and livestock rearing as a means of livelihood. The region is characterized by fertile land, availability of natural resources, and a strong dependence on agriculture and allied sectors, particularly livestock, for economic sustenance.

The study focuses specifically on livestock farmers residing in various parts of the Nalbari District. These areas have been selected because of their active involvement in animal husbandry, which plays a crucial role in ensuring food security, income generation, and resilience against livelihood shocks. The socio-economic and geographical setting of the district makes it an appropriate location for examining how livestock contributes to sustainable livelihoods in rural communities.

By selecting Nalbari District as the universe of the study, the researcher aims to capture a realistic picture of the challenges and opportunities associated with livestock-based livelihoods in a rural Indian context.

3.3. RESEARCH DESIGN

Research design refers to the overall framework that outlines how a study is conducted, including the selection of research methods, data collection procedures, and strategies for analysis. It serves as a blueprint to ensure that the research is carried out systematically and effectively to address the research objectives.

For this study, the researcher has adopted a mixed-methods research design, incorporating both qualitative and quantitative approaches. A concurrent design has been used, where both types of data, qualitative and quantitative, were collected during the same period but analyzed independently. This approach allows the researcher to explore different dimensions of the research topic without merging the two datasets, offering both statistical insights and contextual understanding from separate perspectives.

3.4. SAMPLING PROCEDURE

Sampling procedure refers to the way participants are chosen from a larger group to take part in a research study. In this study, the researcher followed a mixed sampling method to suit the mixed methods research approach.

For the quantitative aspect, a probability sampling technique was used. Specifically, simple random sampling was applied so that every individual had an equal chance of being selected. This helped to reduce bias and improve the overall accuracy of the data.

In the qualitative part of the study, non-probability sampling was used. Here, purposive sampling was chosen to include participants who have relevant experience and knowledge about livestock and rural livelihoods.

Using both sampling techniques allowed the study to gather a wide range of data—quantitative data helped to identify patterns, while qualitative insights added depth and meaning to the findings.

(i) Simple Random Sampling

Simple random sampling is a probability sampling method in which each individual in the population has an equal chance of being selected. This technique ensures fairness and reduces selection bias, making the data more representative of the larger group. In this study, the researcher used simple random sampling to collect data from livestock farmers for the quantitative part of the research, allowing for generalizations based on measurable indicators.

(ii)Purposive Sampling Purposive sampling is a non-probability technique where participants are selected intentionally based on their knowledge, experience, or relevance to the research topic. For the qualitative part of this study, purposive sampling was used to engage livestock farmers who could provide in-depth insights into the challenges, practices, and livelihood strategies related to livestock farming. This method helped capture meaningful information that supports the study's objectives.

3.5. SAMPLE SIZE

Sample size refers to the number of participants selected from the overall population to represent the group for data collection and analysis. It is influenced by factors such as the scope of the study, the nature of the research problem, the sampling method employed, and the resources available to the researcher. In this study, the researcher selected a total of 25 respondents. This sample size was considered adequate to obtain meaningful insights and draw conclusions regarding the role of livestock in sustainable livelihoods among rural communities.

3.6. METHOD OF DATA COLLECTION

The study utilized both primary and secondary sources for data collection. Primary data was collected directly from livestock farmers in the Nalbari district, who were the main respondents for this research. Two tools were used to gather this information: a structured questionnaire and an interview schedule. The questionnaire provided measurable data, while the interview schedule offered deeper insights into the lived experiences and livelihood strategies of the farmers.

Secondary data was collected from various journals and reports to support the analysis and provide a broader context for understanding the role of livestock in sustainable rural livelihoods.

3.7. TOOLS FOR DATA ANALYSIS AND INTERPRETATION

Tools for data analysis and interpretation play a vital role in transforming raw data into meaningful insights. They help the researcher to systematically process and make sense of the information collected during the study. In this research, both qualitative and quantitative data were analysed using appropriate methods.

For qualitative data, thematic analysis was used to identify recurring themes and patterns from the responses. This method involved reading through the data, coding significant points, and organizing them into key themes related to the role of livestock in rural livelihoods.

Quantitative data was analysed using Microsoft Excel. The data was organized into tables, basic statistical calculations were performed, and visual representations such as charts and graphs were created to show trends and comparisons.

By combining these tools, the study ensures a well-rounded interpretation that highlights both numerical trends and deeper contextual insights.

3.8. ETHICAL CONSIDERATION

Before initiating the data collection process, the researcher ensured that informed consent was obtained from all participants. The respondents were given a clear

explanation of the study's objectives, the nature of their involvement, and their right to voluntarily participate or withdraw at any stage without any consequences.

Confidentiality of all personal information shared during the study was strictly upheld. The data collected was used solely for academic purposes, and no information was disclosed to any third party without the explicit permission of the participants.

The study was conducted with respect to the cultural values, traditions, and practices of the livestock farming communities in Nalbari district. The researcher remained mindful not to cause any distress or harm to the participants and took necessary steps to minimize any potential discomfort during interviews or discussions.

3.9. LIMITATIONS OF THE STUDY

- 1. The findings of this study are specific to livestock farmers in the Nalbari district and may not be generalized to other regions or farming communities with different socio-economic or environmental conditions.
- 2. Due to limited time and resources, the study was conducted with a sample size of only 25 respondents, which may not fully represent the entire farming population of the district.
- 3. The accuracy of the collected data might be influenced by the respondents' memory, willingness to share information openly, or possible hesitation in disclosing personal or financial details related to livestock practices.

3.10. INCLUSION AND EXCLUSION CRITERIA

• Inclusion Criteria

- 1. Researchers will pay attention to rural households in the Nalbari District of Assam that are actively raising livestock, such as through rearing pigs, chickens and eggs, milking cattle, looking after dairy herds, keeping goats, and raising ducks.
- 2. Those households that depend on livestock for their income, food, or important resources will be reviewed.

- 3. People personally and directly active in raising livestock, both men and women, will be included as participants by the researcher.
- 4. Farmers who are part of or have gained help from livestock development schemes run by government bodies or NGOs will also join the study.

• Exclusion Criteria

- 1. The study population does not include any households that do not engage in livestock rearing.
- 2. People living in the urban or semi-urban areas of Nalbari will not be included in this study.
- 3. Any household involved only in agricultural crop production and not in livestock farming will not be considered.
- 4. Those who are not actively responsible for handling the animals in the business, including family members, will be excluded.

CHAPTER IV ANALYSIS AND INTERPRETATION

4.0. INTRODUCTION

Data analysis and data interpretation is the examination and explanation of qualitative and quantitative data in a study to make meaningful conclusions of it.

In this section, statistical trends, patterns and correlations from feedback received from livestock farmers in Nalbari district are explained using questionnaire data.

Age: Researcher added age to investigate the way livelihood patterns and livestock dependence differ between various age groups.

Table: 4.1

Age Group (in years)	No. of Respondents	Percentage
25–30	2	13.3%
31–35	3	20.0%
36–40	4	26.7%
41–45	4	26.7%
46 and above	2	13.3%
Total	15	100%

INTERPRETATION

Data in the table also shows that the majority of respondents fall into the age category 36–40 years and 41–45 years which consist of 26.7% each. Next 20% belong to the age of 31–35 years. The 25–30 years age group (younger) and 46 and above (older) groups contain only a small percentage of participants, both (13.3 percent) of the total. Livestock involvement is therefore predominantly found amongst middle aged individuals mostly ranging between 31 and 45 years who, alongside a family, may have been engaging in livelihood activities (e.g. livestock keeping) for a longer rather than shorter period.

Sex: Researcher included sex to examine gender-based differences in livestock ownership, roles, and contribution to household livelihood.

Table:4.2

Sex	No. of Respondents	Percentage
Male	9	60.0%
Female	6	40.0%
Total	15	100%

INTERPRETATION

Table than half of the respondents or 60% are male, while 40% are female, according to the table. It achieves a gendered participation in livestock activities, reflecting that men are more likely to be doing more livestock activities or more likely to be reported as main respondents on livestock activities. However, the other important finding is that the presence of 40% female participants also indicates that women do play a noticeable role in livestock rearing but such role has often not been recognized in rural economic activities.

Family: The researcher included family to assess how family size and structure influence livestock rearing and its role in sustaining household livelihoods.

Table:4.3

No. of Family Members	No. of Respondents	Percentage
3	1	6.7%
4	5	33.3%
5	5	33.3%
6	3	20.0%
7	1	6.7%
Total	15	100%

INTERPRETATION

The data shows that 33.3% of the respondents each have either 4 or 5 family members, making these the most common family sizes. A smaller proportion of families (20%) consist of 6 members, while only 6.7% have either 3 or 7 members. This suggests that medium-sized families are prevalent among the study participants, potentially indicating a balanced household size conducive to managing both domestic and economic activities such as livestock rearing. It may also reflect socio-economic conditions typical of the rural population.

Years of involvement with livestock activities: Researcher included years of involvement with livestock activities to test the relationship between experience and the effectiveness or contributions (livelihood) of livestock.

Table:4.4

Duration (in years)	No. of Respondents	Percentage
0–3 years	5	33.3%
3–6 years	7	46.7%
6–9 years	3	20.0%
Total	15	100%

INTERPRETATION

According to the table, the highest percentage of respondents (46.7%) reported being involved in livestock activities for 3–6 years, indicating a moderately experienced group. This is followed by 33.3% who have up to 3 years of experience, suggesting a considerable portion of relatively new entrants into the livestock sector. Meanwhile, 20% of the respondents have 6–9 years of experience, representing a more experienced segment. These findings reflect a broad range of involvement levels, with a notable trend toward increasing participation over recent years, possibly due to growing livelihood dependence on livestock-related income.

Percentage of Respondents

Above 80%

0-20%

20-40%
50%

20-40%
50%

■ 0-20%
■ 0-20%
■ Above 80%

Figure 4.5: Total household income from livestock.

The pie chart showed that half of the respondents (50%) get 20 — 40% of their total household income from livestock as a secondary income source, as the pie chart shows. However, 37 percent of households secure 60–80 percent of their income from livestock, while 13 percent are dependent upon more than 80 percent of their income from livestock. Most importantly, none of the respondents earned less than 20% from livestock which means that livestock is used by every household, to some extent. Livestock in Nalbari district is therefore shown to be an important contribution to rural livelihoods and the potential exists for further development of this sector as a contribution to more secure incomes.

TYPES OF LIVESTOCK 45 40 35 30 26.7 25 20 20 ■ Percentage 20 15 10 6.7 6.7 5 0 Cattle Goat Pig Poultry Duck Others

Figure 4.6: Types of livestock owned.

Interpretation

The table shows the distribution of different types of livestock owned by the respondents are schematically listed on the table. Forty percent of respondents stated goats as the most common of all the animals to own. This implies that goat rearing might be easier or, then, more profitable, locally than poultry rearing because of lower maintenance requirements and faster returns. With 26.7%, poultry (chickens) is mentioned most next in line as a second source of income or food. About 20 percent of the respondents each own pigs and ducks, reflecting quite a significant presence after all these years. Among other types of livestock are cattle as the least common (6.7%) with each named by only 6.7% of respondents. Perhaps this is down to the cost of upkeep or labor demanded by these. Others were also notable: some respondents had more than one type of livestock and this suggests a possible diversification strategy for maximizing income as well as reducing rural livelihood risk.

Percentage

Below ₹5000 ■ ₹5000-₹10,000 ■ ₹10,000-₹15,000 ■ Above ₹15,000

Figure 4.7: Average monthly income from livestock.

Interpretation

The data showed that a good percentage of respondents earn a medium monthly income from livestock activities. Of all the participants, more than half of them (53.3%) came from an income bracket of ₹5000 - ₹10,000; this suggests that livestock provides income to many households as a supplementary or regular (stable) income source. Some 40 per cent of all livestock farmers can afford ₹10,000 to ₹15,000 per month which means livestock provides a major share of family earnings for a good number of households. The group showed earning in high income level from livestock was less common, with only one respondent (6.7%) earning more than ₹15,000 per month. Surprisingly, all of the respondents made above ₹5000 and this may be attributable to an increase in livestock productivity or use of good management practices among the participants. The economic role of livestock as a consistent source of livelihood is shown in the overall income distribution.

Livestock Product OTHER LIVE ANIMALS 100.00% **MANURE** 13.30% **EGGS** 13.30% 66.70% **MEAT** MILK 0.00% 20.00% 40.00% 60.00% 80.00% 100.00% 120.00% Percentage

Figure 4.8: Livestock products sell.

The data showed live animals appear to be the most widely sold livestock product among respondents, with all the 15 participants (100 percent) selling live animals. This means that the sale of animals, not just their by products is a major income generating activity in the community. The second most frequently mentioned product is meat with 66.7% of the respondents selling meat, but this is related to the availability or strong demand of meat from livestock like goats and pigs and chicken. Of the 13.3 percent of these respondents who sell eggs and manure, the larger items are also used, but with less emphasis towards commercial production. As for products, just one respondent sold milk and another other product (6,7%). This study found that livestock mainly serves for direct sale, mainly in the form of live animals and meat, while sales of milk, eggs and manure are minor proximate uses in local market dynamics.

Response Percentage 100.00% 90.00% 80.00% 70.00% 60.00% 50.00% 40.00% 30.00% 20.00% 10.00% 0.00% Increased Stayed the Same Decreased

Figure 4.9: Income from livestock changed over the past 3 years.

The graph showed that livestock related income of the respondents is found to have shown very strong positive trend. A whopping 86.7 per cent said their income from livestock has gone up in the last three years. This implies that livestock activities have become more profitable or gained greater efficiency arising from better management practices, access to markets or through government and NGO support programs. Meanwhile, 13.3% of respondents said their income has remained same and 0% said it decreased. Interestingly there appears to be no negative responses relating to this time period which may indicate good times in the livestock sector in this period. Overall, the results suggest cheery economic progress for those who carry out livestock; most participants experienced cash growth.

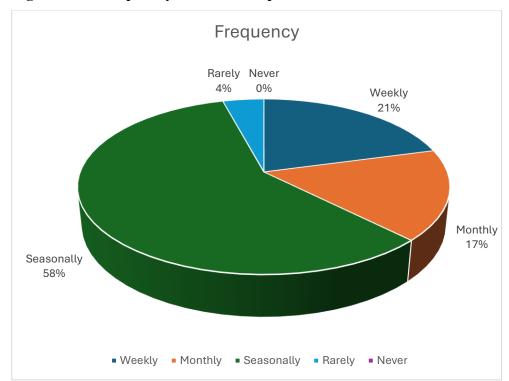


Figure 4.10: Frequently sell livestock products.

According to the data, the majority of respondents, 93.3%, are engaged in seasonal selling of livestock products. It illustrates the impact local demand pattern, festivals or agricultural ones have on marketing behavior. Of the respondents, 33.3% reported weekly sales suggesting that some livestock producers undertake regular, short term market activity. 26.7% mentioned monthly sales, employed a more structured, but less frequent approach than weekly sales. All participants were engaged in some level of market activity, with only one responding they sold rarely while none answered 'never,' confirming that all respondents are at least somewhat engaged in the market. The seasonal pattern prevailed over wide areas, annual patterns overlapped with weekly patterns and vice versa, strongly suggesting that most producers adjust their selling habits in either a flexible or demand driven fashion.

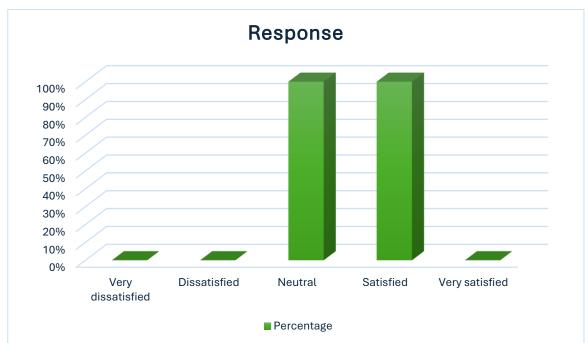


Figure 4.11: Satisfied with the price receive livestock/livestock products.

This graph is massive data collected from 15 people asked about how satisfied they are with how much they get for their livestock or livestock product and turns out most are moderately satisfied. As of these, 53.33% talked that they had no feeling for this question, whereas 46.67% were satisfied. More specifically, no respondent selected policies that fell at the extremes of the scale (i.e. very dissatisfied, dissatisfied or very satisfied) for any of the requested policies indicating very widespread lack of strong liking or disliking of any of the policies. It leaves us with the distribution that most respondents are not unhappy with the price they get but not overly happy either. Even if this area could be identified, however, the findings do support the possibility that producer satisfaction and perhaps even more involvement in livestock economic activities can be increased with improved pricing or market condition.

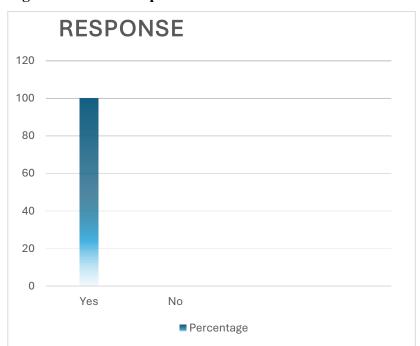


Figure 4.12: Market price fluctuations affect livestock income.

All respondents, without exception, positively affirmed that market price is very subject to fluctuations which greatly affect their livestock income. The phenomenal, 100% affirmative response to this question demonstrates the importance of market dynamics to farmers' financial stability. The fact that there was not a single negative or neutral response indicates a shared experience amongst farmers, that is, price volatility is something continually occurring and of concern. Because of these findings we can conclude that policy interventions or support mechanisms are needed to help counter the effects of unpredictable market conditions on rural livelihoods.

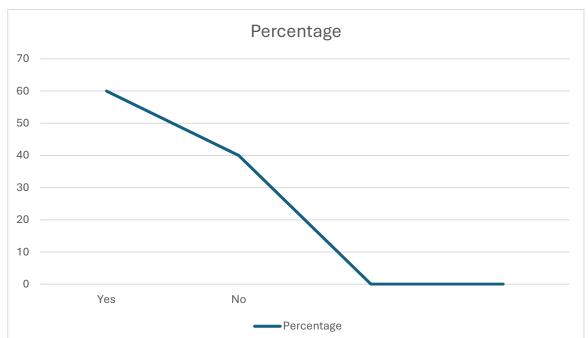


Figure 4.13: Access to veterinary services in village.

Data shows that 60% of the people who responded have access to veterinary services in their village, compared to 40% that have no such access. This means that while most are getting the benefit from the local veterinary support end, there still isn't enough access to essential animal healthcare. Due to lack of veterinary services in some areas livestock health and productivity may be negatively impacted and consequently negatively will affect the income and livelihood of farmers. All of these findings are important reminders of the need to better educate veterinarians on the needs of the poor (a) and to provide better veterinary infrastructure and outreach in underserved rural communities.

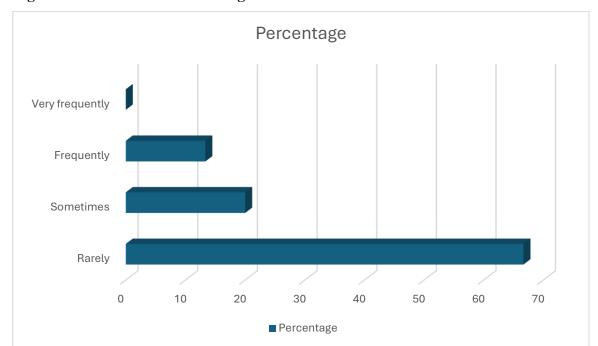


Figure 4.14: How often livestock get sick.

About two thirds (66.67%) of the respondents said that their livestock hardly get sick, so they have good animal health conditions in general. But 20 per cent said it happens sometimes and 13.33 per cent, often. Interestingly though, none of the respondents indicated that their livestock get sick very often. The most compelling result of these data is that, despite the low incidence of health problems in most of our livestock owners, a sizable fraction continues to struggle with recurring health problems and underscores the need for regular veterinary attention and preventive health measures.

Self-produced
1%
Government supply
0%

Local market
Self-produced
Government supply
NGO support

NGO support

Local market
Self-produced
Government supply
NGO support

Figure 4.15: Livestock feed from.

The data indicates that the greatest percentage of respondents source the livestock feed from the local market (86.67%) and self-produced sources (60%). The supply chain of these two sources is dominated by commercial and personal production methods. Interestingly even none of the respondents used to get fed by government supply or nongovernment organization (NGO) support or Other sources. This suggests a possible failure in institutional support or awareness, offering a possible opportunity for the public or non government intervention for bettering the accessibility of feed in these regions and reducing the dependency over market volatility.



Figure 4.16: Types of shelter provide for your livestock.

A large majority (73.33%) of respondents, however, prove this by providing enclosed sheds for their livestock as the majority prefer secure housing for the animals. Meanwhile, 20% of respondents use properly ventilated structures, some of them having become aware of the significance of airflow and animal comfort. One respondent (6.67%) responded having a basic roof and none having none. Consequently, most livestock owners realize the importance of housing animals in structured units in order to maintain animal health and productivity..

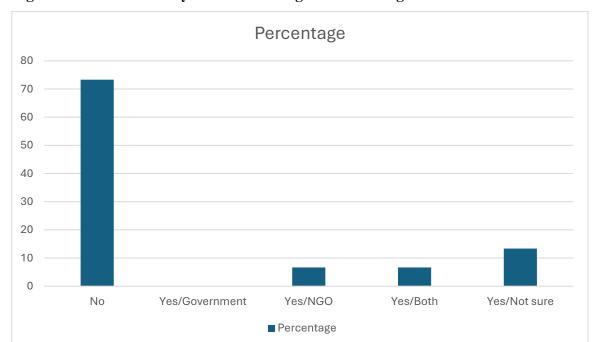


Figure 4.17: Attended any livestock management training.

Most of the respondents (73.33%) reported they were not exposed to any livestock management training, there by having little training on best practices. Just 6.67% of those who did participate said they received training from NGOs, 6.67% from both government and NGOs and 13.33% said they didn't know which organization trained them. Moreover, no respondents said they have received training only through government sources. This has potential to indicate a gap for outreach or awareness of existing government led training programs and indicates a need for more readily accessible and communicated training opportunities for livestock owners.

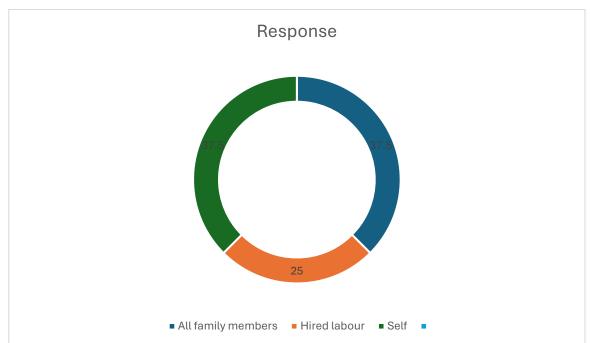
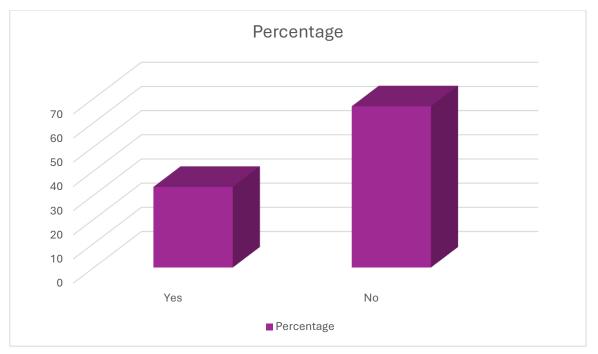


Figure 4.18: Primarily takes care of the livestock in the household.

According to the data, the respective individual household members and the whole family take up 37,5% each of the care responsibilities for livestock. 25% of the cases are related to hired labour, so although external forces are employed, other livestock are managed within the household. This appears as high reliance on family male labour, supplemented occasionally by hired male workers, which may be related to traditional practices and also economic reasons, in livestock care.

Figure 4.19: Received any support related to livestock from the government or NGOs.



The data also shows that of the respondents, only 33.33% have received support on the livestock side from the government or NGO's and bulk of them (66.67%) have not received any such help. It can be inferred that many livestock owners still do not have adequate access to institutional support. The results indicate there is a gap in outreach or availability of support programs, particularly to the rural areas, suggesting a need for more varied and accessible programs to achieve wider targets in the rural livestock development.

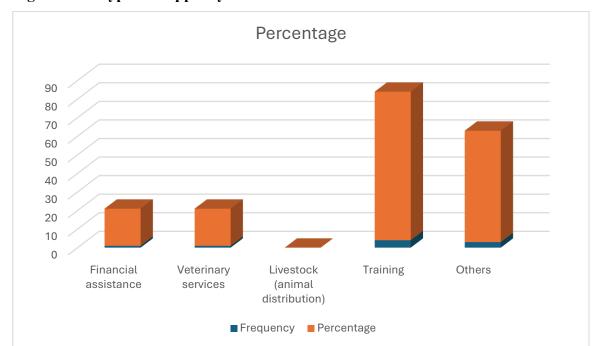


Figure 4.20: Types of support you have received.

Among the five respondents who received support, it training was the most common form, with 80% (n=4) indicating that they had received training. Other types of assistance (60%) may constitute informal or community-based support and follow. Each of the previous was mentioned by 20 per cent, while none had received livestock through distribution programs. Educational and miscellaneous support seems more accessible, yet unmet need in direct material aid is finding less reach.

Percentage

Not sure

Both

NGO

Government

0 0.5 1 1.5 2 2.5 3 3.5 4

Figure 4.21: Support provider.

Among the five respondents who received livestock-related support, the majority (60%) were unsure about the source of the assistance. Only 20% each identified NGOs or a combination of both government and NGO as the providers. Notably, none of the respondents reported receiving support solely from the government. This uncertainty highlights a potential gap in communication or visibility regarding the origin of support programs, suggesting a need for clearer identification and outreach by supporting agencies.

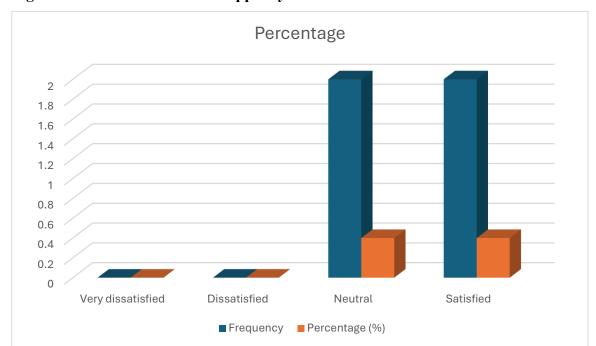


Figure 4.22: Satisfied with the support you received.

This graph showed that in general, responses were positive among the five respondents that got support. Both reaction categories were equally common, Neutral and Satisfied, 40% each. According to one respondent (20%) I was "Very satisfied" and none were dissatisfied. There was good support, but there is still scope for moving satisfaction up even more.

The following part provides an analysis of qualitative interviews with livestock farmers, highlighting their own experiences and what they feel are the main obstacles to a sustainable livelihood.

4.1. Economic Benefit of Livestock Rearing

It analyzes how live stocks, spacially piggery and poultry farming have made a major difference in helping local households remain financially solid and secure more kinds of income. Livestock is seen by the respondents as much more than farming; it supports their family and is critical to their long-term plans as well. Key dimensions used to draw thematic insight are economic benefit, income and security, sustainable livelihood generation, and spending on education. All together, they point to the significant part livestock raising plays in helping rural families gain economic stability, enough food, and grow from one generation to the next in areas where formal work is not widely available. The results reveal livestock as an economic model that is both flexible and able to be managed from home, which is highly valuable for people and especially women, who seek independence..

4.1.1. Economic Benefit

According to respondents, raising livestock has become a main source of income for many, replacing jobs that were either too tough or did not always pay well. S. Deka explained to the surveyors that because of piggery farming, their income has shifted entirely to what they earn from it. Also, Respondent 10 (T. Kalita) admitted that since he started poultry farming, "I have put all my efforts into this sector for a better future." These case studies clearly show that earning a living through livestock is more important than ever for rural households. It is worth noting that Respondent 4 wanted to put livestock earnings into expanding their farm, which demonstrates how the effect is ongoing. With this reinvestment potential, rural income systems can endure for longer. Furthermore, this change is most important for women, as many are now using animals to gain financial independence, help their families, and join in household planning. Livestock farming is useful both for making income and gaining the strength and resources necessary to climb out of poverty in resource-poor villages.

4.1.2. Income and Security

Many participants said that making money from livestock contributed to their increasing financial stability and ability to cope with challenges. This same Respondent mentioned, "It's easy for me to meet our ongoing costs, thanks to my livestock, and in case of an emergency, I keep my money aside for them." For Respondent 3 as well, keeping livestock is a helpful way to secure income when rural employment options are unreliable. Some participants said they save a bit from what they earn, which indicates that raising livestoc3k goes beyond earning money and helps people organise their finances and manage risks. According to Respondent 2 "also try to put away a bit of money whenever I able to do." This shows that even beginning farmers are starting to think wisely about their finances. They show that livestock acts as an easy-to-manage, all-purpose financial asset that helps farmers remain secure on a daily and emergency basis. Households often rely on that regular, modest money as an unofficial cushion when there are no formal ways to protect themselves financially.

4.1.3. Livelihood

Many women are now seeing livestock rearing as a good and inclusive way to earn a living because it allows them to do both livestock work and household chores at the same time. According to Respondent 6, livestock farming allows families to look after their needs from home, reducing their dependence on anyone else. As livestock-based livelihoods fulfill two purposes, they allow rural women to support the family financially without leaving their other main duties at home. Additionally, having livestock allows people to generate a steady income, as the income is not tied to a single type of work. According to Respondent 7, having pigs helps them cope financially when other jobs or farming are not available. It helps families become stronger and continue to earn an income all year round. All in all, the answers provided by participants make it clear that raising livestock is purposeful and beneficial work for women from a rural context. It provides a stable income, allows farmers to handle domestic activities and gives them a job where many rural jobs lack stability.

4.1.4. Education

A good reflection of livestock rearing's economic importance is how it makes long-term investments, mainly for education, possible. For Respondent 10, it became clear when she said: "Recently, my son finished his matriculation exam and was accepted into an ITI college. I was able to pay for his admission because I farmed. It reveals that the income from livestock is helping families survive and is also planned for longer-term development. Similarly, Respondent 2 put a portion of her money toward her child's school, which suggests that women just starting in the livestock sector also plan ahead for their families. These differences indicate that rural families are planning their income, giving higher value to their livestock assets and deciding what to do with the money from sales. It is worth noting that this focus on education matches the main ideas behind sustainable rural development, helping rural people escape poverty. It indicates that a more stable and backed up livestock industry can be a meaningful way for farmers to succeed financially and socially.

4.2. Livestock Management

This theme draws on the true experiences of rural women doing piggery and poultry farming to highlight the main challenges of raising animals as a source of income. It describes how to maintain animal farming enterprises so that they are viable, requiring both economic effort and regular hard work, caring and planning. Though rearing livestock does bring income, a farmer's ability to handle feeding, care for animals and adapt to losses affects the sustainability of their operations. Farming duties plus housekeeping are typically shouldered by women, meaning both roles can be hard for them and yet this aspect is frequently dismissed by spheres focusing on rural development.

4.2.1. Management

The everyday realities of livestock rearing require active, hands-on involvement, and respondents shared the physical, emotional, and time-related demands that come with it. Respondent 1 noted that she manages the pigs "mostly on my own," indicating the

burden of solo labour, with occasional family support. Similarly, Respondent 10 emphasized that "this kind of work requires consistent monitoring and personal involvement," especially because diseases can spread quickly in poultry if not detected early. This reflects the intensive labor commitment required in small-scale livestock rearing, where the success of the enterprise is directly tied to the attentiveness and consistency of the farmer. Notably, several women manage these responsibilities without hired labour, balancing farm work with domestic duties. The gendered nature of this workload also emerged, as many women operate within a context where their contribution may be undervalued, despite being essential to the household economy. Despite these challenges, respondents showed strong personal motivation and responsibility. They expressed pride and ownership over their livestock work, suggesting that management is not only a necessity but also a source of dignity and self-

4.2.2. Feed / Health

worth.

Feeding practices and animal health management emerged as two of the most resource-intensive and stressful aspects of livestock care. Respondent 2 reported preparing pig feed at home using local ingredients but also mentioned the need to "buy some from the market when necessary," highlighting the financial strain of feed costs. Others like Respondent 5 echoed similar concerns about the rising cost of feed and medicine, which directly affects profitability.

Moreover, animal health is a major concern. While most respondents demonstrated awareness of the need for veterinary care, access remained inconsistent. Respondent 3 shared that when animals fall sick, she consults a veterinary doctor, but such services are not always easily available. The threat of disease, especially in poultry, was repeatedly mentioned as a critical risk factor. Respondent 10 noted that "if one bird falls ill, the disease can spread quickly through the entire flock," underlining the fragile nature of livestock health management. This code reveals the twin challenges of feeding and maintaining animal health in a low-resource setting. Despite these obstacles, respondents try to follow good practices, indicating a growing awareness of biosecurity,

but also pointing to the urgent need for affordable feed inputs and reliable veterinary services in rural areas.

4.2.3. Saving

Another recurring concern was the lack of formal financial safety nets. Most respondents mentioned that they had not availed of livestock insurance and instead relied on personal savings to handle emergencies. Respondent 1 mentioned setting aside a portion of her income in case of illness or unexpected costs, while Respondent 8 said she depends on her "own savings" when facing sudden livestock losses.

This approach, though commendable, reflects a structural gap, with women farmers self-insuring due to the absence of accessible institutional mechanisms. The use of small, informal savings reveals the importance of personal planning and risk awareness, but it also highlights the vulnerability of these systems in the face of major shocks like disease outbreaks, price spikes, or natural disasters.

This insight underscores a key aspect of rural livestock management: while the labour and commitment are local, the risks are often beyond the control of the farmer, requiring stronger financial and policy support.

4.3. Institutional Effectiveness

This theme delves into the role of institutional mechanisms, including government programs, NGO interventions, and Self-Help Groups (SHGs) in influencing the livelihoods of women livestock farmers in Nalbari district. While many respondents expressed hope and positive expectations about the support offered by these institutions, the data reveals widespread challenges related to limited awareness, difficulties in access, and the uneven effectiveness of these initiatives. The interpretations that follow provide a detailed analysis of how these institutional frameworks are experienced by women on the ground, highlighting both their potential benefits and critical shortcomings. These insights shed light on how institutional gaps are impacting the economic empowerment and sustainable livelihood outcomes of rural women engaged in livestock farming.

4.3.1. Self-Help Groups (SHGs)

For some respondents, membership in Self-Help Groups (SHGs) has provided a crucial pathway to accessing financial resources and fostering a sense of collective support. For example, Respondent 1 recounted how she secured a loan through her SHG to invest in pig rearing, which enabled her to enhance her livelihood activities. Additionally, her involvement with the SHG led to her selection as a *Pashu Sakhi* (animal husbandry extension worker), granting her opportunities to participate in animal care training programs. This case illustrates that when SHGs are active and well-functioning, they can serve as important platforms for women to obtain microcredit, engage in shared learning, and assume local leadership roles.

Nonetheless, such positive experiences are not universal. Several other respondents, including Respondent 2 and Respondent 5, reported not being members of any SHG and expressed concerns about missing out on the financial and social benefits these groups may offer. This highlights a disparity in SHG accessibility and suggests that women outside these networks are at risk of being excluded from vital institutional support systems. The uneven reach of SHGs indicates the need for more inclusive strategies to ensure broader participation and equitable access to resources for all women livestock farmers in the community.

4.3.2.Training

Although a few respondents reported receiving livestock-related training, many expressed dissatisfaction with its relevance and adequacy in addressing practical challenges encountered on the ground. For instance, Respondent 1 shared that while she attended training sessions as a *Pashu Sakhi*, the content was limited in scope and failed to address the specific, day-to-day difficulties she experienced as a piggery farmer.

In contrast, respondents like Respondent 4 highlighted a complete absence of training opportunities despite being actively engaged in livestock rearing. This gap reveals a significant disconnect between institutional training programs and the actual needs of farmers. It points to systemic issues where capacity-building efforts may be irregular,

insufficiently practical, or poorly targeted, resulting in limited impact at the grassroots level. Addressing these shortcomings is essential for enhancing the skills and resilience of women livestock farmers and improving the overall effectiveness of institutional support.

4. 3.3. Limited Government Support

A prominent theme emerging from the interviews is the perceived inadequacy or complete absence of government support for livestock farmers. Many respondents expressed frustration over the lack of tangible benefits such as subsidies, infrastructure materials (e.g., livestock sheds), and consistent follow-up services promised under various livestock development schemes.

For example, Respondent 1 remarked, "We were informed about assistance like sheds and loans, but these have never been properly delivered." Similarly, Respondent 6 shared that while she was aware of government aid being provided in neighboring villages, she personally had never received any support, despite being eligible. These accounts highlight a significant gap between policy intentions and actual implementation on the ground. This disconnect not only limits the effectiveness of government programs but also erodes farmers' trust in public institutions, thereby hindering their willingness to engage with available schemes.

4.3.4. Awareness

A major challenge identified in the study is the widespread lack of awareness among livestock farmers regarding the availability of government schemes, training programs, and other institutional support. For instance, Respondent 2 candidly admitted, "I don't know much about what kind of support is even available for people like me." This gap in knowledge is less a matter of disinterest and more a consequence of inadequate communication and outreach efforts by government bodies and NGOs.

Similar sentiments were shared by Respondents 3 and 8, who revealed that many women involved in livestock farming have limited or no access to formal information about their entitlements or the procedures for applying to these support mechanisms. This

information deficit exacerbates existing inequalities, as only those who are well-connected or better informed are able to leverage the benefits of available programs. The findings underscore the urgent need for more effective, grassroots-level dissemination strategies to ensure equitable access to institutional resources.

4.3.5. Suggestions

Several respondents put forward practical and insightful recommendations for enhancing institutional support. For example, Respondent 2 emphasized, "If proper guidance and consistent follow-up were provided, women like me could benefit significantly more." Other participants highlighted the critical need for timely veterinary services, accessible and relevant training programs, availability of low-interest loans, and regular field visits by extension officers to offer hands-on assistance.

These suggestions reveal a clear eagerness and willingness among rural women livestock farmers to engage with institutional mechanisms actively, provided these systems become more responsive, transparent, and inclusive. Far from being passive beneficiaries, these women seek meaningful collaboration but are constrained by persistent gaps in the implementation and outreach of existing policies. Addressing these challenges could unlock greater empowerment and improve the sustainability of livelihoods within the community.

CHAPTER V FINDING AND DISCUSSION

5.1. Economic Impact of Livestock Rearing on Rural Household Income

5.1.1. Livestock as a Primary Source of Income

- Raising livestock like pigs and chickens now supports the main livelihoods of countless rural families in Nalbari district.
- Women are often leading these activities since keeping livestock is more secure and predictable than other forms of work.
- This change means farming communities are moving to self-reliant, home-based occupations, following Livelihood Approach ideas from Chambers and Conway (1992).

5.1.2. Income Security and Financial Resilience

- Routine expenses and financial problems during emergencies are dealt with using the income from livestock.
- Several respondents said that in the absence of banks, paying for emergencies comes from selling livestock.
- It shows that livestock provides families with extra financial support when they need it for health or income problems.

5.1.3. Livelihood Flexibility and Gendered Access

- Rearing animals at home gives women a job they can fit into their household schedule and earn extra money.
- Responses showed that having livestock provided an ongoing income for families when other jobs became unavailable or health problems arose.
- The outcomes show that livestock livelihoods encourage both men and women to be economically active in their villages.

5.1.4. Reinvestment in Education

 Many people said that income from livestock helped them pay for their children's education.

- It shows that livestock contributes to families' short-term finances and helps them develop over the years.
- Spending some of the income from animal husbandry on schooling increases people's abilities and fits with the plan for sustainable development.

5.2. Challenges in Livestock Management and Livelihood Opportunities

5.2.1. Daily Management Responsibilities

- Participants pointed out that caring for animals is a daily responsibility, and women often deal with most of it.
- Daily tasks are doing mealtime, cleaning and making sure all animals are healthy.
- Women often have to do both these official jobs and their own share of unpaid work at home.

5.2.2. Feed and Veterinary Care Challenges

- People we spoke with felt that higher prices for feed and medicine were adding to the financial strain on their families.
- Disease outbreaks are sometimes difficult or impossible to prevent because owners cannot receive the care they need from veterinarians, especially during emergencies.
- Critically, these issues are very important in poultry farming, where diseases may travel rapidly.

5.2.3. Coping with Emergencies and Risk

- Most women lacked livestock insurance and relied on personal savings to deal with emergencies or animal illness.
- While saving is a proactive approach, it remains insufficient for major or repeated losses.

• The absence of formal risk mitigation systems highlights the need for accessible livestock insurance and emergency support services.

5.2.4. Time Management and Stress

- Most farmers said looking after their home and their animals caused a lot of stress and tiredness.
- Many people said that they felt support in the form of labor networks and resources that help save time would be welcome.
- It is important to deal with this stress so that rural women farmers stay mentally healthy and productive.
- Generally, whilst raising livestock increases income for rural families, there are some difficulties, mainly for women.
- Appropriate aid, education, and policies are necessary to keep these ways of making a living both sustainable and fair.

5.3. Effectiveness of Institutional Support and Awareness of Schemes

5.3.1. Self-Help Group (SHG) Participation

- Many women have gained from joining SHGs by getting loans or different roles in Pashu Sakhi (such as those that help with cattle).
- At the same time, a lot of respondents had not joined SHGs, mainly because they lacked information about them.
- The lack of SHGs accessible to women stops them from using the help and support offered by companies.

5.3.2. Training Access and Gaps

- A small number of people said that their livestock care got better after training, while many said the skills were not enough.
- Expert advice was generally that programmes should be relevant and realistic for all communities.

 When people do not learn proper skills when needed, livestock rearing will not succeed.

5.3.3. Limited Government Assistance

- Only a small number of respondents said they knew about livestock, and those few thought the training was not enough.
- Advisors pointed out that training materials should match the needs and advice for every community.
- Livestock find it hard to adapt when not trained properly at the proper stage.

5.3.4. Lack of Awareness of Schemes

- There was a common pattern of farmers being unaware of government or NGO programs for livestock producers.
- Because people lack the right information, programs that could help them remain out of reach.
- Stronger efforts to reach out and inform people are necessary to bring us together.

5.3.5. Suggestions for Improvement

- The researchers heard from respondents who offered practical solutions such as spending more time with farmers, making loan practices simpler, and helping with prompt veterinary care.
- Many women said they would take part in SHGs and participate in training if there were better information and easier access.
- The findings show that many rural women want to take advantage of support from institutions, provided it is inclusive, practical, and responds to their needs.
- In short, although there are institutional schemes to boost rural animal farming, their inadequate accessibility and visibility stop them from working well.
- Making outreach stronger, making procedures easier, and adjusting these schemes to fit the needs of the area will help them achieve the biggest results.

The study was conducted in Nalbari district of Assam looks at how the rearing of animals plays a versatile role in rural communities. It examines three important areas: the amount of household income generated, the difficulties involved in ranching and how government support is working. The mixed-methods approach used by the study allows us to understand the whole range of economic, technical and emotional issues that livestock farmers experience in their work. The authors use Chambers and Conway's (1992) Livelihood Approach to examine how livestock contributes to building sustainable livelihoods. The approach made it easier to understand how farmers use what they earn from livestock to provide housing, educate their children and look after themselves every day. Similarly, the approach pointed out items that hold back the livelihoods, including few veterinary services, little coverage thanks to insurance and issues with scheme setup. Applying the framework helped the study to evaluate the effectiveness of rural livestock practices and explained how sustainable they are in that area.

The findings of the study are in line with what Kumar et al. (2012) asserted that livestock is critical for ensuring sustainable livelihood for rural households through income diversification and food security. Livestock is a steady source of income replies quickly confirmed meeting daily needs and investing in the future of their family. Yet participants often mentioned challenges like biosecurity risks including poor sanitation, overpopulation of animals and frequent disease outbreaks because of infrequent veterinary checkups. These are problems noted by Das et al. (2020), who identified inadequate veterinary infrastructure and disease management as critical impediments to rural livestock production in India. The research also showed that women were underrepresented in livestock activities but the respondents did not report any overt bias in the treatment. This observation complements, in part, Das's (2017) findings on shifting ethno-cultural preferences on livestock practices and possibly the gender roles in farming from her 2012 study in Kamrup (Rural) District. Such limited participation highlights social shortcomings to provide women equitable livelihood opportunities. The insufficient support and accessibility of government support mechanisms raised by Roy et al. (2021) also reflects gaps in delivering and covering government schemes for livestock farmers. Respondents pointed to bureaucratic hurdles and limited awareness as key factors for underutilisation of benefits, indicating a gap between policy frameworks and on ground realities.

In this context, the application of the Sustainable Livelihood Approach (Chambers & Conway, 1992) which frames livestock farming not only as an economic activity but as an integrated livelihood strategy influenced by technical, social and institutional factors, is helpful. Livestock rearing is still the mainstay of livelihood of the common people of Nalbari, but the challenges such as gaps in veterinary services, inequalities between males and females and poor involvement of the government remain obdurate frontiers to its actual potential. Improved veterinary infrastructure, inclusion of women through inclusive policies and improved implementation of support schemes are the ways through which these issues can be addressed thus promoting the attainment of sustainable rural livelihoods.

CHAPTER VI SUGGESTIONS, RECOMMENDATIONS, AND CONCLUSIONS

The knowledge gathered from the field in Nalbari district has led to the creation of important recommendations for policy and practical actions to help the livestock sector. Each suggestion is developed using the problems reported by respondents and grounded in the researcher's involvement and use of the Livelihood Approach framework.

Enhance veterinary support and animal healthcare access

requires setting up mobile vet stations, having more para-vets in every block and establishing emergency support in each village to offer fast care. Easy and inexpensive healthcare for livestock helps farmers lower their losses and improve production.

Promote livestock insurance and financial risk protection.

Inform people about possible insurance schemes through aware programs organized by NGOs and SHGs. Reduce the processes needed to claim government insurance specifically for damage due to disease. People working in the small livestock sector should be required and helped to secure insurance to protect them during virus outbreaks and other unexpected problems.

Expand localized and practical livestock training

Organize training sessions often in the local languages. Take part in joint activities with agricultural and veterinary universities to distribute knowledge about field research. Allow NGOs and institutions to serve as connections between farmers and scientific agencies. Any training program needs to be open to both old and new farmers in their areas.

Strengthen the participation of women alongside men in livestock development.

Encourage equal opportunities for all women in livestock to receive schemes, training and loans. Make sure SHGs and cooperatives include both men and women and officially include women's impact on raising livestock. Higher female involvement will boost a household's earnings, ensure enough food security and empower women economically.

Encourage mixed farming and support scientific research.

Support mixed farms that involve livestock, fish, birds and crops and sponsor research focused on the best ways to farm in each region. Make field demonstrations and help people understand about sustainable mixed farming that is suitable for the local environment. The study should concentrate on building a variety of incomes and lessening the pressure on the environment.

Improve market access and stabilize livestock prices.

Expand the cold chain, help gather the small farmers into livestock cooperatives and ease the way for Assam's surplus items to be exported abroad. Because farmers face uncertainty in the market, governments have a duty to regulate prices and market practices.

Engage rural youth in livestock-based entrepreneurship.

Livestock vocational training should be available in rural secondary and higher education institutions. Give startup grants and easy-to-borrow loans to young entrepreneurs. Through new digital solutions and innovative approaches, work to interest young people in the livestock sector.

Organize livestock fairs and confidence-building platforms.

Have Pashu Mela and exhibitions nearby so farmers have a place to show and sell what they raise. Identify innovative food producers and let veterinarians provide information through live support. They can make farmers stronger, more visible and part of the wider economy.

Raise awareness of government schemes and ease access.

Tell about the scheme to SHGs, panchayats, through rural media and at training centers. Help people by outreach in their local languages and aid with paperwork at the below government levels. NGOs and panchayat bodies should make sure that people are aware of and able to use their entitlements.

Develop cooperative models for collective strength. Improve cooperatives for farming animal products to avoid or decrease problems from fluctuations in the market. To serve

farmers well, cooperatives require abilities to train, get financial support and work according to their own guidelines.

Offer livelihood loans at low interest rates.

Offer credit support requiring only a little documentation and letting borrowers pay back according to their terms. Promote lending for individuals who have never taken out a loan and those raising only a few animals. There should be an effort by the government and NGOs to make loan schemes known in rural places.

The suggestions show the priorities and dreams of rural livestock farmers in Nalbari. Researcher point out the problems as well as the big opportunities found in using livestock for rural growth. Only an approach that includes experts, farmers' needs and relies on science can help connect rules made by policy to what actually happens on the ground. It's important to view livestock as a tool for income, food, equal treatment of genders and sustainable growth of villages. If done in a way that includes everyone, these recommendations can help Assam build its economy and prosperity on livestock.

CONCLUSION

This research looked at how raising animals influences sustainable living in the rural parts of Nalbari district, Assam. Different types of qualitative and quantitative data were collected using both surveys and in-person interviews with livestock farmers involved in piggery, poultry, dairy and goatery. The data was studied using QDA Miner so we could look for themes and also used descriptive statistics to analyze the numbers. The foundation for the study comes from the Livelihood Approach, introduced by Chambers and Conway in 1992 which highlights how people deal with shocks and hazards by managing their assets for living. The research results show that livestock greatly adds to both the finances and food supply of rural residents. For a number of individuals, farming livestock is now the main way they make money and pay for housing, education and health needs. It gives you a source of money when something unexpected happens. Moreover, the research reveals that although women are taking part in raising animals, their work isn't usually acknowledged or backed by others. Low access to vets, costly livestock feed, no insurance and lack of government support were pointed out by participants as serious challenges. It also pointed out where government schemes could be improved. Although initiatives are in place, many respondents said they were not aware of them or lacked the resources to take advantage. Moreover, the instability of the market and insufficient organized cooperative help made it hard to keep upsetting income streams. Livestock farmers managed to continue their livelihoods despite these problems by applying creativity and using their indigenous knowledge, helping themselves and joining community groups.

What makes this research important is that it is based on experiences from rural communities. The study contributes valuable insights about rural development in the Northeast by paying attention to what livestock farmers face in Nalbari, a district that has not received much attention. The approach explains how livestock helps make life better for rural women, young people and families who are not well-off.

Various problems should be acknowledged. Since researchers had a short time to collect data and do fieldwork, the study was completed in a tight timeframe, so the number of participants was limited and the conversation with each was brief. The study was conducted only with livestock farmers which was intentional but left out other stakeholders possible, including veterinary officials, SHG leaders and officials of government schemes meant for livestock. Third, the study area was chosen to be Nalbari district only because of logistical concerns, so its findings may not apply to all regions of Assam or the Northeast. Such constraints arised in the research, yet they do not reduce the importance of what the study found.

Through all these challenges, the study has provided results that can drive real-world change. It is suggested that improving facilities for animals, building more insurance options for livestock, raising awareness of mixed farming, bringing more young people into animal husbandry and helping women take part in training and schemes are important actions to take. It was pointed out that to achieve lasting success, awareness, cooperation and organizing livestock fairs were necessary.

The research points to several important topics that can be studied further in the future. More examinations could take place throughout several districts or even states to observe how a variety of livestock practices shapes the livelihoods of those living there. Extended research on how government schemes and insurance programs are carried out could help generate better policy decisions. Focusing on how women's roles, help and obstacles in livestock entrepreneurship are covered in research would improve tolerance and efforts in developing rural areas.

It can be said that rearing livestock in Nalbari helps not only to earn a living, but also to stay secure, get strong and look ahead. Provided with the needed resources and changes in policy, livestock could transform rural living for many in Assam and elsewhere in India.

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APPENDIX

Informed Consent

I Priyanka Sarmah, a student of the Social Work Department, Mahapurusha Srimanta

Sankaradeva Vishwavidyalaya, Guwahati unit, promise that this interview schedule and

Questionnaire will only be used for my dissertation "A Study on Impact of Livestock on

Sustainable Livelihood Among Rural Area with Reference to Nalbari District, Assam",

under the supervision of Dr. Monalisha Phukan Roy, Assistant Professor Department of

Social Work, MSSV, Guwahati Unit. I assure that your answers will be kept confidential

and used only for educational purposes. Therefore, I kindly request your valuable input

in responding to the following set of questions.

Priyanka Sarmah

MSW 4th Semester

Roll No: MSW-24/23

Department of Social Work

MSSV, Guwahati Unit

INTERVIEW SCHEDULE

Section I: General Information:

- 1. Can you tell me about yourself and your family background?
- 2. How long have you been involved in Livestock rearing?
- 3. The place where you rear your Livestock is it your land or someone else's?

Section II:

- 1. Can you describe how livestock contributes to your household's income?
- 2. How do you decide which livestock to rear?
- 3. How has your economic situation changed after starting livestock rearing?
- 4. How does livestock income compare to income from agriculture or daily wage work?
- 5. What do you do with the money earned from livestock?
- 6. Have you faced any losses in livestock that affected your income?
- 7. Are you engaged in any other activity like farming along with livestock (mixed farming)? How do you manage both?
- 8. Do you manage the livestock yourself or do you hire help/family members?
- 9. What are the main challenges you face in livestock rearing (e.g., diseases, cost of feed, access to market)?
- 10. How do you handle livestock illness or disease outbreaks?
- 11. Have you lost any livestock due to lack of treatment or poor facilities?
- 12. What do you do when you cannot afford veterinary care or feed?
- 13. Are you part of any livestock-related group, cooperative, or SHG? If not, why?
- 14. If managing alone, how do you manage time, work, and emergencies?
- 15. Do you take any measures to manage risks (e.g., saving money, insurance, alternate sources of income)?
- 16. What suggestions do you have for improving the livestock situation in your area?
- 17. Are you aware of any government or NGO schemes for livestock rearers?
- 18. Have you received any help, training, or subsidy from these schemes? Can you describe it?

- 19. Did the support/training you received actually improve your livestock practices or income?
- 20. Do you think the schemes reach poor and deserving households in your area?
- 21. What would you suggest to improve the delivery and usefulness of these schemes?

QUESTIONNAIRE

Sec	Section I: General Information:			
1.	Age:			
2.	Sex:			
3.	Family Members:			
4.	Involved in Livestock (in years)			
Sec	etion II:			
1.	What percentage of your total household income comes from livestock?			
	□ 0–20%			
	□ 20–40%			
	□ 40–60%			
	□ 60–80%			
	□ Above 80%			
2.	Which types of livestock do you own? (Check all that apply)			
	□ Cattle			
	□ Goats			
	□ Pigs			
	□ Poultry			
	□ Duck			
	□ Other			
	What is your average monthly income from livestock?			
	☐ Below 5000Rs			

□ 500	00-10000Rs
□ 100	000-15000Rs
□Ab	ove 15000Rs
What 1	livestock products do you sell? (Check all that apply)
□ Mil	k
□ Mea	at
□ Egg	gs
□ Ma	nure
□ Liv	e animals
□ Oth	er
How h	has your income from livestock changed over the past 3 years?
	□ Decreased
	☐ Stayed the same
	□ Increased
1.	How frequently do you sell livestock products?
	☐ Weekly
	☐ Monthly
	☐ Seasonally
	□ Rarely
	□ Never
2.	How satisfied are you with the price you receive for your livestock/livestock
	products?
	☐ Very dissatisfied
	☐ Dissatisfied
	□ Neutral

	☐ Satisfied
	☐ Very satisfied
3.	Do market price fluctuations affect your livestock income?
	□ Yes
	□ No
4.	Do you have access to veterinary services in your village?
	□ Yes
	□ No
5.	How often do your livestock get sick?
	□ Rarely
	☐ Sometimes
	☐ Frequently
6.	☐ Very frequently
7.	Where do you usually get livestock feed from?
	☐ Local market
	☐ Self-produced
	☐ Government supply
	□ NGO support
	□ Other
8.	What kind of shelter do you provide for your livestock?
	□ No shelter
	☐ Basic roof
	☐ Enclosed shed
	☐ Properly ventilated structure.
9.	Have you attended any livestock management training?
	\square Yes (\rightarrow If yes, who provided it? \square Government \square NGO \square Both \square Not

	sure)
	□ No
10.	Who primarily takes care of the livestock in your household?
	□ Self
	☐ All family members
	☐ Hired labour
11.	Have you received any support related to livestock from the government or
	NGOs?
	□ Yes
	□ No
	(If No, skip to Question 18/If Yes to Q16)
12.	What kind of support have you received? (Check all that apply)
	☐ Financial assistance
	☐ Veterinary services
	☐ Livestock (animal distribution)
	☐ Training
	□ Other
13.	Who provided the support?
	☐ Government
	□NGO
	□ Both
	□ Not sure
14.	How satisfied are you with the support you received?
	☐ Very dissatisfied
	☐ Dissatisfied

☐ Neutral
☐ Satisfied
☐ Very satisfied