

From Cattle to Capital: A Review on SHGs, Dairy Farming, and Gender Empowerment in Rural India

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Abstract

Self-Help Groups (SHGs) have emerged as a platform for encouraging women to start their own ventures in rural India, particularly through dairy-based enterprises. This review explores the role of SHGs in enhancing financial support, skill development, market access, and social empowerment among rural women. By utilizing savings and providing microcredit, SHGs enable women to establish and expand dairy ventures, contributing to household income and organized milk production. The integration of institutional support, skill development programs, and ICT-enabled systems further strengthens operational efficiency and the supply chain. SHG membership not only improves financial literacy and entrepreneurial skills but also encourages self-reliance and decision-making power within households and communities. Women entrepreneurs benefit from shared knowledge and collective bargaining that enhance self-resilience and competitiveness. Despite persistent challenges, such as limited facilities, cultural constraints, and limited access to organized markets, SHGs remain crucial in addressing systemic gaps. This review endorses gender-responsive rural development policies that align with national schemes like DAY-NRLM, RGM, and AHIDF. Joint efforts among governments, financial institutions, and civil society are essential to expand SHG-led models and promote inclusive growth. Ultimately, SHGs serve as catalysts for socioeconomic change, empowering women to become role models for an equal approach society and sustainable rural economy.

Keywords: Self-help groups (SHGs), women entrepreneurship, dairy-based enterprises, socioeconomic empowerment, inclusive rural development

INTRODUCTION

Rural India accommodates approximately 66% of the population, contributing roughly 46% of the national income. It is now challenging for the low-income agriculturists to earn a livelihood solely from agriculture [1]. Rural families have an average monthly income of Rs. 8,059, with farming generating only 43% of the monthly income. This is primarily through casual work as labourers and government jobs. Agricultural households have higher earnings than non-agricultural households, but they also have greater liabilities [2]. Considering the current situation, there is an immediate necessity to explore other means of income. Rural labourers need to be provided with skill development and vocational training in relevant sectors to achieve higher income and financial credibility. Dairy technology has the potential

to enhance the livelihoods of the rural Indian population. Research findings have shown that dairy ventures significantly contribute to the economic and social progress of low-income rural households [3].

Dairy farming is a key occupation in rural India and is regarded as an additional income source for a large segment of agricultural households. India holds the position of the leading milk producer nation (239.3 million tonnes of milk production and 471gm/day per capita availability of milk in 2023–2024), with the milk sector being the most

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significant farm product accounting for 5% of Gross Value Added (GVA). It recorded a Compound Annual Growth Rate (CAGR) of 4.97% between 2018–19 and 2023–24 [4]. India has the highest livestock population in the world, accounting for 109.85 million buffalo with a growth rate of 1.06% and 193.46 million cattle with growth rate of 1.34% [5]. The market demand for dairy products in India is expected to increase significantly in the next few years, driven by higher income and consumer affordability as well as growing consumer attention towards nutritious food. Dairy ventures activities play a meaningful role transforming milk production into a leading income generating industry.

The growth of agriculture and related business initiatives in rural areas is crucial for social and economic development. Rural women play a meaningful role as entrepreneurs in agricultural activities, supporting the holistic development of India. Hence, it is necessary to evaluate entrepreneurial capacity among women in self-help groups (SHGs) [6].

ROLE OF WOMEN IN AGRICULTURE AND ALLIED SECTORS

According to the Food and Agriculture Organization (FAO), women contribute immensely to farming across the globe. Approximately 70% of farm labourers, 80% of food producers, and 10% of those involved in handling food ingredients are women. They also engage in 60–90% of local marketing activities [7]. Women play a vital role in plant cultivation, especially within low scale cultivation models. They frequently oversee strategic decision making, cultivation planning, farm activities, deweeding, watering, reaping, postharvest handling, crop and nutrient management, and eco-friendly pest control [8]. Krishi Vigyan Kendra's (KVKs) in all over India, have taken a leading role in uplifting women cultivators advancing sustainable agriculture [9]. KVKs has improved farming expertise and skills among women farmers through capacity building initiatives, and field trials markedly boosted yield and income stability [10]. Along with agriculture, the escalating need for livestock products – such as dairy, poultry, and meat – in India are fuelled by growing population, urbanization, growing wages and the rise of the middle class. The animal husbandry sector is an essential pillar in rural economy and holds a crucial function in uplifting village women, deeply engaged in livestock associated tasks such as animal feeding, milking, health management, sale of milk. Hence, considerable potential in supporting women farmers through livestock-based ventures [11]. Empowering rural women through gender-transformative strategies and equitable resource access accelerates agriculture productivity, nutrition, and inclusive rural development [12].

EMERGENCE AND SIGNIFICANCE OF SELF-HELP GROUPS (SHGS)

SHGs are compact socio-economic groups of rural households that come together by choice, willing to invest shared capital to be loaned to group individuals as per group discussion. The aim is mutual support, group awareness, and socio-economic empowerment through participatory approach [6]. According to Myrada (1995) [13], SHGs should have 15–20 members with the same socio-economic strata. They should have rotational leadership, with members voluntarily participating in all meetings and following all rules and regulations. Group accounts should be regularly updated and maintained. SHGs promote group based cooperative relationships and thus significantly contribute in social harmony and economic access. These group work by merging pooled funds, loan support alongside shared information exchange [14]. SHGs are a powerful tool for promoting participatory growth especially among rural women [15]. define three types of groups: saving groups, women's health group and farmer's groups. Saving groups, such as Rotating, Saving and Credit associations (ROSCAs) and Village Saving and Loan Associations (VSLAs), focus on credit empowerment, and collective asset utilization among rural women entrepreneurs. Women's Health Groups (WHGs) are educated by NGOs to promote awareness about women's and public health, and they use engagement and community-based training approaches. Farmers group which includes both men and women, with group sizes typically ranging from of 12 to 40 individuals, focus on loan availability, collective risk management, business integration, and knowledge sharing.

As per NABARD, the development of Self-Help Groups (SHGs) progresses through five distinct stages: pre-formation, group formation, initial stabilization (Phase I), advanced stabilization (Phase II), and finally, growth and expansion (Figure 1 and Table 1).



Figure 1. SHG lifecycle and Gram Sabha engagement framework.

Table 1. The formation stages of SHGs [16].

Stage of development	Time period	Focus of activities
Pre-formation	1–2 months	Identifying poor through participatory Rural Appraisal method.
Formation	3–6 months	Motivation to form groups, develop roles and norms, conduct meeting, pooling saving, issue and collection of small loans, group cohesion, adjustment of activities.
Stabilization (Phase I)	7–12 months	Leadership stabilization, training of leaders and members, regularized and increase savings, handling of group level transactions, informal interactions with other groups or clusters.
Stabilization (Phase II)	13–18 months	In addition to above activities, initiation of income generation programmes, linkage of banks, support to new groups.
Growth and Expansion	19 months and above	Strengthen linkages with banks, creation of assets for groups and members. Spreading concept building and promotion of new groups, attempts at cluster development and federation of SHGs.

As per Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NLRM) 91.7548 lakh SHGs promoted and 1029.21 lakh households mobilised into SHGs. Under DAY-NLRM total 85.31 lakh SHGs are registered and 884.33 lakh members are associated with these SHGs (Figures 2–3 & Table 2) [17].

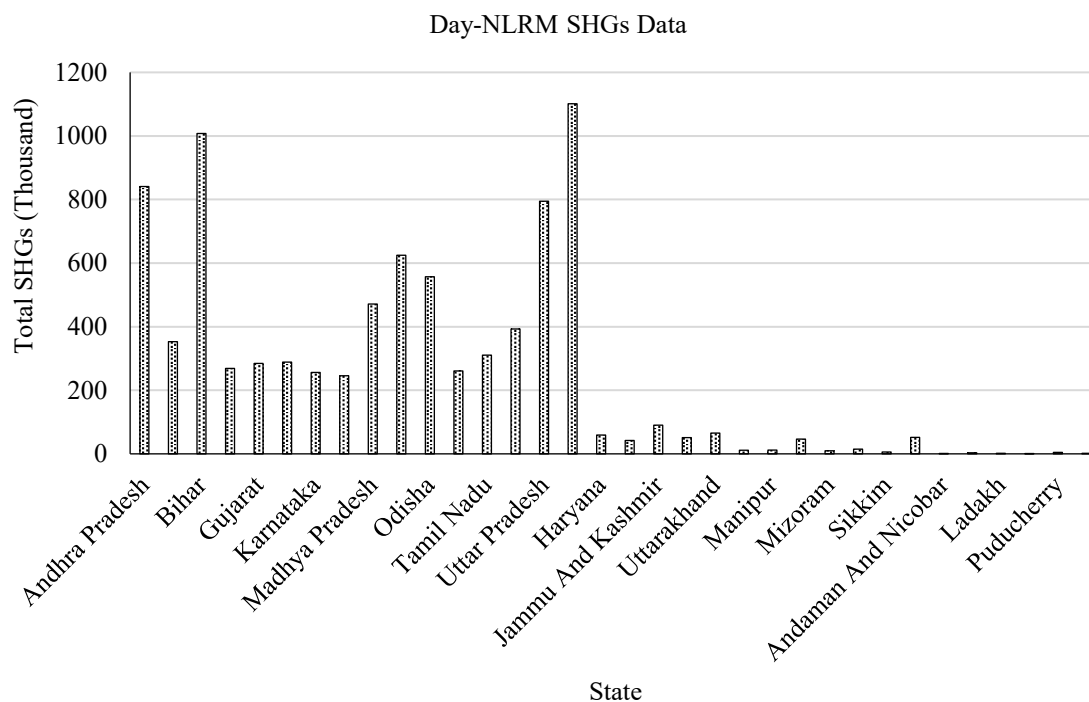


Figure 2. Day-NLRM SHGs data of India.

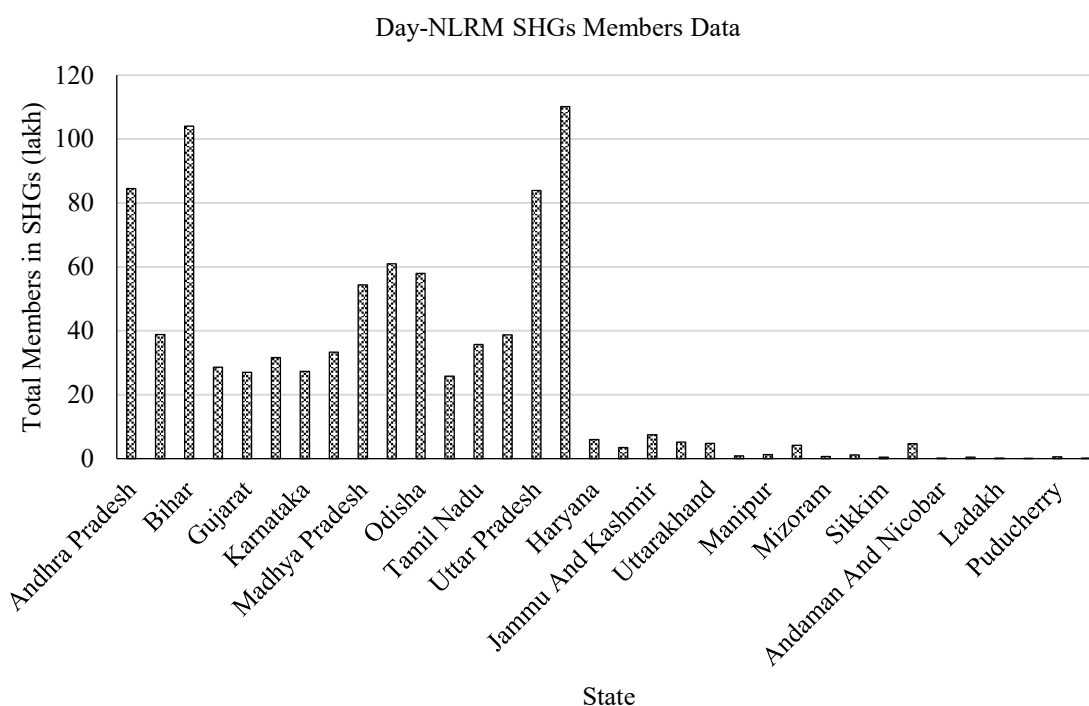


Figure 3. Day-NLRM SHGs members data of India.

Table2. Total SHGs and total members in India [17].

	Total SHGs	Total member
India	85,31,528	8,84,33,002
Northwest states	3,08,061	26,89,672
Northeast states	1,51,932	13,27,179
Union territories	13,119	1,42,774

WOMEN EMPOWERMENT THROUGH SHGS

Dairy farming is a sustainable choice for village households without land. Dairy cooperatives offer assistance for dairy production, improving outcomes and marketing opportunities. Women hold a key position in overseeing farms, households, and livestock. A successful livestock occupation can significantly uplift the economic and social position of rural women by providing them with a sustainable source of income. Women have a vital contribution to the progress of the agriculture sector, yet their efforts are often neglected. In India, rural women contribute the most to the dairy sector workforce, engaging in activities such as sourcing forage, pasturing, feeding, watering, cleaning livestock and shelters and selling milk [18].

Empowering women requires developing self-reliance and inner strength. In India, dairy industry primarily managed by women who spend more time than men. Training and skill development plays an essential function in empowering rural women by providing them information about dairy sector and improving their skills. Women in India have a record of participating in dairy cooperative and animal husbandry projects [19]. The government initiated multiple schemes to empower women in the dairy industry, such as setting up milk cooperative societies, providing skill-oriented training, offering small-scale credit support for entrepreneurship, and promoting value-added traditional Indian dairy products. Government initiatives have transformed women from workers to active members of management committees and boards. These initiatives aim to boost rural women's contributions to the dairy industry and improve their self-confidence and awareness [20].

SHGs AND DAIRY FARMING: A SYNERGISTIC MODEL

Dairy farming has emerged as a key livelihood for rural women helping them to attain economic security, support family expenses, and be involved in community markets. Women's participation in livestock rearing has been consistently rising owing to presence of government policies, financial schemes and SHGs. Dairy farming provides monetary advantages and improves women's social status, giving them authority in making choices within their household and village society. Rural women involved in dairying attain greater self-reliance in financial decisions, enabling them to provide better access to education for their dependents, and actively engage in local initiatives. Moreover, dairy farming supports the development of business skills, empowering rural women to effectively oversee dairy ventures [21].

SHGs and dairy farming works as a synergistic model that empowers rural women and helps in sustainable dairy farming. The government and NGOs initiatives emphasize on structuring rural women in SHGs, thus initiating the strengthening of women's role.

Case Studies on Dairy Self-Help Group

Kishore CN. (2018) [22] in her study on dairy entrepreneurship among self-help groups in Malnad region of Karnataka found that dairy venture based SHGs emerged as a source of income generation and skill development. Major constraints – such as loan repayment, dual work burdens, limited mobility, and inadequate technical and training support – hinder their performance. Despite challenges, the presence of successful SHGs and moderate entrepreneurial engagement shows potential for expanding dairy-based livelihoods.

In their study conducted on economic analysis of women dairy self-help groups in Belagavi district of Karnataka, Makarabbi and Chauhan (2018) [23] discovered that joining Women Dairy Self-Help

Groups (WDSHG) improves the economic and social status of rural women. WDSHG members have larger herds, higher milk yields, better land use, and higher dairy income than non-members. Financial indicators, like net income, credit costs, and recovery rates, support the success of SHG-led dairy businesses.

In his study on evaluation of women dairy self-help groups of Mahila Grameen Hastkala Welfare Society of Kathua District found that dairy-based Self-Help Groups (SHGs) are effective in improving the livelihoods of rural women in Kathua district [24]. SHG members showed higher expertise in dairy farming, increased livestock ownership, and better connections with extension services compared to non-members. Members also outperformed non-members in milk sales, value addition, and income generation. SHGs provided better access to credit for members, while non-members relied on informal sources. However, women dairy entrepreneurs faced challenges such as high feed costs, limited access to artificial insemination services, and livestock diseases. Addressing these issues through targeted interventions, infrastructure support, and improved veterinary services is crucial for sustaining and expanding the impact of dairy SHGs.

While analysing the dairy management practices adopted by farm women of self-help groups in Gadag district [25] found that SHG-based dairy training programs empower rural women, generate income, and foster entrepreneurial development. Strengthening institutional linkages, expanding outreach, and addressing constraints can enhance the sustainability and inclusivity of dairy-based livelihoods in rural India.

In their study conducted on performance of dairy self-help groups (SHGs) in India using principal component analysis (PCA) approach [26] evaluates dairy-focused Self-Help Groups (SHGs) in Haryana using a Composite Performance Index (CPI) based on savings, lending, repayment, and income-generating activities. SHGs show strong financial discipline, with well-distributed internal loans and access to external credit in line with NABARD guidelines. Repayment rates for external loans are higher than internal loans.

SHGs fund various income-generating activities, with dairy as the main business component, along with papad-making, agarbatti production, and vermicomposting. The study highlights SHGs' potential for rural economic empowerment and suggests strengthening group-based lending for economic sustainability, livelihood sustainability, and women's participation in the dairy sector.

All the schemes mentioned in Table 3 are related to dairy farming, and SHGs benefit from these schemes. With the support of Department of Animal Husbandry and Dairying, Ministry of Fisheries, Animal Husbandry & Dairying, Government of India, various schemes are launched for helping dairy farmer and SHGs linked to dairy farming.

Table 3. Government of India scheme, objectives, and year of release.

Scheme	Objectives	Year
Dairy Processing and Infrastructure Development Fund (DIDF)	To modernize the milk processing plants and machinery and to create additional infrastructure for processing more milk.	2017–2018
Start-up Village Entrepreneurship Programme (SVEP)	- Providing sustainable livelihoods and self-employment opportunities with financial assistance and training in business management and soft skills - Creating local community cadre for promotion of enterprises - Building and supporting early-stage rural enterprises by providing them with a range of critical services, such as business development support, mentoring, finance, as well as access to the banking system along with guidance for convergence and integration with other government schemes.	2015

DAY-NRLM (National Rural Livelihood Mission)	• Mobilise rural poor households into self-managed SHGs and unite them at various levels. • Promote sustainable livelihoods through skill development, micro-enterprise support, and access to employment. • Make it easier for SHGs and their members to get bank loans, insurance, and pensions.	2011
Dairy Entrepreneurship Development Scheme (DEDS)	• To promote setting up of modern dairy farms for production of clean milk. • To encourage heifer calf rearing, thereby conserve good breeding stock. • To bring structural changes in the unorganized sector so that initial processing of milk can be taken up at the village level itself. • To bring about upgradation of quality and traditional technology to handle milk on a commercial scale. • To generate self-employment and provide infrastructure mainly for unorganized sector.	2010
Supporting Dairy Cooperatives and Farmer Producer Organisations (SDCFPO)	• To assist the State Dairy Cooperative Federations by providing soft working capital loan to tide over the crisis on account severely adverse market conditions or natural calamities. • To provide stable market access to the dairy farmers. • To enable State Cooperative Dairy Federations to continue to make timely payments of dues to the farmers. • To enable the cooperatives to procure milk at a remunerative price from the farmers, even during the flush season.	2018
Livelihood and Enterprise Development Programme (LEDP)	• To enhance the capacities of SHG members through identifying the skill gaps, appropriate skill upgradation, exposure visits, demonstrations and support for livelihood activities in the locality. • To enhance the income levels of SHG members by taking up livelihood activities with credit support of banks through SHG or through individual/JLG mode.	2015
Animal Husbandry Infrastructure Development Fund (AHIDF)	• To help increasing of milk and meat processing capacity and product diversification, thereby providing greater access for unorganized rural milk and meat producers to organized milk and meat market polygon • To make available increased price realization for the producer polygon • To make available quality milk and meat products for the domestic consumer	2020
Rashtriya Gokul Mission (RGM)	• To enhance productivity of bovines and increasing milk production in a sustainable manner using advance technologies. • To propagate use of high genetic merit bulls for breeding purposes. • To enhance Artificial insemination coverage through strengthening breeding network and delivery of Artificial insemination services at farmers doorstep. • To promote indigenous cattle & buffalo rearing and conservation in a scientific and holistic manner.	2014
(NLM)	• Increase of per animal productivity through breed improvement • Increase in production of meat, egg, goat milk, wool and fodder. Increasing availability of fodder and feed to substantially reduce the demand – through • strengthening the fodder seed supply chain and availability of certified fodder seeds	2014–2015
Livestock Health and Disease Control Programme (LHDCP)	• To control and eradicate Foot and Mouth Disease (FMD) by 2030 • To control Bovine Brucellosis with Vaccination • To control and eradicate Peste des Petits Ruminant (PPR) by 2030 • To control Classical Swine Fever (CSF) by vaccination • To provide veterinary services at the farmers' doorstep through Mobile Veterinary Units (MVUs)	2022
National Programme for Dairy Development (NPDD)	• To enhance quality of milk and milk products and increase share of organized milk procurement	2014

ICAR Initiative

ICAR-National Dairy Research Institute in Haryana initiated the project “Improving Livelihood of Rural Women through Dairy-based Secondary Agriculture” where rural women established SHGs to participate in dairy-based livelihood activities.

This initiative, funded by The Department of Science and Technology, aims to empower women economically and socially, by motivating them to participate in dairy farming. The project facilitated the generation of extra income and helped women achieve social esteem in local societies. Every cluster of 4 to 8 women associates in the dairy cooperative is assigned into designated tasks such as milk procurement, preparation and labelling of product, marketing, and accounts management.

Each member dedicates 2 to 3 hours a day to such tasks enabling them to efficiently operate dairy based entrepreneurial venture to generate extra income for household needs. The rural women receive training and practical sessions on development of value-added dairy products, with 50 workshops help for 635 rural women from 27 villages.

The schemes comply with National Skills Qualification Framework (NSQF) set by the National Skill Council of India. The ICAR-NDRI in Karnal, Haryana conducted on-campus training at its Women Empowerment Lab to train women in selected villages. Three districts in Haryana (Karnal, Panipat, Sonapat) showed significant progress. The training helped women groups start earning additional income of Rs. 5,000 to Rs. 20,000 per group by selling quality dairy products. This initiative also promoted the availability of healthy and unadulterated dairy products to consumers (Table 4).

Table 4. SHG established by ICAR initiative.

SHGs	Village	Product
Shri Ram SHG	Manglora Village, Karnal	Milk, paneer, whey drink and Gulab Jamun.
Shivam SHG	Bharatpur Village, Karnal	Ghee, Khoa.
Santoshi SHG	Hasanpur Village, Karnal	Ghee, Khoa.
Bharti SHG	Karnal	Gulab Jamun, Paneer, Ghee.
Sashakt SHG	Karnal	Gulab Jamun, Ghee.
Aarzoo SHG	Pattikalyana Village, Panipat	Paneer.
Lakshmi SHG	Dinger Majra Village, Karnal	Gulab Jamun.

USE OF ICT TOOLS FOR SHG DAIRY TRACKING

The Ministry of Rural Development (MoRD) launched the DAY-NRLM program to empower rural women by providing them with information, knowledge, training, equipment's, small credit-based loans, and support for participation. Self-Help Groups (SHGs) have been instrumental in promoting financial support and livelihood security for small women producers. However, challenges – such as high costs and market risks – hinder their economic outcome.

The National Rural Livelihoods Mission (NRLM) is addressing these issues by promoting Farmer Producer Organizations (FPOs) to elevate SHG members to higher-value chain activities with access to credit and the global market.

By connecting SHGs into online payment systems and involving them in high value supply chains, the aim is to increase market share and sustainable income [27]. discussed various aspects of ICT tools and their benefits (Table 5) for a successful self-help group supported microenterprise such as Foundation for Development of Rural Value Chains (FDRVC), Value Addition & going to D2C Markets, Training & Capacity Building, Local Entrepreneurship, Traceability, ERP enabled Digital Commodity Collection Centre, QR code linked Member ID cards, Know Your Member Drive, Mobilization with Saturation approach, 100% women farmer membership and payment in their account, Business Plan First for IT based solutions for SHGs.

Table 5. ICT intervention and their benefits.

Intervention	Benefits
Business Plan First	- Identifying key commodities. - Focus on resources.
100% women farmer membership and payment in their account	- Direct digital payments, and ERP-enabled procurement. - Increased Women participation.
Mobilization with Saturation approach	- Structured establishment of 4–5 villages per collection centre and 4–5 D3Cs per cluster. - minimizing mobilization costs.
Know your member Drive	- To understand the transaction experience of member farmers. - Improved communication. - Gradual increase in the volume transacted per member.
QR code linked Member ID cards	- Unique Member ID for farmer members. - To track the farmer's production and sales. - To track the payment of the member and other transactions.
ERP enabled Digital Commodity Collection Centre (D3C)	- Increased Efficiency. - Increased Market Access. - Improved Price Transparency.
Traceability	TAFETA label and ERP helps in trace the total produce of women farmer.
Local Entrepreneurship	- Reduced Transaction costs. - Enhanced procurement efficiency. - Resolve operational challenges.
Training & Capacity Building	- To provide training to farmers on good Agri practices, sustainable agriculture, Sanchalika on crop quality and D3C operations, BOD on governance and compliance policies. - To provide rigorous training on the protocols. - Periodic revision training.
Value Addition & going to D2C Markets	- Value addition of millets to RTE millet products. - Enhance the margin for PCs. - Reduce the commodity risk.

Foundation for Development of Rural Value Chains (FDRVC)

FDRVC improves Farmer Producer Organizations (FPOs) by resolving supply chain challenges for small producers. It focuses on pricing, quality control, timely disbursement, and minimizing operational expenses to improve engagement with organized markets.

The demand supply chain strategy connects FPOs with regular buyers, supporting pricing transparency, product quality, and timely payments. ERP systems enhance transparency and operational efficiency and helps farmers in strategic planning.

FDRVC establishes village support and value addition units to improve profitability, income generation, rural employment, and women empowerment. Its user-friendly interface, ICT supported framework offers an adaptable model for FPO promotion in India (Figure 4).

Along with these initiatives, training and skill development play a key role in capacity building by creating a trained workforce [28, 29]. have discussed various aspects of training for self-help groups and their impact on microenterprises supported by SHGs. As discussed by ICAR (2026) (Icar.org.in) [30] for a successful SHG coming together, learning together and working together of all the members of SHG is necessary.

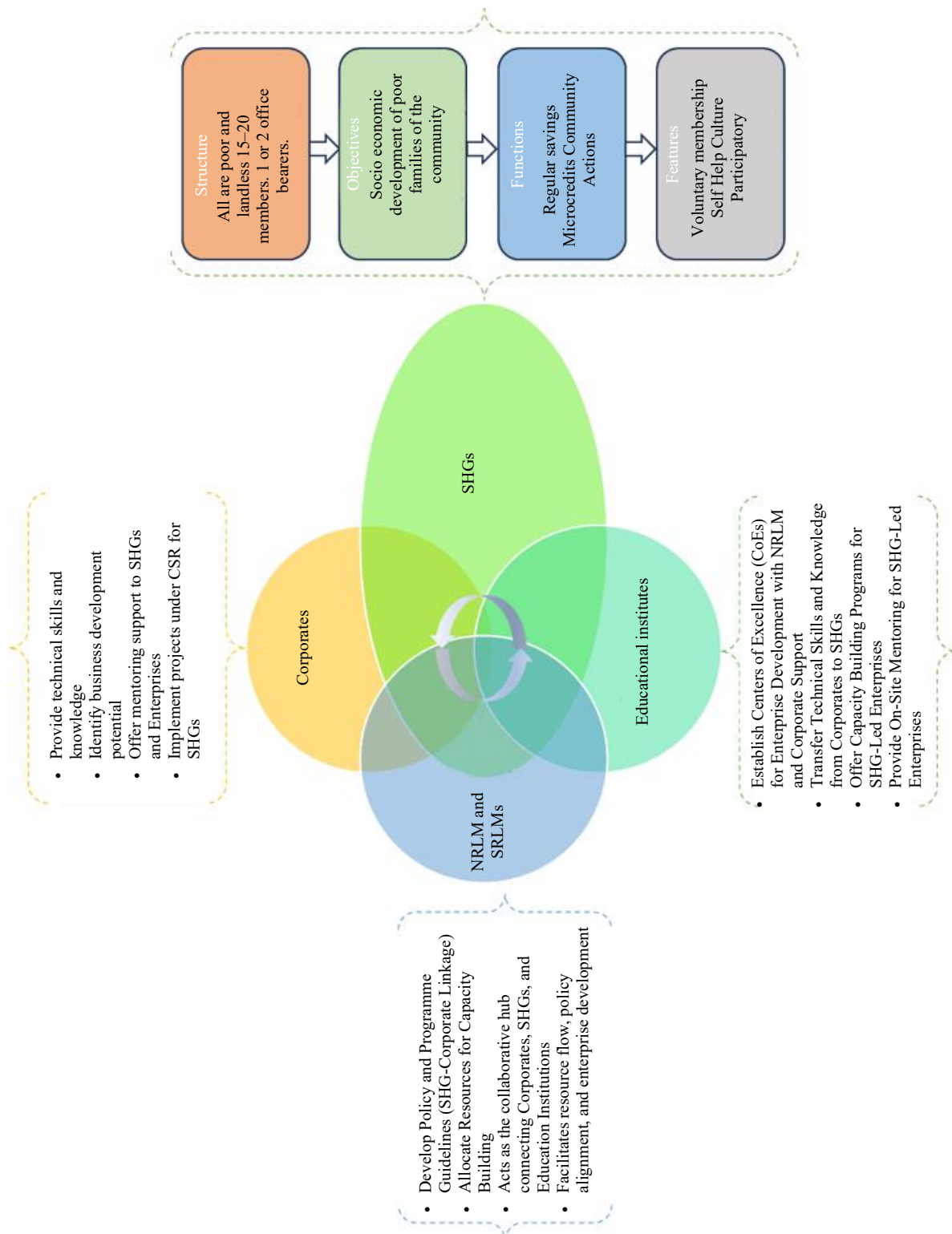


Figure 4. Institutional linkage model for SHG-led enterprise development.

CONCLUSION

SHGs serve as a voluntary association for rural women to participate in dairy entrepreneurship, strengthening economic independence and social empowerment. As a voluntary group of 10–20 members, SHGs mobilize savings, resource linkages, and enhance entrepreneurial skills. Their role in organized milk production directly addresses the rising national demand while solving rural poverty.

SHG dairy ventures enhance income, ownership, and decision-making power, especially among women engaged in agriculture and the dairy business. Institutional support, training, and ICT integration enhance productivity and market access. To sustain this progress, gender-sensitive policies should be implemented to credit, veterinary services, digital literacy, and bargaining power in alignment with schemes like DAY-NRLM, RGM, and AHIDF. SHGs also play a key role by providing microcredit and business training, empowering women to overcome barriers and establish their own dairy enterprises. Despite challenges, like limited infrastructure, cultural barriers, and market access, Self-Help Groups (SHGs) are crucial for the overall growth of rural women. With the help of governments, financial institutions, and civil society is crucial for women-led enterprises. SHGs promote equal market participation and provide robust support systems for long-term socioeconomic development. Empowering women through SHGs is not just a checkbox for policy, it sparks real change.

List of Abbreviations

Abbreviation	Full Form
MYRADA	Mysore Resettlement and Development Agency
ICAR	Indian Council of Agricultural Research
SHGs	Self-Help Groups
ICT	Information and Communication Technology
DAY-NRLM	Deendayal Antyodaya Yojana – National Rural Livelihoods Mission
RGM	Rashtriya Gokul Mission
AHIDF	Animal Husbandry Infrastructure Development Fund
NABARD	National Bank for Agriculture and Rural Development
GVA	Gross Value Added
CAGR	Compound Annual Growth Rate
FAO	Food and Agricultural Organization
KVKs	Krishi Vigyan Kendras
ROSCAs	Rotating Savings and Credit Associations
WHGs	Women's Health Groups
NGOs	Non-Governmental Organizations
WDSHG	Women Dairy Self-Help Groups
PCA	Principal Component Analysis
CPI	Composite Performance Index
DIDF	Dairy Processing and Infrastructure Development Fund
SVEP	Start-up Village Entrepreneurship Programme
DEDS	Dairy Entrepreneurship Development Scheme
SDCFPO	Supporting Dairy Cooperatives and Farmer Producer Organisations
FPOs	Farmer Producer Organizations
LEDP	Livelihood and Enterprise Development Programme
NLM	National Livestock Mission
LHDCP	Livestock Health and Disease Control Programme
NPDD	National Programme for Dairy Development
NSQF	National Skills Qualification Framework
MoRD	Ministry of Rural Development
FDRVC	Foundation for Development of Rural Value Chains
ERP	Enterprise Resource Planning

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