



## Keynote Address



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**G**ood morning, Namaste!

When the history of modern India's economic transformation is written, it will record that some of the country's most enduring and successful enterprises were not born in board rooms, incubators or venture capital hubs. They were born in villages. Long before the terms "startup", "entrepreneurship", or "innovation ecosystem" entered our everyday vocabulary, India's dairy farmers had already built them-quietly, collectively, and sustainably.

More than seven decades ago, ordinary farmers came together to solve an extraordinary problem: how to gain control over their produce, secure fair prices, and build livelihoods with dignity. With no access to capital markets, no formal training in management, and no safety nets, they pooled their resources, shared risks, and founded what we now recognise as the world's largest collective entrepreneurial movement-dairy cooperatives.

In today's language, we would refer to these institutions as village-level startups. Their founders were dairy farmers-small, marginal, and landless-who invested not money, but trust, effort, and resilience. Their innovation lay in cooperation; their business model lay in shared ownership; and their success lay in scale with inclusivity. Unlike many modern startups that chase valuation, these farmer-founded enterprises pursued value-economic, social, and national.

It is most fitting that the theme of this Conference is **'Empowering Rural India through Dairy Entrepreneurship'**, as it builds upon this legacy. Standing at the threshold of White Revolution 2.0 and the vision of Viksit Bharat 2047, we are not embarking on a new journey, but renewing and modernising a proven one.

It is indeed a great honour and privilege to deliver the Keynote Address at this 52<sup>nd</sup> Dairy Industry Conference being held at the iconic Yashobhoomi Convention Centre, New Delhi. The Indian Dairy Association has, over the decades, built this conference into the most important annual congregation of dairy fraternity in the country, and each edition has increasingly contributed meaningfully in shaping the discourse of Indian dairying. The last time the DIC was held in New Delhi was in 2012, and since then, in the 14 years that have passed, India has added a little over the USA's milk production to its volume of milk production!

This year's theme, **'Empowering Rural India through Dairy Entrepreneurship'**, is both timely and transformative. It aligns seamlessly with India's national priorities today which are inclusive growth, rural prosperity and the vision of Viksit Bharat 2047. The concept of Viksit Bharat, a developed India by the centenary of our Independence, will be a developmental milestone in the rich history of India that we aspire to achieve. It is a vision of holistic transformation where prosperity is shared, growth is inclusive, and opportunities are equitably distributed. Therefore, the choices we make today have to be well-thought out as they are going to have a major bearing on the future we all desire to build. The consequences it can have on generations to come will be profound!

India today stands at a defining juncture in its developmental journey. As the world's fourth-largest economy and one of the fastest-growing major nations, it is poised to become the third-largest by the end of this decade. India's growth story has drawn global attention, especially in the current unpredictable geopolitical scenario and uncertain times.



I would like to emphasize that the true strength of this macroeconomic narrative lies in rural India, where nearly seventy percent of our population resides. Rural India is not just a demographic reality; it is the soul of the nation. It feeds the country, sustains cultural traditions and provides the workforce that fuels both agriculture & industry, driving the country's economic progress. Any vision of a developed India is incomplete unless it addresses rural livelihoods, income security and social empowerment. The prosperity of our villages, directly determines the pace and extent of our national progress. For India to rise as a global economic leader, its villages must evolve into vibrant ecosystems of entrepreneurship, education, healthcare, and innovation. The journey towards a developed India, therefore, begins with the development of rural India.

By unlocking the true potential of rural India, we unleash a reservoir of productivity, innovation, and resilience that can propel the nation towards our vision of Viksit Bharat 2047. This is where dairying has been playing an unparalleled role in creating rural prosperity. You are all aware of the tremendous transformation in dairying that has taken place in India which is now being recognized globally and has become a source of inspiration for many across the world. India is fast emerging as one of the brightest spots on the Global Dairy Map. This success has been made possible through timely large-scale interventions, a conducive policy environment, strong institutions and the perseverance of our dairy professionals and dairy farmers.

The last decade has witnessed a rapid pace of growth and unprecedented advancements in Indian dairy industry. I am confident that it will be remembered as a golden decade for this sector. This growth has been driven by increased awareness of health and well-being among consumers, trust in packaged dairy products, rising disposable incomes, a rapidly expanding consumer base, technological advances in dairying, efficient dairy value chains, productivity enhancements and sustainability measures.

### **Dairying: From Subsistence Activity to Entrepreneurial Movement**

In the Indian context, dairying is more than just a rural activity. It is a social and economic movement that touches the lives of more than 8 crore rural households. From landless labourers to marginal farmers, dairying provides a consistent source of income that is unmatched by most other rural occupations.

India's transformation from a milk-deficient nation to the world's largest milk producer is a remarkable tale of

farmer entrepreneurship, institutional innovation, and cooperative leadership. Milk production has grown from about 17 million tonnes in 1950-51 to nearly 248 million tonnes today, accounting about one-fourth of global milk production. This transformation was not achieved through large corporate farms or capital-intensive models, but through crores of small producers owning one or two animals, organised through cooperatives and producer institutions.

While entrepreneurship, innovation, and start-ups are often discussed in contemporary conversations, I firmly believe that our farmers truly embody the spirit of entrepreneurship. Supported by skilled professionals and visionary leaders, they have created start-ups in the form of dairy cooperatives with limited resources, businesses that have not only survived but thrived over time. The essence of any entrepreneurial endeavor is the willingness to take risks in pursuit of rewards. Do our farmers not exemplify this by facing numerous uncontrollable challenges such as unpredictable weather, fluctuating markets, and disease outbreaks that directly impact their work, production, and livelihoods?

For a moment, let's reflect on the gambles undertaken by dairy farmers at the time of Independence as they established pioneering cooperatives in Anand, Gujarat—a spark that ignited a nationwide revolution. In an unpredictable environment, without venture capitalists or seed funding, their only capital was unyielding courage, steely resolve and indomitable will.

These cooperatives have played a significant role in shaping where we stand today. Weathering storms and celebrating achievements, several of these early ventures have now surpassed seventy-five years of existence, a feat few enterprises in any sector achieve. As the founders of these cooperatives come from the farming community, their success has led to a remarkable elevation of dairy farmers. In recognition of their impact on sustainable development, the UN declared 2025 as the International Year of Cooperatives.

Over time, dairying has become a cornerstone of India's rural economy, showcasing how grassroots entrepreneurship, when backed by cooperative institutions, can lead to significant transformation. The narrative of India's advancement is closely intertwined with the narrative of its villages, and within that, the narrative of dairying.

### **How Dairying Transformed India's Villages**

Our small and marginal dairy farmers have together created a decentralized yet remarkably efficient value chain that touches almost every nook and corner of the



country. The economic footprint of dairying today is extraordinary. Valued at Rs 12.2 lakh crore, milk is India's single largest agricultural commodity, exceeding the combined value of cereals, pulses, and sugarcane.

The livestock sector's contribution to agricultural GDP has climbed from 22 percent in 2011-12 to nearly 31 percent in 2023-24, and about 65 percent of livestock is dairying, reflecting how the sector now anchors rural income. In practical terms, dairying adds stability to the rural economy by generating employment throughout the year rather than in seasonal bursts.

The social impact has been equally profound. Dairying has played a decisive role in women's empowerment, with women constituting nearly 70 percent of the dairy workforce. For many, the morning milk collection represents their first independent income - one that strengthens their voice in family decisions, improves access to education and healthcare, and builds community leadership. The cooperative system has provided an institutional platform for these women to become members, shareholders and leaders of local enterprises. It is often rightly said that when one woman is empowered, an entire family and the next generation is forever transformed.

Nutrition has also benefitted immensely. The per-capita availability of milk has risen from 128 grams per day in 1980-81 to 485 grams in 2024-25, surpassing the global average of 330 grams. In a largely vegetarian nation, milk serves as an affordable and complete source of protein, vitamins, and minerals, enhancing food security for over 140 crore citizens.

Beyond economics and nutrition, dairying has reshaped the very fabric of rural India. It has fostered collective enterprise, reduced social barriers, and strengthened local institutions through cooperation and shared ownership. The cooperative movement that grew around milk has become a blueprint for grassroots democracy - where every producer, however small, has a stake and a voice. It is this fusion of economic logic and social inclusion that makes the dairy cooperative system a true engine of rural transformation.

### **Dairy Cooperatives - India's Home-Grown Model of Entrepreneurship**

The story of India's dairy revolution goes hand in hand with the story of evolution of its cooperatives. When the Kaira District Cooperative Milk Producers' Union, better known as Amul, was founded in 1946, it laid the foundation for a movement that would redefine rural enterprise and soon pave way for the White Revolution in India. What began as a local effort to protect farmers from exploitation evolved into a model that was

replicated nationwide, uniting millions of producers under a shared vision of collective prosperity.

At the heart of this model lies a simple yet powerful principle - ownership by producers and management by professionals. Every milk producer, no matter how small, becomes a member of a village-level Dairy Cooperative Society (DCS), which is then federated into district unions and subsequently into state federations. This three-tier structure, controlled by farmers themselves, at each level and run with the help of professionals, ensures that value created from milk flows back to the producers. It also guarantees transparency, regular payments, and a sense of dignity that comes from ownership rather than dependence.

Today, India's dairy cooperatives represent one of the largest self-managed networks of producers in the world. In India, dairy cooperatives return 70-80 percent of the consumer price directly to producers, the highest proportion globally. The system now includes about 2.5 lakh village societies, enrolling nearly 1.7 crore members and collectively procuring around 660 lakh kilograms of milk per day. The annual payback by these cooperatives exceeds Rs 1 lakh crore, effectively channeling over Rs 270 crore back into rural households each day. These numbers speak not only of the economic scale of the movement but also to its inclusivity. Even the smallest farmer in a remote village participates in a value chain that spans from the milking pail to urban retail shelves.

Through the cooperative framework, dairying was transformed from a household subsistence activity into one of the most successful examples of grassroots industrialization in the world.

### **Expanding the Frontiers of Rural Dairy Entrepreneurship**

Despite its immense success, India's dairy sector still has vast potential and a lot remains to be achieved. Although the milk sector is much more organized than fruits and vegetables, only about 30 percent of milk is handled by the organized sector, which includes cooperatives and private dairies. The remaining 70 percent is handled informally through local vendors or unorganized markets, often without assured quality, traceability or fair returns to the producer. This means that while India produces more milk than any other country, there is scope for it to translate into formal income, value addition, or export opportunity for farmers.

The organized sector's share also underscores the opportunity for expansion of cooperatives. Many districts and panchayats, especially in eastern and central India, remain uncovered or under-served by cooperative



networks. Establishing viable DCSs in these areas could bring millions of new producers into the formal economy, ensuring transparency, fair pricing, and technical support. Every new DCS established is not merely an administrative addition, it represents hundreds of rural families gaining a reliable income stream and access to high quality institutional services.

There is also significant potential for value addition and diversification. Nearly 75 percent of the milk handled by cooperatives is still sold as liquid milk, with only a quarter converted into products such as ghee, butter, curd, paneer, cheese, or flavoured milk. Expanding this portfolio towards value-added products (VAPs) can multiply rural incomes several times over. As urban consumers shift toward health-conscious and convenience foods, demand for dairy products like probiotics, high-protein beverages, organic variants are rising rapidly. Tapping this demand can convert India's vast raw milk pool into a diversified range of high-value products, strengthening both farmer incomes and export potential.

India's share in the global dairy trade remains less than one percent, even though the country accounts for one-fourth of world milk production. Most of India's exports currently go to neighbouring Asian and Middle Eastern markets, dominated by skimmed milk powder, ghee, and butter oil. With better processing facilities, certification systems, and cold-chain logistics, India can significantly increase its footprint in value-added global segments.

Therefore, rural entrepreneurship in dairy thus serves a dual purpose, it strengthens local economies by providing continuous income and employment, while also aiding in positioning India to meet emerging domestic and international demand. Every litre of milk handled formally, every producer trained, and every cooperative formed adds a new layer of resilience to India's rural economy.

### **Institutional Support**

The role played by several pioneering institutions across the country can never be overemphasized. I would like to mention that, the year 2025 also marked the Diamond Jubilee of the National Dairy Development Board (NDDB), a milestone that highlights 6 decades of building India's cooperative dairy movement, enabling farmers, and transforming the rural economy. NDDB's journey from Operation Flood to Perspective Plan to National Dairy Plan and now to climate-smart and digital dairying reflects the strength of its farmer-centric approach, professional management, and innovation-driven development. The Diamond Jubilee year became not only a moment to reflect on past achievements but

also a catalyst for accelerated progress, deeper collaborations, technology infusion, and renewed commitment to sustainability and resilience across the dairy value chain. Today, our initiatives focus on productivity enhancement, innovative technology, handholding needy cooperatives and sustainable practices.

As India enters the next phase of dairy-led rural transformation, the cooperative legacy stands ready for renewal. The next stage is not just about expanding milk procurement, but also enhancing entrepreneurial capacity in every village.

### **Expanding Cooperative Footprint**

The Ministry of Fisheries, Animal Husbandry and Dairying and Ministry of Cooperation have provided a fresh impetus to this effort by integrating policy and implementation under one unified framework with increase in budgetary allocations and better schemes. Guided by the vision of "**Sahkar-se-Samridhi**" - prosperity through cooperation, NDDB has embarked on an ambitious mission to reach out to more and more dairy farmers. The cooperative-led "**White Revolution 2.0**" is aimed at expanding cooperative coverage, employment generation, and women's empowerment with an objective to increase the milk procurement of dairy cooperatives by 50% to 1,000 Lakh Kg per day over the next five years by providing market access to dairy farmers in uncovered areas and increasing the share of dairy cooperatives in organized sector. NDDB has been designated as a principal stakeholder in the implementation of this national initiative.

An action plan was prepared by NDDB for establishing about 75,000 new Multipurpose DCS (MDCS) during 2024-25 to 2028-29 to achieve the procurement targets. In addition, over 46,000 existing village-level DCS/PACS will be strengthened with better and advanced milk procurement and testing infrastructure. So far, about 23,000 new DCS have been formed since the programme was launched. We are making good progress on this mammoth assignment as the goal is to achieve in 5 years what was done in the past 75 years.

### **Enhancing Productivity**

Keeping milch animals at the pink of their health and productivity is of paramount importance. Even the best cooperatives or market linkages cannot create value if the animals do not produce optimum milk, remain healthy, or reproduce efficiently. Recognizing this, NDDB has implemented a range of interventions to improve animal health, nutrition, and breeding, ensuring that farmers can increase productivity, reduce costs, and manage risks effectively.



NDDB advanced its productivity enhancement initiatives by integrating scientific breeding, balanced nutrition, and improved animal management practices. Reproductive technologies such as OPU-IVF-ET were propagated through a hub-and-spoke model. NDDB also developed GauSort, an indigenous sex-sorting technology enabling 90 percent female calf births at one-third the earlier cost. With ICAR-NBAGR, NIAB, and BAIF, NDDB developed the first Indian genotyping chips - GAUCHIP for cattle and MAHISHCHIP for buffaloes. These chips enable affordable genotyping services for farmers, facilitating early selection of high-quality heifers and young bulls.

Furthermore, scientific feeding initiatives focused on harnessing genetic potential, improving efficiency, and reducing GHG emissions. Ration balancing was scaled through the 1962 Farmers App, NMRP, and collaborations with Aga Khan Foundation and Kolhapur Milk Union, complemented by precision feeding pilots.

Support to cooperative cattle feed plants included least-cost formulation, improved quality control, new feed variants, and adoption of unconventional resources like DDGS and bakery waste, validated for safe inclusion. Research on ozonation achieved significant aflatoxin and microbial reductions, while R&D on slow-release nitrogen products such as Starea and nitrate-based combinations demonstrated methane mitigation potential of up to 18 percent.

Fodder development remained a strategic focus, with seed production worth Rs 66 crore under NLM and 100 Fodder Plus FPOs formed across 19 States. Technology-enabled initiatives such as GIS and remote sensing for green fodder acreage estimation were piloted with SAC-ISRO. NDDB also standardised silage production from high-moisture agricultural waste, forage hay-based pellet formulations for scarcity regions, and stubble-to-silage technologies, with a plant being set up in Sangrur. These interventions helped farmers optimise feed costs, improve productivity, and reduce environmental impacts.

Animal health interventions were strengthened through a One Health approach. NDDB promoted DCAM - an Ayurveda-based alternative therapy model - to reduce antibiotic use and combat antimicrobial resistance. Efforts in disease diagnostics, vaccination coverage, and surveillance helped minimise livestock losses and safeguard farmer incomes.

### **Sustainability and Circular Economy**

We all agree that climate change is real and surpassed comfortable levels demanding urgent action. It is evident and is being felt by each one of us - seasonal rains, droughts, floods, harsher summers and winters and

shifting of seasons are a reality. Human induced activities have been taking a toll on the environment and it is in our common interest to mitigate its impact in whatever way we can. We have focused our energies on propagating manure value chain which is a win-win for all. It not only transforms what was once considered waste into valuable resources for energy, fertilizers, and income generation, it is also helping in restoring the environment. Our efforts and pilots over the past few years have helped us develop multiple models that are suitable for different needs, from household-level biogas to large-scale industrial solutions.

The Decentralized Model turns dung at the household level into biogas for cooking and organic fertilizer for fields making usage of traditional cooking fuels and chemical fertilizers redundant. The Centralized Model goes a step further, producing vehicle-grade Compressed Bio Gas alongside organic fertilizers, demonstrating how dairy waste can contribute to India's clean energy goals. The third model, Thermal-Electric Model channels biogas to meet the energy needs of dairy plants, cutting operating costs. These models not only reduce greenhouse gas emissions but also generate additional income streams for farmers. Partnerships with organizations like Suzuki Motor Corporation are helping replicate these models, expanding clean energy access in rural areas.

Scaling these models nationally requires strong collaborations. NDDB has been working with ONGC, NDDB Foundation for Nutrition, Banas Dairy, Suzuki R&D Centre India, CSR partners, and Sustain Plus Energy Foundation to replicate and expand these initiatives. Over 35,000 household-level biogas plants have already been installed, and NDDB's subsidiary, NDDB MRIDA Ltd, ensures a dedicated focus on upscaling these efforts efficiently.

Workshops and strategic partnerships are also helping spread these practices. A national workshop last year has led to MoUs with 25 dairy cooperatives across 15 States, enabling the establishment of biogas, CBG, and community-scale manure management plants. These initiatives create clean energy, improve soil health, and generate new income opportunities for smallholder farmers.

The NDDB-Sustain Plus Programme Phase II further integrates manure and dairy value chains. Household-level flexi-biogas units provide clean cooking fuel while producing nutrient-rich bio-slurry as organic fertilizer. Community and gaushala-scale biogas plants create clean fuel and generate revenue from surplus slurry processed into commercial fertilizers. Solar-powered milk collection and cooling units, along with farm-level



processing units for products like pasteurized milk, ghee, and cheese, ensure operational efficiency and entrepreneurship opportunities for local farmers.

Beyond energy and fertilizers, water conservation and circularity are also central. The SPICE model empowers farmer groups to collectively operate solar-powered irrigation systems, ensuring efficient groundwater use. At processing plants, Effluent Treatment Plants (ETPs) and Zero Liquid Discharge (ZLD) systems allow wastewater reuse for cleaning, cooling, and irrigation. These measures reduce freshwater dependency and demonstrate practical circularity in action.

These initiatives are turning dairy waste into wealth and emissions into incomes. By linking manure management, renewable energy, and water conservation, India's dairy sector is evolving into a climate-smart, circular economy.

### **Creation of Multi-State Cooperative Institutions - Empowering Farmers to Lead the Circular Dairy Transition**

India's dairy sector has reached a pivotal moment where future growth must be anchored in sustainability, inclusiveness, and resilience. The cooperative model—having empowered millions of smallholders and ensured national food security—remains central to this transition. As we chart the way forward, strengthening cooperative institutions across the dairy value chain is essential, not only for efficiency and market access, but increasingly for advancing sustainability and a circular dairy economy.

In this direction, NDDB under the guidance of Hon'ble Union Minister of Home and Cooperation Shri Amit Shah ji, has taken a significant step by promoting a new generation of Multi-State Cooperative Societies (MSCS) under the Multi-State Cooperative Societies Act, 2002. These institutions are designed to address structural gaps that individual cooperatives or states cannot solve in isolation, while preserving the cooperative ethos of democratic governance, farmer ownership, and professional management.

**The Cooperative Input Service Delivery Multi-State Limited (CISDL)** has been established to ensure reliable, affordable, and quality access to critical farm inputs and services. By integrating feed, fodder, animal health, and breeding solutions under one cooperative umbrella, CISDL aims to reduce input costs, improve productivity, and enhance farm-level profitability - particularly for smallholder dairy farmers who are most vulnerable to market and supply shocks.

Complementing this effort is the **Gomay Sahkari Samiti Multi-State Limited (GSSL)**, which reflects our

commitment to sustainability and rural livelihoods. By promoting scientific manure management, organic fertilizers, and renewable energy solutions, GSSL aligns dairy development with national priorities of climate action, circular economy, and green growth, while creating new income and employment opportunities in rural areas.

On the market side, the **Cooperative Milk Producers' Organization Multi-State Limited (CMPOL)** has been envisioned to strengthen procurement and marketing capabilities of Milk Producer Organizations across states. By aggregating scale, enhancing market access, and improving value realization, CMPOL will help ensure that farmers receive a fair and remunerative share of consumer value, even in an increasingly competitive dairy marketplace.

Looking ahead, NDDB is also working on the conceptualization of a national-level cooperative for ethical and scientific management of fallen animal by-products, inspired by the vision of Hon'ble Union Minister of Home and Cooperation Shri Amit Shah ji. This initiative seeks to achieve 100 percent circularity by converting carcass management into a dignified, hygienic, and value-adding rural enterprise, while addressing sanitation, environmental, and livelihood concerns.

Together, these initiatives represent a holistic approach to cooperative-led dairy development - one that integrates productivity, sustainability, market access, and circular economy. NDDB remains committed to working closely with policymakers, state governments, cooperative institutions, private stakeholders, and above all, our farmers, to build a future-ready dairy sector that is resilient, inclusive, and globally competitive, while remaining deeply rooted in the cooperative values that have defined India's dairy success.

### **Technology and Innovation as Force Multipliers**

Dairying today is also about leveraging technology to simplify operations, improve quality, and increase farmers' income. NDDB has introduced a range of technological innovations helping farmers and cooperatives operate efficiently, reduce costs, and scale operations.

Along with developing indigenous sex-sorting technology for ensuring female calf births and indigenous genomic chips for better progeny selection, we have also developed an indigenous IVF media suite called '**Shashthi**', which supports *in-vitro* embryo production and embryo transfer. By reducing dependence on expensive imported media, this technology makes advanced reproductive techniques accessible and cost-effective, helping farmers improve breed quality.



Quality and safety are central to building consumer trust. The Conformity Assessment Scheme for Milk & Milk Products (CAS-MMP) provides a unified system for quality and food-safety certification across the dairy value chain. At the same time, NDDB's milk adulteration detection kits allow testing for common adulterants at household or cooperative levels, ensuring safer milk for all.

Adequate fodder is vital for productive animals. To address this, NDDB partnered with ISRO's Space Applications Centre to map fodder resources using remote sensing technology. This initiative identifies surplus and deficit regions, helping cooperatives plan fodder procurement and cultivation efficiently.

Further, the Ready-to-Use Culture (RUC) technology developed by NDDB ensures that cultures needed for fermented dairy products like dahi, lassi, and mishti dahi can be produced domestically, reducing import dependence. RUC can support the production of up to 10 lakh litres of fermented milk per day, strengthening dairy processing and making high-quality cultures available to cooperatives nationwide.

Another recent milestone has been the last month's strategic alliance between the Indian Council of Agricultural Research (ICAR) and NDDB which marks a defining moment for the future of India's dairy sector. By bringing together ICAR's vast scientific and research capabilities with NDDB's unparalleled grassroots reach and cooperative experience, this partnership seeks to bridge the gap between laboratory research and farm-level impact. The collaboration is designed to foster multidisciplinary research, accelerate innovation, and strengthen extension systems across the dairy value chain—covering production, processing, value addition, climate resilience, fodder development, waste-to-wealth solutions, and sustainable livestock management.

More importantly, this alliance reflects a shared national vision: to empower dairy farmers with science-led, field-tested solutions that enhance productivity, profitability, and resilience. This initiative is aimed at breaking institutional silos and co-creating solutions rooted in farmers' realities. The ICAR-NDDB partnership has the potential to evolve into one of the world's largest collaborative platforms for scientific cooperation, addressing not only dairy but related agricultural value chains including fruits, vegetables, oilseeds and fodder - transforming knowledge into action, innovation into income, and cooperation into a powerful force for inclusive and sustainable growth of India's dairy economy.

The combined momentum of these initiatives signals a decisive transition of dairying in India to a smart-dairying

in India. The objective now is not only to produce more, but to produce better, sustainably, and profitably. By aligning institutional innovation with farmer entrepreneurship, the government and cooperatives are creating a rural ecosystem that is self-reliant, technology-driven, and globally competitive.

### Going digital

India's dairy sector is undergoing a fundamental transformation—from being scale-driven to data-driven. Under the leadership of NDDB, a comprehensive digital ecosystem is being built that connects animals, farmers, cooperatives, and markets into a single, transparent, and traceable value chain. Initiatives such as the National Digital Livestock Mission and Bharat Pashudhan have provided a digital identity to over 35 crore animals through Pashu Aadhaar, enabling real-time tracking of health, breeding, and productivity. This data backbone, supported by mobile veterinary services and nationwide platforms, is improving service delivery, enhancing productivity, and placing informed decision-making directly in the hands of farmers and veterinarians.

At the operational level, NDDB's digital solutions—ranging from Automatic Milk Collection Systems to open-source Dairy ERP platforms—are bringing unprecedented transparency, efficiency, and cost optimisation across procurement, processing, logistics, and distribution. Millions of daily milk transactions are now digitally recorded, ensuring fair and timely payments to farmers while enabling cooperatives to plan better and reduce losses. Advanced systems for semen station management, artificial insemination tracking, GIS-based route optimisation, and national-level data aggregation are strengthening genetics, lowering logistics costs, and supporting evidence-based policymaking. Together, these initiatives demonstrate how India's cooperative dairy model is being future-proofed through technology—showing the world that inclusive digital transformation at national scale is both possible and impactful.

### Building Human Capital: Training and Capacity Building

Even the best policies, infrastructure, and breeding programmes cannot achieve their full potential without skilled people to implement them. Recognizing this, NDDB has placed a strong emphasis on training and capacity building across all levels of the dairy ecosystem. This helps in keeping the entrepreneurial spirits of our dairy farmers high and encourage them to expand their enterprise.

NDDB organizes training programmes at its dedicated centres for all stakeholders of dairy cooperatives, from milk producer members and management committee



members to employees of milk unions and cooperative boards. These programmes are designed not just to teach technical skills, technical knowhows, best practices but also to strengthen governance, improve decision-making, and foster professional management of dairy institutions.

NDDDB also extends training to personnel from End Implementing Agencies involved in Government of India-funded projects, such as DTC-JICA and A-HELP (Accredited Agent for Health and Extension of Livestock Production), ensuring that field staff and extension workers are well-equipped to support farmers on the ground.

By building human capital alongside infrastructure and technology, we try to ensure that dairy cooperatives are not only operational but professionally managed, future-ready, and capable of supporting rural entrepreneurship in a sustainable way.

### **Building Momentum - Convergent Policies & Collaborative Governance**

India's dairy sector did not grow by chance. Its expansion rests on a carefully built policy and institutional framework that addresses the structural realities of rural India - small landholdings, scattered producers, high production risks, and limited access to markets. Government-led dairy development schemes form the foundation on which dairy entrepreneurship is able to take root and scale sustainably.

At the heart of dairy entrepreneurship lies the productivity of the animal itself. The Rashtriya Gokul Mission (RGM) was introduced to strengthen this foundation by focusing on genetic improvement alongside conservation of indigenous cattle and buffalo breeds. By promoting scientific breeding practices, improved quality semen, and organized breeding services, RGM enables farmers to produce more milk from the same animals, lowering cost per litre while increasing returns, without compromising breed resilience.

As milk production increased, another critical constraint emerged: the lack of village-level infrastructure for testing, chilling, and safe handling of milk. Without this, farmers were often compelled to sell locally at lower prices or suffer losses due to quality deterioration. The National Programme for Dairy Development (NPDD) was designed to address this challenge by strengthening milk procurement systems and expanding access to the organized dairy sector. Investments in milk testing equipment, bulk milk coolers, and primary chilling facilities allow farmers to preserve quality, receive transparent pricing, and participate in formal markets. Its cooperatives-focused component, supported by the Japan International Cooperation Agency (JICA), further

strengthens institutions and market linkages from village societies to state-level federations.

Sustaining dairy entrepreneurship also depends on reliable and affordable access to inputs, particularly fodder, which constitutes a major share of production costs. The National Livestock Mission and the Formation and Promotion of Fodder Plus Farmer Producer Organisations (FPOs) work together to institutionalize fodder production, aggregation, and distribution. By organizing fodder supply through farmer-owned entities, these initiatives help stabilize input availability, reduce seasonal price fluctuations, and improve feed quality.

Beyond production and inputs, entrepreneurship requires strong institutions that can aggregate produce, manage risk, and reinvest in growth. The Supporting Dairy Cooperatives and Farmer Producer Organisations (SDCFPO) scheme focuses on strengthening governance, professional management, and financial sustainability of producer-owned institutions.

As cooperatives and producer institutions mature, access to capital becomes essential for expansion into processing, value addition, and modern logistics. This need is addressed through dedicated financing mechanisms such as the Dairy Processing and Infrastructure Development Fund (DIDF), now subsumed under the Animal Husbandry Infrastructure Development Fund (AHIDF). These funds support investments in processing plants, cold chains, storage, and allied infrastructure, allowing farmer-owned institutions to move up the value chain and compete in organized markets.

Under the aegis of Ministry of Cooperation, aligning with the vision of '**Local to Global**', National-level multi-state cooperative societies have been incorporated. NDDDB is the chief promoter of National Cooperative Organics Limited (NCOL) - an umbrella organisation for cooperatives involved in the production and marketing of organic agricultural commodities to ensure better returns compared to conventional produce; facilitating market linkages through retail channels and institutional buyers under the brand name "Bharat Organics"; and engaging directly with Farmer-Producer Organisations (FPOs), and Cooperatives. Another multi-State cooperative society namely, Bharatiya Beej Sahakari Samiti Limited (BBSSL) - an apex organisation has been established for producing, processing, storage, marketing, branding, labelling, distribution and conducting research and development on quality seeds produced by cooperatives/other entities. The goal is to provide better prices to farmers and other stakeholders.

This initiative marks a strategic expansion of NDDDB's role beyond the dairy sector, reinforcing its commitment



to holistic rural development through cooperative frameworks.

### Giving Fillip to Budding Entrepreneurs

To give a sustained impetus to entrepreneurship and innovation, the Government of India launched the Startup India initiative in January 2016. Over the past decade, this mission-mode approach has transformed India into one of the world's most vibrant startup ecosystems. As of January 2026, India is home to over 2 lakh DPIIT-recognised startups, spanning diverse sectors and geographies, and supported by a robust policy framework that includes seed funding, credit guarantees, mentoring platforms, and state-level competitiveness frameworks. The declaration of January 16 as National Startup Day has further reinforced the national resolve to celebrate entrepreneurs as key drivers of economic growth, employment generation, and innovation-laying the foundation of a self-reliant and future-ready India. Year 2026 completes a decade of this initiative and this year the programme was graced by Hon'ble Prime Minister at Bharat Mandapam.

For the dairy and animal husbandry sector, this startup movement has opened up unprecedented opportunities. India also holds immense potential for technology-led transformation across production, procurement, processing, logistics, quality assurance, and market access. Over the past few years, hundreds of agri-livestock and dairy startups have emerged across the country, many of them working directly with small and marginal farmers to improve productivity, traceability, input efficiency, animal health, and farm incomes. The inclusion of animal husbandry in the National Startup Awards and the institution of recognitions such as the National Gopal Ratna Awards reflect a conscious effort to celebrate innovation not only in boardrooms, but also in cowsheds, milk collection centres, and cooperative institutions.

Encouragingly, startups such as Stellapps, Mooofarm, Country Delight, Akshayakalpa, Milk Mantra, Statlogic, Dvara E-Dairy, and Hydrogreens demonstrate how digital technologies, data analytics, IoT, AI, sustainable fodder solutions, and farmer-centric business models can strengthen the cooperative dairy ecosystem rather than disrupt it. These innovations align closely with NDDDB's vision of building a technology-enabled, transparent, efficient, and inclusive dairy value chain.

**The Government's decision to create a Rs. 1 lakh crore long-term financing corpus for research and innovation,** announced in recent budgets, further strengthens this enabling environment. Together, these developments offer a historic opportunity for dairy professionals, cooperatives, entrepreneurs, and institutions to

collaborate and ensure that India not only remains the largest producer of milk, but also emerges as a global leader and becomes Dairy to the World.

Taken together, these government-led schemes and initiatives create the enabling environment - better animals, assured markets, reliable institutions, affordable inputs, and modern infrastructure, without which dairy entrepreneurship at the farmer level would remain fragmented and vulnerable.

While national schemes create the broad enabling environment, the long-term strength of India's dairy sector depends on the health of its producer-owned institutions - village societies, district unions, federations and milk producer organizations. NDDDB's own interventions are designed to support these institutions from within, ensuring that they remain financially viable, professionally managed, and capable of serving farmers consistently.

One of the most common challenges faced by cooperatives and milk producer organizations is limited market reach. Many producer-owned institutions collect good quality milk but struggle with branding, distribution, or access to better-paying markets. NDDDB supports such institutions by strengthening their marketing operations, helping them improve product positioning, packaging, logistics, and linkages with organized markets. This ensures that value created beyond the farm gate ultimately flows back to producers. Interventions done a few years ago are yielding fruitful results.

Not all producer-owned institutions face the same issues. Some have strong foundations but suffer from temporary financial stress, management gaps, or legacy constraints. Through the Revitalizing Promising Producer-Owned Institutions initiative, NDDDB identifies such entities and supports their turnaround. The focus is on restoring operational efficiency so that viable institutions are not lost due to short-term difficulties.

Access to timely finance is another critical factor for institutional stability. NDDDB provides working capital loans to producer-owned institutions to ensure smooth day-to-day operations, such as procurement payments to farmers, feed purchases, or routine expenses. This prevents disruptions that can directly affect farmer confidence and milk supply.

In addition, term loans for urgent equipment and machinery allow cooperatives and producer-owned institutions to modernize without delaying critical investments. This includes upgrading dairy plants, cattle feed facilities, feed supplement units, and associated civil works required for efficient operation, refurbishment, modernization, and upgradation. Such support ensures that institutions can maintain quality standards and operational efficiency as they grow.



NDDB also provides financial assistance for infrastructure creation, skill development, and training, recognizing that strong institutions require both physical assets and capable human resources. Investments in chilling facilities, testing equipment, and training programmes help cooperatives operate professionally and sustainably.

Taken together, these interventions reflect NDDB's role not merely as a funding or implementing agency, but as an institution builder. By strengthening producer-owned institutions at every level, NDDB ensures that dairy entrepreneurship remains farmer-centric, resilient, and capable of delivering long-term value to rural households.

### **The Road Ahead: Dairy as a Catalyst for Rural Empowerment**

The past 7 decades of India's dairy journey have been defined by scale, inclusivity, and resilience. The next phase will hinge on efficiency, innovation, and sustainability. For millions of small and marginal farmers, dairying continues to be the most dependable source of daily income, social security, and empowerment. By expanding access to markets, finance, digital tools, and training, rural producers can evolve from milk suppliers into entrepreneurial leaders engaged in production, processing, and marketing. Encouraging youth participation and skill development across the dairy value chain will ensure the sector remains dynamic, future-ready, and innovation-driven.

Looking ahead, Vision 2047 provides a clear and ambitious roadmap for the future of Indian dairying. The vision envisages a substantial increase in average milk yield per animal, expansion of cooperative coverage to over 3.5 lakh villages through White Revolution 2.0, and a significant rise in the share of value-added products in cooperative turnover. It also aims to enhance India's participation in global dairy trade, while ensuring that growth is environmentally sustainable and socially inclusive. Sustainability must be integrated into every aspect of our future strategy. This includes promoting balanced feeding, efficient manure management, renewable energy use in dairy plants, and circular economy approaches that convert waste into value. Our long-term goals must align with India's broader commitment to climate action and the aspiration of achieving net-zero emissions in the coming decades.

The Indian dairy story is, at its core, a story of faith in ordinary people and extraordinary institutions. It demonstrates that when farmers are trusted as entrepreneurs and supported by strong institutions, they can build enterprises of global scale and relevance.

As we look towards the next quarter century, the challenge is not to reinvent the dairy sector, but to deepen and refine it. To strengthen institutions, nurture leadership, embrace technology, and embed sustainability at every level.

For women and rural youth in particular, dairying offers both economic independence and social influence. Supported by cooperative frameworks, transparent governance, and modern management, small-scale dairy enterprises provide year-round income, local employment, and community resilience. Every litre of milk collected through organized channels translates not only into economic value but also into social stability, cooperative ownership, and inclusive growth.

Profitable and sustainable dairying strengthens household incomes, nurtures local entrepreneurship, and reinforces values of trust, cooperation, and self-reliance. It embodies the ideals of inclusive development - equality of opportunity, participation, and shared prosperity. In many ways, the dairy movement mirrors India's own development journey which has been built on collaboration, resilience, and innovation.

As India transitions into the era of White Revolution 2.0 and beyond, the future lies in integrating sustainability, technology, and entrepreneurship. The innovations led by digital revolutions in dairy will not only enhance production but also transform rural livelihoods, turning villages into hubs of economic opportunity, empowerment and circularity.

Dairy entrepreneurship is not merely an economic activity; it is nation building from the grassroots. By empowering farmers as entrepreneurs, strengthening cooperatives, and embracing innovation, we can ensure that rural India becomes a driver of inclusive and sustainable growth. Dairying embodies the spirit of rural entrepreneurship that will power the vision of Viksit Bharat closer to reality, village by village, family by family.

Let us recommit ourselves to strengthening cooperatives, nurturing entrepreneurs, embracing innovation, and ensuring that the benefits of growth reach every dairy farmer.

I conclude by recalling Dr. Verghese Kurien's timeless words:

*"Dairying is an instrument of social and economic change. It is to such instruments that we must look to build the India of tomorrow."*

I am confident that the deliberations of this conference will contribute meaningfully to that noble objective and find pathways to achieve all our dreams.

Thank you. Jai Hind!