National Dairy
Development Board

ANNUAL REPORT 2023-24

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National Dairy Development Board

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Additional Secretary
(Cattle & Dairy Development)

Department of Animal Husbandry & Dairying

Ministry of Fisheries, Animal Husbandry & Dairying

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Maharashtra

[1] Additional Charge of Chairman, NDDB

[2] Up to 27 February 2024

[3] With effect from 17 November 2023

CHAIRMAN'S MESSAGE

It is my privilege to present the Annual Report of NDDB for the Financial Year 2023-24.

Strengthening livelihoods of dairy farmers has always been at the core of our endeavours. During 2023-24, NDDB continued to promote, plan and organise intensive nationwide programmes for the development of dairy and allied sectors with its subsidiaries and dairy cooperatives leveraging various schemes of Central/State Governments. Additionally, several new initiatives and innovative activities were initiated to further support the dairy sector.

At the macro level, supported by favourable climatic conditions, the dairy sector in the year 2023-24 witnessed increased milk production, robust consumer demand and remunerative prices to dairy farmers.

The dairy cooperatives also went the extra mile by reaching out to more dairy farmers in new geographies. This effort resulted in an increase in milk procurement, averaging 662 LKgPD during 2023-24, an impressive 12 per cent increase compared to 2022-23. Currently, dairy cooperatives have 1.72 crore members from 2.36 lakh dairy cooperative societies across the country, playing a major role in bringing about rural prosperity.

Multifaceted initiatives were undertaken during the year to create a more efficient and effective dairy ecosystem. These focussed interventions were targeted towards Productivity Enhancement, fostering innovations and promoting sustainability, which have resulted in many positive outcomes.

NDDB maintained a proactive approach to the genetic improvement of dairy animals through meticulously crafted scientific programmes as well as playing a major role in implementation of Rashtriya Gokul Mission. These programmes, along with scientific and technological interventions in animal nutrition and health, represent significant initiatives undertaken towards productivity enhancement. These interventions have been crucial to make dairying profitable as well as sustainable.

Committed to sustainability, NDDB has continued to develop and propagate various biogas/manure value chain models from decentralised to community and centralised level. Many of these have emerged as models and are now being replicated across the country, with NDDB playing a significant role in it. NDDB also set up a state-of-the-art 100 MTPD Gobar-based Biogas Generation Plant in Varanasi to meet the thermal and electrical energy requirements of the dairy plant. It was a proud moment for us when the plant was inaugurated by Shri Narendra Modi ji, Hon'ble Prime Minister in July 2023, with its foundation stone having been laid by the Hon'ble Prime Minister as well. Today, this plant serves as a model for the country providing various benefits such as income for dairy farmers from sale of dung, replacing expensive imported Light Diesel Oil in the dairy plant, producing organic manure to replace chemical fertilisers and improving soil health.

Measures like using dung for generation of fuel and fertilisers have immense potential for transforming our dairy sector towards sustainability. NDDB has fostered partnerships with various domestic and international institutions, including Suzuki R&D Centre India, Food and Agriculture Organisation of United Nations, Dairy Sustainability Framework, Sustain Plus etc. while leveraging various Government Schemes and through innovative initiatives undertaken by its newly formed subsidiary NDDB Mrida Ltd.

India is the largest milk producer as well as consumer in the world. However, its share in the global trade has been negligible due to various internal and external reasons. Now, with the implementation of structured programmes across the dairy value chain to ameliorate the impediments to export like animal diseases, traceability, quality etc. coupled with increased milk production and sustainable dairying practices, India is on the cusp of becoming 'Dairy to the World'. This will significantly enhance the ability to pay farmers more. The Schemes of Government of India like National Animal Disease Control Programme, Rashtriya Gokul Mission, National Livestock Mission, National Programme for Dairy Development, Dairying through Cooperatives - JICA Supported Project, Dairy Processing and Infrastructure Development Fund, Supporting Dairy Cooperatives and Farmer Producer Organisations Scheme (SDCFPO) etc. are playing a major role in this. We are proud that most of these schemes and programmes are being implemented through NDDB.

During 2023-24, to realise the vision of 'Sahkar-se-Samriddhi', apart from several other initiatives undertaken under the aegis of Ministry of Cooperation through 'Whole of the Government Approach', the Union Cabinet approved a plan for establishing viable Primary Agriculture Credit Societies (PACS) in each uncovered Panchayat, viable DCS in each uncovered Panchayat/village and viable Fishery Cooperatives in each coastal Panchayat/village having large water bodies, and strengthening the existing PACS/DCS & Fishery cooperative societies. As the task of preparation of action plan for dairy cooperatives has been assigned to NDDB, the Dairy Board organised various workshops/meetings etc. with the concerned entities. NDDB also launched pilot projects in uncovered areas of three districts of Jind (Haryana), Indore (Madhya Pradesh) and Chikmagalur (Karnataka) and formed 79 village level dairy cooperative soceities. In addition, NDDB Board has also introduced a scheme for supporting 1,000 M-PACS to initiate viable dairy activities.

Three new national-level multistate cooperative societies were set up in January 2023 under the aegis of Ministry of Cooperation namely, National Cooperative Organics Limited (NCOL), Bharatiya Beej Sahakari Samiti Limited (BBSSL) and National Cooperative Exports Limited (NCEL). NDDB is the chief promoter in NCOL and a promoter in BBSSL with KRIBHCO as the chief promoter. Both NCOL and BBSSL are working in close coordination with NCEL which has the Gujarat Cooperative Milk

CHAIRMAN'S MESSAGE

Marketing Federation as the chief promoter. NDDB has been providing all the necessary support to these national level multistate cooperative societies.

At the specific request of State Governments, NDDB has been undertaking management and dairy development activities in various parts of the country. In 2023-24, NDDB managed the operations of Varanasi Milk Union, West Assam Milk Union Limited, East Assam Milk Union Limited, Jharkhand Milk Federation, Vidarbha & Marathwada Project in Maharashtra and Ladakh Milk Union. Additionally, NDDB provided manpower support to the dairy cooperatives for specific activities.

To make the world appreciate the uniqueness of Indian dairy sector, NDDB is collaborating with several institutions of repute like International Dairy Federation, Food & Agriculture Organisation (FAO), World Organsation for Animal Health (WOAH), Global Dairy Platform, Dairy Asia etc. During 2023-24, NDDB successfully hosted G20 - International Symposium on Sustainable Livestock Transformation under the Agriculture Working Group (AWG) with FAO & DAHD and Jan Bhagidari W20 event – Women-led Sustainable Development through Dairy Cooperatives with GCMMF and Women 20 group. The International Symposium on Sustainable Livestock Transformation saw large scale participation of international and domestic experts and generated evidences for actions towards more efficient, inclusive and sustainable livestock system. The W20 Jan-Bhagidari event also had a significant turnout with about 700 women dairy farmers, women leaders from across the world and inspiring women achievers from various domains.

The six subsidiary companies of NDDB are furthering the objectives of NDDB by undertaking several initiatives across the dairy value chain to bring prosperity to the lives of farmers.

Mother Dairy Fruit & Vegetable Pvt Ltd celebrated its Golden Jubilee year and continued to make available safe, healthy and convenient products to millions of consumers, thus creating market access for dairy farmers. Mother Dairy achieved a turnover of ₹15,036 crore in 2023-24 and is expanding its operations. To support this growth, it is setting up a state-of-the-art 6 LLPD capacity mega plant for milk and milk products in Nagpur.

For the first time, both Indian Immunologicals Ltd (IIL) and IDMC Ltd have crossed annual turnover of ₹1,000

crore each during 2023-24. IIL celebrated its 40 years of existence and has emerged over the years as a "One Health Company" and one of the leading manufacturers of animal and human health vaccines in the country. During the year, IIL launched India's first indigenously developed vaccine for Hepatitis-A and also vaccines for Measles – Rubella Vaccine (MR) and Tetanus Toxid+Diphtheria (Td). To meet the future requirement of FMD and FMD+HS vaccines, IIL is also setting up a greenfield Veterinary Vaccine Facility at Karakapatla, Telangana with a capacity of 150 million doses per annum. This will equip it to contribute more to the Disease Control Programme of Government of India. IIL has not only built its capacity and capability to supply in the domestic market but has also been exporting its vaccines to over 60 countries which is a story of '*Aatmanirbharta*' and "Local to Global".

IDMC Ltd has also expanded its horizons and excelled in providing a range of food & pharma processing equipment, processing and packaging solutions. During the year, it secured 3A certification for pneumatic single seat & mixproof valves, centrifugal pumps and other products. In line with '*Aatmanirbharta*' initiative in dairy sector, IDMC Ltd is also setting up a Ready to Use Culture (RUC) plant, which will produce indigenous product culture for manufacturing Dahi and other fermented products. It is also establishing a 7,500 tonnes facility for production of poly film in Delhi NCR.

During the year, NDDB Dairy Services (NDS), a not for profit subsidiary company of NDDB, has made concerted efforts towards undertaking new innovations and providing quality services to farmers. These efforts include scientific productivity enhancement measures as well as facilitating formation of milk producer organisations. NDS is facilitating and supporting 22 Milk Producer Organisations (MPOs) that are impacting the lives of more than 10 lakh dairy farmers across 24,116 villages. It was a joyous moment for us all when the all-women Shreeja Milk Producer Organisation received the prestigious Dairy Innovation Award from International

CHAIRMAN'S MESSAGE

Dairy Federation for Innovation in Women Empowerment in the Dairy Sector during the World Dairy Summit in Chicago, USA.

In addition to implementing various RGM schemes of Government of India, NDS undertook several new initiatives in the domain of productivity enhancement. NDDB collaborated with several reputed institutes to develop its own effective and low-cost Sex-Sorted Semen Technology and NDS developed a working prototype that is now fully operational. This technology is expected to bring a revolutionary change in the Indian dairy sector. NDS is also establishing a cow sanctuary in Muzaffarnagar, Uttar Pradesh which aims to house 5,000 bovines and a Bio-CNG plant.

One of the recent additions to the list of subsidiary companies has been NDDB Mrida Ltd which is bringing synergy to the sectors of biogas, bio-energy, carbon emission reduction and organic fertilisers by execution of biogas and related projects such as household biogas, Bio-CNG plants and biogas-based energy generation for dairy plants. It is also undertaking new Research & Development in collaboration with several institutes. It is also collaborating with Suzuki R&D Centre India Pvt Ltd (SRDI) to propagate cattle dung-based biogas plants for the generation of Compressed Biogas (CBG) as an energy source for mobility and production of organic fertilisers by leveraging the strength of our cooperative network.

Our newly formed subsidiary NDDB CALF Ltd with its state-of-the-art laboratory is providing quality testing services for a range of products such as dairy products, fats and oils, honey, ready to eat food products, processed food, organic food, fruits and vegetables, animal feed, mineral mixes and vitamin premixes.

I am confident that together with our subsidiaries and the dairy fraternity, we will continue to expand our products and services, with quality and innovations to meet the diverse needs of our farmers and consumers.

India today has a greater vision of transforming itself into 'Viksit Bharat' by 2047 in which dairy sector has a significant role to play by becoming more productive, sustainable, remunerative and climate-resilient.

NDDB is working towards Vision 2047 for the dairy sector which envisions and strategises a sustainable and prosperous future for the dairy sector. The five areas of focus here would be - enhancing productivity of milch animals, expanding the cooperative coverage, improving share of Value-added Products in cooperative sector, increasing share in global trade and achieving the state of 'Net-Zero GHG emissions' by 2050. NDDB intends to

take this forward through collaborative arrangements with all key stakeholders of dairying in the country.

During the year, NDDB continued to receive guidance and support from Hon'ble Union Minister of Fisheries, Animal Husbandry & Dairying; Hon'ble Union Ministers of State for Ministry of Fisheries, Animal Husbandry & Dairying and the Secretary, Department of Animal Husbandry & Dairying, Government of India which helped NDDB to take forward several initiatives for strengthening the livestock and dairy sector in the country.

I am grateful to Shri Amit Shah ji, Hon'ble Union Minister of Home Affairs & Cooperation, for sharing his vision of "*Sahkar-se-Samriddhi*" with the members on the Board of NDDB and providing guidance to advance the dairy and allied sectors for the benefit of the dairy farmers. This has helped in initiating pilot projects to expand coverage of dairy cooperatives to uncovered areas with dairy potential. In line with the guidance of Hon'ble Union Minister, IDMC Ltd is not only ensuring domestic production of most of the dairy equipment and machinery but is also expanding its operations in the export markets. IDMC Ltd successfully commissioned the milk processing plant of Banaskantha Milk Union in Varanasi and a 20 MTPD mozzeralla cheese plant for Kheda Milk Union both predominantly used domestic equipment and were inaugurated by Hon'ble Prime Minister of India.

During the year, NDDB also received continuous support from other Ministries of Government of India, such as, Ministry of Cooperation, Ministry of Agriculture and Farmers' Welfare, Ministry of Rural Development, Ministry of Finance, Ministry of Health and Family Welfare, Ministry of Chemicals and Fertilisers, Ministry of Jal Shakti, Ministry of New and Renewable Energy etc. and the State Governments. I am grateful for their support and belief in our capabilities.

I would also like to thank the members on the Board of NDDB and all other stakeholders including Milk Federations/Milk Unions/Milk Producer Organisations for their support and guidance.

Moving forward, NDDB is more determined than ever to positively impact the lives of the dairy farmers it serves and to face the challenges ahead through innovation, technology, cooperation and collaboration.

Dr Meenesh C Shah

Chairman, NDDB

ABOUT NDDB

The National Dairy Development Board (NDDB) was established in 1965 as a society. In 1987, NDDB was constituted as a body corporate by vesting undertakings of the Indian Dairy Corporation in it and was declared an institution of national importance by an Act of Parliament. NDDB has been playing a pivotal role in developing the dairy sector of the country over the past six decades by nurturing and promoting producer-owned institutions with the objective of improving the livelihoods of crores of dairy farmers, the majority of whom are landless, marginal or small.

Since its inception, NDDB has been following cooperative strategies while planning and implementing various projects and programmes to make dairying a tool for development, providing livelihood to crores of our dairy farmers and nutrition to consumers. In the initial years to bring about White Revolution in the country, NDDB planned and implemented the Operation Flood Programme in three phases during 1970-96 through dairy cooperatives. This immensely helped make India the largest milk producer in the world since 1998. According to a World Bank report, Operation Flood generated an impact of ₹24,000 crore each year on India's rural economy from an initial investment of ₹200 crore.

NDDB has continued on this journey and successfully implemented various schemes of Government of India nationwide, such as the National Dairy Plan Phase I (NDP I) and Rashtriya Gokul Mission (RGM), always putting farmers first and cooperation as the guiding force. NDP I was successfully implemented by NDDB, receiving a "Highly Satisfactory" outcome rating, the highest rating provided to World Bank-funded projects.

These successes are being further enhanced by NDDB through various scientific and technological interventions, mainly aimed at creating a dairy ecosystem that offers better returns to farmers. Cooperatives have proven to be the best model for the dairy sector. NDDB has successfully turned challenges into opportunities, developed implementable plans, piloted them, assisted the Government in creating schemes based on successful implementation and coordinated the implementation of these schemes.

In addition to providing technical & financial support and engineering services to dairy cooperatives, NDDB has been implementing various schemes, such as Revitalising Promising Milk Unions, Marketing initiatives to Support Dairy Cooperatives, Disease Control programmes through Ethno-veterinary Medicines and the One Health initiative.

Today, India is not only '*Aatmanirbhar*' in milk production, but also the largest milk-producing nation, accounting for about 24 per cent of the global output. With scientific and technological interventions being implemented in a planned manner with support from Central/State Governments, it is on the verge of becoming 'Dairy to the World'. NDDB has been closely working with the Central/State Governments, dairy cooperatives, reputed Institutions across the World and its subsidiaries in creating a thriving dairy ecosystem. This ecosystem provides better livelihood for farmers and nutrition to consumers through quality milk and milk products.

NDDB, Anand

Signing of the Shareholders Agreement among NDDB, GCMMF and Cargills (Ceylon) PLC in the presence of HE Mr Ranil Wickremesinghe, Hon'ble President of Sri Lanka and Dr S Jaishankar, Hon'ble Minister of External Affairs, Government of India

Dr Meenesh Shah, Chairman, NDDB in meeting with Mr Jonathan Mwangangi Mueke, Principal Secretary for Livestock, Dr Augustine Cheruiyot, Senior Advisor and Head of PETS & Member of President's Economic Council of Advisors and Ms Margaret Kibogi, Managing Director of Kenya Dairy Board

TRANSFORMING INDIAN DAIRY SECTOR- LOCAL TO GLOBAL

Over the years, the Indian Dairy sector has proven to be a tool for rural development with its unique smallholder-based dairying system leveraging cooperative strategies. Today, with the efforts of various stakeholders, supported by farmer-centric schemes of Government, India continues to be the largest milk producer and consumer of milk. Backed by scientifically planned initiatives in the realm of productivity enhancement, animal nutrition and animal health, Indian dairy sector today is on the verge of another revolution that would further increase the milk production in the country. These technological advancements provide ample opportunities for India to play a major role in global dairy sector across the dairy value chain.

While India has been the largest milk producer in the world since 1998, its share in global trade has been abysmally low and negligible. Participation from India in various global forum has also been limited. Realising the need for an integrated approach towards global dairy sector, several sustained efforts have been undertaken by NDDB and its subsidiaries during 2023-24, supported by the Central and State Governments. These efforts aim to make our dairy sector more efficient, effective and sustainable, paving the way for India to emerge as a major player in the global dairy sector.

Further, several new collaborative initiatives have been planned and started with various countries and international organisations to advance the dairy sector in the country. This initiatives also aim to assist countries with similar dairying ecosystem in regions like South Asia and Africa in transforming their animal husbandry and dairy sectors leveraging the expertise of the Indian dairy sector.

Support for Development of Animal Husbandry and Dairy sector in Sri Lanka

Taking into consideration past collaborations with NDDB, in the form of a Joint Venture with Government of Sri Lanka during 1997-2000, Government of Sri Lanka had sought assistance from India to help achieve its nutritional requirements and for improving the livelihoods of smallholder dairy farmers. Several visits and meetings with the key officials of Government of Sri Lanka including Hon'ble President of Sri Lanka resulted in a broad framework outlining the role that NDDB and other organisations from India could play in developing Sri Lanka's dairy sector.

In July 2023, during the visit of Hon'ble President of Sri Lanka to India, a Joint Declaration of Intent was signed between India and Sri Lanka in the field of Animal Husbandry and Dairying by Ms Alka Upadhyaya, Secretary, Department of Animal Husbandry & Dairying, Government of India and Mr. Milinda Moragoda, Hon'ble High Commissioner of Sri Lanka in the gracious presence of Shri Narendra Modi ji, Hon'ble Prime Minister of India and HE Mr Ranil Wickremesinghe, Hon'ble President of Sri Lanka. The Joint Declaration aims to achieve greater socio-economic development through stronger bilateral collaboration in animal husbandry and dairying. This agreement will also contribute towards enhanced food security and livelihoods, apart from promoting resource efficient and sustainable development of the animal husbandry and dairy sector in Sri Lanka.

Further, to advance the objectives of the Joint Declaration of Intent, the NDDB Board approved setting up of a Joint Venture Company in Sri Lanka by National Dairy Development Board with Gujarat Cooperative Milk Marketing Federation and Cargills (Ceylon) PLC, Sri Lanka which is also approved by the Central Government.

Exchange of Joint Declaration of Intent between India and Sri Lanka in the field of Animal Husbandry and Dairying by Ms Alka Upadhyaya, Secretary, DAHD, Government of India and Mr Milinda Moragoda, Hon'ble High Commissioner of Sri Lanka in the presence of Shri Narendra Modi ji, Hon'ble Prime Minister of India and HE Mr Ranil Wickremesinghe, Hon'ble President of Sri Lanka

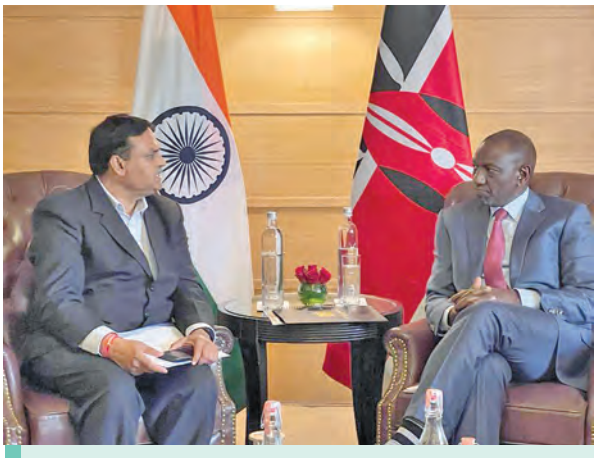
Chairman, NDDB presenting the action plan for enhancing milk production in Sri Lanka

The Shareholder Agreement was signed in October 2023 among NDDB, GCMMF and Cargills (Ceylon) PLC at the Presidential Secretariat in Colombo in the gracious presence of His Excellency Mr. Ranil Wickremesinghe, Hon'ble President of Sri Lanka, Dr Subrahmanyam Jaishankar, Hon'ble Minister of External Affairs, Government of India; Mr. M U M Ali Sabry, Hon'ble Minister of Foreign Affairs, Government of Sri Lanka; His Excellency Shri Gopal Baglay, Hon'ble High Commissioner of India to Sri Lanka and other Ministers and senior officials from the Governments of India and Sri Lanka.

Support for Development of Animal Husbandry and Dairy sector in Kenya

After the meeting of Chairman, NDDB with Hon'ble High Commissioner of Kenya and Managing Director, Kenya Dairy Board in March 2023 regarding help from NDDB in planning and implementing a long term dairy development plan in Kenya, a multidisciplinary team from NDDB visited Kenya in June 2023.

Subsequently, Hon'ble President of Republic of Kenya visited India in December 2023 and had meetings with Chairman, NDDB, Managing Director, GCMMF (AMUL) and Managing Director, Mother Dairy. The Hon'ble President expressed a desire for comprehensive interventions on a country-wide scale. He mentioned



HE Mr William Ruto, President of the Republic of Kenya and Dr Meenesh Shah, Chairman, NDDB during the 'India-Kenya Trade and Investment Forum' in New Delhi

Dr Meenesh Shah, Chairman, NDDB with senior officials from the Kenya delegation during their visit to NDDB

that the expertise of India with farmer centric dairying system could be leveraged for the Kenyan Dairy sector and outlined four major focus areas for collaboration - Vaccine and Vaccine Manufacturing; Genetic improvement; Cooperative Network and Dairy Equipment Manufacturing & Packaging. These focus areas are seen as crucial building blocks to ensure an efficient and sustainable dairy sector.

The Hon'ble President of Kenya in his meeting with Hon'ble Prime Minister of India in December 2023 also highlighted the need for collaboration between India and Kenya in the Animal Husbandry and Dairy Sector. Subsequently, a nine-member high-level delegation from Kenya including Principal Secretary, State Department for Livestock Development visited NDDB Anand in December 2023. During the visit, mutual areas of interest were deliberated in line with the key focus areas outlined by the Hon'ble President. This was followed by a visit of senior officials from NDDB along with its subsidiaries and GCMMF to finalise the action plan for transforming the dairy sector in Kenya within a Government to Government collaborative framework.

Collaboration with Suzuki R&D Centre India Pvt Ltd

To swiftly scale up biogas/manure management interventions across the country with innovative models and technologies, NDDB has partnered with Suzuki R&D Centre India Pvt Ltd (SRDI) a fully owned subsidiary of Suzuki Motor Corporation, Japan and various Dairy Cooperatives.

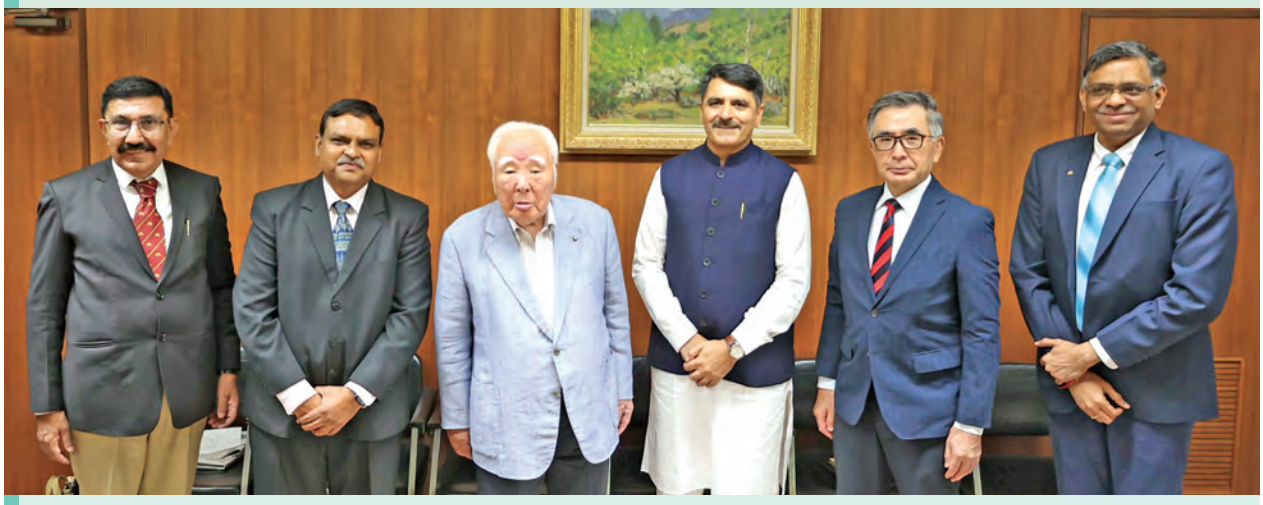
NDDB has already signed an MoU with Suzuki R&D Centre India Pvt Ltd to design and develop innovative business models for efficiently utilising dung as a source of energy for fuelling transportation needs, as a rich source of organic fertilisers and achieving carbon neutrality.

To take it forward, during the visit of Dr Meenesh Shah, Chairman and Shri S Rajeev, Executive Director, NDDB to Japan, in September 2023, a tripartite agreement was signed at the Embassy of India in Japan in the gracious presence of HE Mr Sibi George, Hon'ble Ambassador of India to Japan; Shri Shankar Chaudhary, Hon'ble Speaker, Gujarat Legislative Assembly & Chairman,

Banas Dairy and Mr T Suzuki, President, Suzuki Motor Corporation, Japan. The agreement aimed to set up the first four Compressed Biogas (CBG) projects in Banaskantha as a unique collaborative approach- SRDI to make investment, Banaskantha Milk Union to arrange for land and operate the plant and NDDB to provide technology and setup the plant on a turnkey basis. Suzuki Motor Corporation also expressed interest in investing in NDDB Mrida Ltd through its subsidiary SRDI to leverage mutual expertise and expeditiously scale up the activities.

A team from India also visited various engineering companies in Japan working in the domain of compression and purification of Biogas and Green Hydrogen. The team also explored possible collaboration and adoption of innovative technologies in India.

NDDB, Banas Dairy and Suzuki R&D Center India Pvt Ltd (SRDI), an Indian subsidiary of Suzuki Motor Corporation (SMC) entered into a tripartite agreement to set up four dung-based biogas plants for generating Compressed Biogas (CBG)



Shri Shankarbhai Chaudhary, Speaker, Gujarat Legislative Assembly & Chairman, Banas Dairy, Dr Meenesh Shah, Chairman, NDDB, Shri Jayen Mehta, Managing Director, GCMMF and Shri Sangram Chaudhary, Managing Director, Banas Dairy met Mr O Suzuki, Former Chairman and Mr T Suzuki, President, Suzuki Motor Corporation

Dr Meenesh Shah, Chairman, NDDB as a panellist and presenting the success story at FAO Global Conference in Rome

Collaboration with International Organisations and Governments

During 2023-24, NDDB engaged in numerous proactive collaborations with various international organisations like International Dairy Federation, The Food and Agriculture Organization of the United Nations, World Organisation for Animal Health, Dairy Sustainability Framework, Dairy Asia, Global Dairy Platform etc. and also with several countries like Australia, New Zealand, Japan, France, Sri Lanka, Kenya, Nepal etc. These collaborations are towards leveraging mutual strengths and expertise along with building a network with the global dairy fraternity to position Indian Dairy sector in the right perspective.

Dr Meenesh Shah, Chairman, NDDB attended the Global Conference on Sustainable Livestock Transformation at FAO, Rome wherein the experts, policy makers and professionals deliberated on themes like 'better production, better nutrition, better environment, better life'. "The all-women-led cooperative championing manure management", was selected as one of the 12 success stories from across the World and displayed at the FAO Global Conference on Sustainable Livestock Transformation in the FAO Atrium, Rome. Chairman, NDDB also participated as a panellist on the session themed "Better Life".

During the year, Chairman, NDDB also met Dr Monique Eloit, Director General, World Organisation for Animal Health (WOAH) in Paris and deliberated on WOAH Lab Twinning Project between Animal and Plant Health Agency and NDDB Research and Development Laboratory focusing on Infectious Bovine Rhinotracheitis (IBR), among other issues and ideas.

Chairman, NDDB with Dr Monique Eloit, Director General, WOAH in Paris, France

TRANSFORMING INDIAN DAIRY SECTOR- LOCAL TO GLOBAL

Dr Meenesh Shah, Chairman, NDDB during Dairy Round Table on Women at Chicago, USA

Chairman, NDDB also participated in the International Dairy Federation's side event at the sixth session of United Nations Environment Assembly on 'Sustainable dairy ecosystems: nutrition security, women's empowerment, climate-smart agriculture, action on nature and biodiversity enhancement' held at Nairobi, Kenya and spoke about women empowerment through climate-smart dairying in India.

The National Dairy Development Board also participated in the International Dairy Federation (IDF) Task Force on Women in Dairy Round Table- "How can technology and innovation help women in the dairy sector" in Chicago, USA and elucidated the role of women and cooperatives in the dairy sector in India with examples of technological advancements which are helping greater participation of women and also the role being played by the Government of India through schemes like A-HELP (Accredited Agent for Health and Extension of Livestock Production), which nurtures entrepreneurship in women and provides various services to bridge the gap between veterinary officers and dairy farmers.

Several meetings with Government Officials from various countries took place during the year including meeting with Mr Winston Peters, Deputy Prime Minister & Minister of Foreign Affairs, New Zealand with discussions centred on global & sustainable dairy development, with a focus on exploring opportunities for collaboration and knowledge sharing between the dairy sectors of both nations.

Dr Meenesh Shah, Chairman, NDDB with Mr Winston Peters, Deputy Prime Minister & Minister of Foreign Affairs, New Zealand

G20's International Symposium of Agriculture Working Group hosted by NDDB

Chairman, NDDB called on Smt Droupadi Murmu, Hon'ble President of India

Under the aegis of the Agriculture Working Group (AWG) of G20, NDDB in collaboration with the Department of Animal Husbandry and Dairying (DAHD) and the Food and Agriculture Organization of the United Nations organised a two-day International Symposium on Sustainable Livestock Transformation at NDDB, Anand during 18-19 July, 2023.

Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry & Dairying inaugurated the event in the presence of Ms Alka Upadhyaya, Secretary, Department of Animal Husbandry and Dairying, Government of India; Dr Meenesh Shah, Chairman, NDDB; Dr Abhijit Mitra, Animal Husbandry Commissioner (AHC), Government of India; Mr Tiensin Thanawat, Director, Animal Production and Health Division, Food and Agriculture Organization of the United Nations (FAO); Ms Caroline Emond, Director General, International Dairy Federation (IDF); Dr Ailan Li, Assistant Director General, Healthier Population Division, WHO; Dr Hirofumi Kugita, Regional Representative for the Asia & Pacific, World Organisation for Animal Health (WOAH); Mr Takayuki Hagiwara, FAO representative in India; Dr Jamie Jonker, Chief Science Officer, National Milk Producers Federation and other eminent dignitaries.

TRANSFORMING INDIAN DAIRY SECTOR- LOCAL TO GLOBAL

Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry & Dairying inaugurating the International Symposium on Sustainable Livestock Transformation under the Agriculture Working Group (AWG) of G20 at NDDB, Anand

Experts from G20 countries including Australia, Canada, France, Brazil, Argentina, the EU, Germany, Russia and the USA, as well as representatives from invited countries such as Bangladesh, the Netherlands, the UAE, Mauritius and Kenya, participated in the symposium. Sixteen technical sessions were held during the symposium covering various topics. These sessions helped consolidate initiatives on sustainable livestock transformation through discussions and deliberations by experts from organisations such as FAO, World Health Organization, World Organization for Animal Health, International Dairy Federation, USAID and other reputable organisations/universities like the National Milk Producers' Federation, USA and the University of Guelph, Canada. Distinguished experts, policymakers and stakeholders exchanged knowledge, shared experiences and explored innovative approaches to ensure sustainability of the livestock sector.

Ms Alka Upadhyaya, Secretary, Department of Animal Husbandry & Dairying, Government of India along with Dr Meenesh Shah, Chairman, NDDB and other participants at the G20 Symposium

Dr Meenesh Shah, Chairman, NDDB welcoming Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry & Dairying during the G-20 Symposium at Anand

A technical tour was organised to visit the milk and milk product plant of Amul and Mujkuva Dairy Cooperative Society. Delegates from G20 countries were able to witness the processing systems, milk collection, as well as biogas and solar cooperatives.

An exhibition showcasing the Indian dairy system to the world, highlighting its uniqueness and efforts to make the sector more efficient, effective and sustainable was also organised. Additionally, a captivating cultural event was held to display India's vibrant heritage and diversity through mesmerising performances featuring various dance and art forms from different regions of the country.

The symposium provided an excellent platform for mutual learning, strategy development and planning to address contemporary challenges in the livestock sector faced by both developing and developed countries worldwide. These challenges include One Health, climate change and sustainability.

Eminent dignitaries from across the world attending the G20 Symposium at NDDB, Anand

The Symposium also provided evidence for actions towards transforming agri-food systems into more efficient, inclusive, resilient and sustainable for better production, nutrition, environment and quality of life, ensuring that no one is left behind. This contributes to achieving the SDGs. The key recommendations of the symposium included:

- Provide equitable access to Universal Health Care (UHC) for livestock systems at the last mile, ensuring provision of essential services for improved productivity, animal health and welfare to support transformation in efficient, inclusive, resilient and sustainable livestock systems.
- The pathways of change towards sustainable livestock transformation should prioritize reducing emissions, diseases and antimicrobial use through animal health, animal nutrition, husbandry and breeding services at primary producer level to accelerate transformation to sustainability.
- Recognize the critical role of livestock and dairy in healthy diets and sustainable agri-food systems.

Dr Meenesh Shah, Chairman, NDDB briefing Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying along with other dignitaries during their visit to Exhibition

- Enhance funding to scale up sustainable good practices in livestock and dairy sector in their countries.
- Include livestock and dairy in their reporting on progress for the UN SDGs for example, including their signature to the Dairy Declaration of Rotterdam, Pathways to Dairy Net Zero initiative or School Milk Programmes.

Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry & Dairying visiting the exhibition showcasing the Indian dairy system to the world

NDDB hosted W20's Jan Bhagidari event – Women-led Sustainable Development through Dairy Cooperatives

Shri Jagdish Vishwakarma, Hon'ble Minister of State for Cooperation, Government of Gujarat inaugurating the Jan Bhagidari – Women-led Sustainable Development through Dairy Cooperatives under W20 at NDDB, Anand

NDDB, Gujarat Cooperative Milk Marketing Federation Ltd (GCMMF) and Women 20 (W20) – the official G20 engagement group, jointly organised a one-day event on 20 July 2023 with the theme Jan Bhagidari – Women-led Sustainable Development through Dairy Cooperatives at NDDB, Anand. The event saw active participation from esteemed guests, experts and women leaders from the dairy sector. Women are bedrock of the Indian dairy sector and their participation has been central to the transformative journey of our dairy sector.

Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry & Dairying addressed the participants virtually and emphasized the role and importance of women in the dairy sector including in value-added product manufacturing.

Shri Jagdish Vishwakarma, Hon'ble Minister of State for Cooperation, Government of Gujarat inaugurated the event in the presence of Ms Alka Upadhyaya, Secretary, Department of Animal Husbandry & Dairying (DAHD), Government of India; Dr Meenesh Shah, Chairman, NDDB; Shri Shamalbhai Patel, Chairman, GCMMF; Dr Sandhya Purecha, Chair, W20; Shri Vipul Patel, Chairman, Amul Dairy; Shri Jayen Mehta, MD, GCMMF; Ms Caroline Emond, Director General, International

Shri Jagdish Vishwakarma, Hon'ble Minister of State for Cooperation, Government of Gujarat addressing the gathering during the Jan Bhagidari event

Dairy Federation (IDF); Ms Margaret Kibogy, MD, Kenya Dairy Board; Ms Bharati Ghosh, Ex-IPS and Ms Dharitri Patnaik, Chief Coordinator, W20.

About 700 women dairy farmers, representing cooperatives and producer organisations from across the country, participated in the event. Delegates from USA, France, Italy, UK, Kenya and Argentina, as well as officials from central and state governments, revered institutions related to the dairy sector and other stakeholders also attended the event.

The event highlighted the contribution of women in cooperative dairying. The delegates focussed on the changing role of women in the dairy sector from women-oriented development to women-led development.

Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries of Animal Husbandry addressing the participants virtually during the Jan Bhagidari event

From left to right: Ms Lajja Gauswami, Ms Rahibai Soma Popere, Dr Sandhya Purecha, Ms Tessy Thomas and Ms Dharitri Patnaik during the panel discussion on journey of Resilience of Women Leaders across Sectors at the Jan Bhagidari event

During the event, women dairy farmers from various states in India were honoured. Women achievers shared their remarkable success stories across five key priority areas of W20: Women's Entrepreneurship, Grassroots Women Leadership, Bridging the Gender Digital Divide, Education and Skill Development and Climate Action.

Panel discussions were organised on 'Journey of Resilience of Women Leaders across Sectors', and 'Contribution of Women in Sustainable Development through interdisciplinary collaboration'. The discussions featured inspiring women leaders like Ms Rahibai Soma Popere (Seed Mother of India), Ms Tessy Thomas (Former Director General, Aeronautical System & Former Project Director of Agni IV missile, DRDO), Ms Lajja Gauswami (Shooter, International Player, Commonwealth Games Medalist) and Dr Sandhya Purecha, who shared their inspiring journeys.

Cultural performance during the event

Dr Meenesh Shah, Chairman, NDDB, Mr Piercristiano Brazzale, President, IDF and Dr K Anand Kumar, Managing Director, IIL, releasing the manual on "Standard Operating Procedures and essential aspects in the laboratory diagnosis of Infectious Bovine Rhinotracheitis"

International Workshop on Diagnosis of Infectious Bovine Rhinotracheitis

The World Organisation for Animal Health (WOAH) twinning programme on IBR and collaboration with World Reference Laboratory for IBR (WRL-IBR) has enhanced NDDB's expertise in laboratory diagnosis. To spread this across the region, NDDB organised an international workshop on the diagnosis of IBR in March 2024 at Indian Immunological Limited (IIL), Hyderabad, which was conducted in association with WRL-IBR. The workshop was attended by scientists from central disease diagnosis laboratories across South Asia (Bhutan, Nepal and Sri Lanka) and various Indian laboratories - Regional Diseases Diagnostic Laboratories (RDDLs), BAIF Development Research Foundation (BAIF), Chaudhary Charan Singh National Institute of Animal Health (CCSNIAH), NDDB CALF Ltd and IIL. The workshop covered various aspects of IBR, diagnostic tools and techniques and quality assurance practices for accurate diagnosis. A manual on 'Standard Operating Procedures and essential aspects in the laboratory diagnosis of Infectious Bovine Rhinotracheitis' was also released during the event.

Signing of agreement between IDMC Ltd and M/s Simon Freres

IDMC signed agreement with M/s Simon Freres

IDMC Ltd, a wholly-owned subsidiary of NDDB participated for the first time at Anuga FoodTec 2024, Cologne, Germany showcasing its innovations and products to promote Make in India to the world. During the visit, an agreement was signed between IDMC Ltd and M/s Simon Freres in the presence of Dr Meenesh Shah, Chairman, NDDB and Mr Jerome Villard, President, Synext Group. This agreement is aimed at strengthening the partnership to manufacture more equipment at IDMC Ltd that were previously imported- a significant step towards realising Aatmanirbhar Bharat. Meetings and visit to the facilities of SIG Combibloc (SIG Group) were also undertaken to deliberate and witness the latest technological advancements.

Announcement of First IDF Regional Dairy Conference Asia Pacific 2024

During his visit to Paris, France to attend the meeting of the Board of Directors of IDF on March 2024, an agreement was signed by Dr Meenesh Shah, Member Secretary, INC-IDF and Ms Caroline Emond, Director General, IDF in the presence of Mr Piercristiano Brazzale, President, IDF and other members on the Board of IDF for hosting First IDF Regional Dairy Conference Asia Pacific 2024 in Kochi, Kerala. Dr Shah also made a presentation about the conference with the theme 'Farmer Centric Innovations in Dairying'.

Agreement signing and presentation at Paris for hosting the First IDF Regional Dairy Conference Asia Pacific 2024 in India

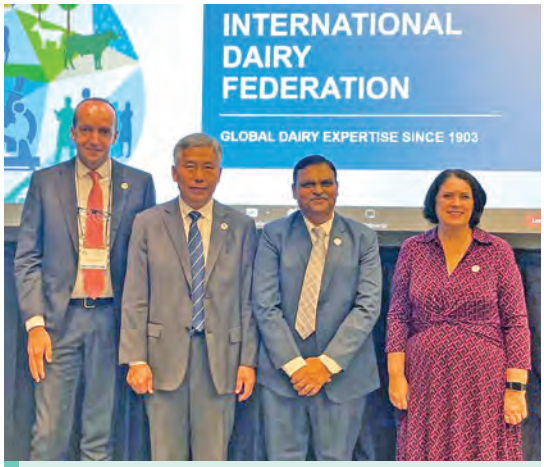
Ms Alka Upadhyaya, Secretary, DAHD, Government of India and President, INC-IDF and Dr Meenesh Shah, Chairman, NDDB and Member Secretary, INC-IDF at the INC-IDF Pavillion during the IDF World Dairy Summit 2023 in Chicago, USA

Participation of NDDB at IDF World Dairy Summit 2023 in Chicago, USA

An Indian Delegation comprising of Ms Alka Upadhyaya, Secretary, Department of Animal Husbandry & Dairying, Government of India & President, Indian National Committee of IDF (INC-IDF) and Dr Meenesh Shah, Chairman, NDDB & Member Secretary, INC-IDF and other senior officials participated in the IDF World Dairy Summit 2023 in Chicago, USA. They took lead in putting forth the perspectives of Indian Dairying systems and showcasing India's small holder dairying system to the World. The innovative interventions of Indian Dairy Sector were displayed through poster presentations on various topics across the dairy value chain.

NDDB also set up an Indian Pavilion at the IDF World Dairy Summit 2023 to showcase the unique small-holder dairying system, which has been supporting the livelihoods of millions of dairy farmers and making quality milk and milk products available to the consumers.

The Memoirs of the World Dairy Summit 2022, successfully organised in India, was also launched during the IDF World Dairy Summit 2023, Chicago, USA by Ms Alka Upadhyaya, Secretary, Department of Animal Husbandry & Dairying, Government of India; Dr Meenesh Shah, Chairman, NDDB; Mr Piercristiano Brazzale, President, IDF and Ms Caroline Emond, Director General, IDF.



Dr Meenesh Shah, Chairman, NDDB inducted to the Board of International Dairy Federation in Chicago, USA

Chairman, NDDB Elected to Board of International Dairy Federation

Dr Meenesh Shah, Chairman, NDDB was elected to the Board of the International Dairy Federation (IDF) during the General Assembly of IDF on 15 October 2023. Having representation

Dr Meenesh Shah, Chairman, NDDB being conferred the IDF Prize of Excellence Award 2023 at the IDF World Dairy Summit in Chicago, USA

from India on the Board is a win-win for the global dairy sector as the growth of the International dairy sector will continue to be fuelled by India and with the implementation of advanced scientific measures and technologies, the Indian dairy system will become more efficient, effective and sustainable.

IDF Prize of Excellence Award 2023

Dr Meenesh Shah, Chairman, NDDB, was bestowed with the IDF Prize of Excellence Award 2023 at the IDF World Dairy Summit in Chicago, USA, which acknowledges his exceptional contribution to the Work Programme of International Dairy Federation on five key concepts constituting SWIFT (Speed, Worldwide Visibility, Impact, Focus, Transparency).

Chairman, NDDB Appointed as Governor in the Dairy Sustainability Framework

Dr Meenesh Shah, Chairman, NDDB, was appointed as a Governor by Dairy Asia in the Dairy Sustainability Framework (DSF) in May 2023. This is a significant milestone in the efforts to promote sustainability within the smallholder dairying system. As a member of Dairy Asia, NDDB is actively engaged in a multi-stakeholder partnership dedicated to envisioning and establishing a sustainable dairy sector in Asia and the Pacific region.

Linking small milk producer to market

TRENDS FROM THE DAIRY SECTOR

Domestic Scenario

During the past ten years, milk production in the country continued to increase by about six per cent per annum, while per capita availability registered a growth of over five per cent. In 2023-24, milk production in the country is projected to reach about 242 million tonnes, with per capita availability expected to be around 475 grams per day.

Favourable climatic conditions, remunerative prices for dairy farmers and robust demand from consumers have ensured that the year 2023-24 remained decent for dairying. Further, the Government of India took proactive steps to contain input prices, especially that of cattle feed. After a series of consultations, the government banned the export of De-oiled Rice Bran (DoRB) which had seen a steep rise in prices and is a main ingredient of cattle feed. This greatly helped in controlling the input prices, thereby stabilising the cost of milk production and in turn, consumer milk prices.

The dairy cooperatives went an extra mile by reaching out to more dairy farmers in newer geographies and increasing their milk procurement to an average of 662 LKgPD during 2023-24, an impressive 12 per cent increase over 2022-23. In addition to accepting more milk from the dairy farmers, the dairy cooperatives supported them by providing technical inputs and extension services like veterinary services, Artificial Insemination (AI) services, vaccination, balanced cattle feed, fodder seed, mineral mixture etc.

The average sales of liquid milk have stabilised after a significant increase post COVID-19 pandemic. During 2023-24, the cooperatives' liquid milk sale averaged at 438 LLPD, representing about a three per cent increase over 2022-23.

The domestic market prices for conserved dairy commodities such as Skimmed Milk Powder (SMP) and white butter witnessed a declining trend during the year. SMP traded at around ₹ 225 per kg in March 2024, registering a decline of about 24 per cent. Similarly, the price of white butter decreased by about 20 per cent and was trading at around ₹ 320 per kg in March 2024.

Although domestic SMP prices remained higher than international market rates for most of the financial year 2023-24, the gap gradually narrowed down. In contrast, the domestic price for white butter remained slightly lower than its international price till November 2023. However, a sharp surge in the international butter prices and a steady domestic price caused a widening gap later.

During 2023-24, India exported milk and milk products worth about ₹ 2.7 thousand crore despite unfavourable trading terms in conserved dairy commodities.

International Scenario

According to the Food and Agriculture Organisation of the United Nations (FAO), world milk production was estimated at 965 million tonnes in 2023, a 1.4 per cent increase from 2022. This growth is primarily attributed to an increase in milk production in the Asian region particularly in India and China.

Global trade in dairy products was 84.7 million tonnes (in milk equivalent) in 2023, down one per cent from 2022. China, the largest importer, imported about 15.8 million tonnes (milk equivalent) of dairy products, a nine per cent decrease from the previous year. The decline in China's imports was attributed to its rising domestic milk production and increased stock of imported dairy products. The export of milk products from New Zealand and the European Union increased by around 9 per cent and 6 per cent respectively, while the USA's exports were about 10 per cent lower than last year.

The impact of sluggish global trade reflected in the international prices of dairy commodities, particularly SMP. In the Global Dairy Trade (GDT), the average price of SMP declined from around USD 2,678 per MT in April 2023 to USD 2,343 per MT in September 2023. However, the prices recovered to around USD 2,578 per MT in March 2024.

Butter prices traded in a narrow range of USD 4,700 to 5,200 per MT from April to November 2023, witnessing a sharp rise during the last four months of the financial year. White butter traded above USD 6,400 per MT by end of March 2024.

Harvesting embryos from elite cow

PRODUCTIVITY ENHANCEMENT, INNOVATION AND SUSTAINABILITY

Enhancing Animal Productivity

Animal Breeding

Boosting the productivity of dairy animals is a highly effective strategy for ensuring profitable dairy farming. The key to achieving this is implementing animal breeding interventions, particularly for cattle and buffaloes. NDDB has consistently prioritised research and development in animal breeding, paving the way for innovative advancements in the industry.

Genetic improvement programmes relies on two important factors: identifying elite animals and proliferating their superior genetics on a large scale. NDDB's initiatives in genomic selection, adoption of sex-sorted semen and embryo transfer technologies exemplify a proactive approach to drive the genetic improvement of dairy animals. The genetic evaluation programmes spearheaded by NDDB under Rashtriya Gokul Mission (RGM) scheme of GoI represent landmark projects with the potential to yield substantial impacts in the future. These meticulously crafted scientific programmes, covering most of the important dairy breeds of cattle and buffaloes, have emerged as reliable sources of superior genetics. Initiatives like the Accelerated Breed Improvement Programme (ABIP), leveraging embryo transfer, sexed-semen and developing indigenous culture media for *in-vitro* embryo production have gained significant traction, solidifying NDDB's influence and efficacy in this domain.

Genomic selection of Young Bulls

In its steadfast commitment to progress, NDDB has prioritised the implementation and expansion of genomic selection in the country. A notable advancement in this domain is the early-stage selection of bulls through the adoption of advanced genomic selection techniques, facilitated by systematic collection of performance records and biological samples, including blood, tissue and semen, through field-based genetic improvement programmes. These efforts have led to the development of an extensive reference population covering the major dairy breeds of cattle and buffaloes, reflecting NDDB's dedication and setting a solid groundwork for further improving breeding programmes and enhancing the genetic potential of dairy herds across the nation.

Efforts to strengthen the reference population through genotyping continued in 2023-24. During the year, 30,315 animals and bulls with a performance record were genotyped under the RGM and Gujarat Biotechnology Research Centre (GBRC) funded genomic selection projects.

During the year, 1,724 young bull calves of Gir, Sahiwal, Murrah, Mehsana, crossbred HF and crossbred Jersey produced by PT and PS projects were genotyped using INDUSCHIP and BUFFCHIP-customised medium density chip develop by NDDB. The endeavours were aimed at selecting best bulls to be distributed to the semen stations for frozen semen production and accelerating the genetic progress through artificial insemination.

Genomic selection is gaining popularity among farmers and other agencies. During the year, a total of 15,360 cattle and buffalo samples were genotyped. Furthermore, there has been a growing demand among farmers for breed purity analysis using genotype data to select purebred animals and develop their herds.

NDDB's initiatives in genomic selection, adoption of sex-sorted semen and embryo transfer technologies exemplify a proactive approach to drive the genetic improvement of dairy animals.

Ovum Pick-up and *In-vitro* Embryo Production

Ovum pick-up and *In-vitro* embryo production (OPU-IVEP) has gained widespread recognition for propagating superior bovine dairy genetics, particularly in the dairy-developed nations. This technology, with its significant advantage of expediting the genetic enhancement of cattle and buffaloes, through the rapid multiplication of superior germplasm, holds immense promise for transforming the dairy landscape and reorienting dairy farming practices in India.

NDDB's Ovum Pick-Up, *In-vitro* Embryo Production and Embryo Transfer (OPU-IVEP-ET) facility continued its endeavour to enhance the efficiency of the technique for both cattle and buffaloes. In addition to tech-optimisation, the facility focussed on developing skilled personnel, underscoring NDDB's commitment to advancing bovine reproductive technologies while ensuring a proficient workforce. Emphasis was also laid on reducing the cost of technology by developing indigenous OPU-IVEP-ET culture media. A total of 1,584 viable embryos were produced from cattle donors and 550 embryo transfers were completed in FY 2023-24. This resulted in 115 pregnancies and 96 calves were born.

Further, technical support was provided by NDDB to Amul Dairy and Banas Dairy for the establishment of OPU-IVEP-ET facilities and ensuring their smooth functioning. With the help of NDDB, Amul Dairy has established an OPU-IVEP-ET facility at their Heifer Rearing Centre, Mogar. At this facility, 2,116 embryos have been transferred and 606 pregnancies established and 334 calves born. Similarly, NDDB provided support to Banas, Sabar, Mehsana and Surat Milk Unions and transferred 1,181 embryos resulting in 153 pregnancies and 83 calves born.

NDDB trained twelve veterinarians from various organisations during the year to ensure seamless on-field implementation of the technology, bringing the

OPU-IVEP-ET – A tool for genetic improvement in cattle & buffaloes

Green fodder for better nutrition

cumulative number of trained professionals to 74 till March 2024. Additionally, three Master's and two PhD students were also trained.

NDDB has been selected for the Fulbright-Nehru Specialist Program Grant by the United States-India Educational Foundation (USIEF) to host a U.S. expert in the specialised area of Agriculture. This allows Indian universities and institutions to benefit from the expertise of U.S. scholars and professionals, fostering linkages with American institutions. Specialist grants focus on strengthening and supporting the developmental needs of institutions while expanding institutional cooperation.

Assessment of Herd Replacement Pattern in the Operational Area of Kaira Union

NDDB and Kaira Milk Union conducted a study across 1,100 households in 54 Dairy Cooperative Societies (DCS) spanning 20 talukas to understand herd replacement patterns. The study focussed on herd size, composition and factors influencing preferences for raising home-born calves versus replacing animals with pregnant heifers or in-milk adult female bovines.

Animal Feeding

NDDB is currently undertaking various animal nutrition activities/initiatives aimed at utilising the full genetic potential of dairy animals for increasing their milk production, improving reproduction efficiency and optimising the cost of milk production.

Promoting Balanced Feeding through Ration Balancing Programme (RBP)

Scientific feeding, with the help of advisories generated through NDDB's Ration Balancing software, helps in improving productivity and optimising the cost of milk production. NDDB continues to provide technical support to Kolhapur Milk Union and Aga Khan Foundation (AKF) for the implementation of RBP. During 2023-24, 395 local resource persons from these two agencies provided ration advisories to 28,002 farmers for 48,007 animals covering 480 villages.

To expand RBP's reach, NDDB has also extended its support to the State Animal Husbandry Departments by conducting training sessions on ration balancing software for the officers under A-HELP. The officers in-turn are training Pashu Sakhis/resource persons in their respective states.

Promoting Conventional Total Mixed Ration (TMR)

With the objective of improving the feed conversion efficiency of dairy animals, NDDB has standardised the process for production of packed conventional TMR, a Ready-To-Eat feed for dairy animals. NDDB is actively supporting dairy cooperatives and fodder entrepreneurs in submitting proposals for the TMR project through the Entrepreneur Development Programme under National Livestock Mission. The first such conventional TMR plant has been approved and is being established by Amul with technical assistance from NDDB. The plant is scheduled to commence operations in the next fiscal year, after which it is expected to produce approximately 9,000 MT of TMR annually.

Support to Cattle Feed Plants of Dairy Cooperatives for Production of Feed and Feed Supplements

Most dairy farmers rely on dairy cooperatives for the supply of concentrate feed, particularly compound cattle feed. The availability of quality feed at a reasonable price directly impacts the farmer's income. To produce the cattle feed, the Cattle Feed Plants (CFPs) require feed formulas that minimise costs while meeting desired specifications and nutritional requirement. NDDB provides technical support to various CFPs, assisting them in preparing least-cost formulation (LCF) and introducing various feed variants tailored to different physiological stages. During 2023-24, three new feed variants of compound cattle feed, namely pregnancy feed, early lactation feed and calf starter, were launched in Sabarkantha, Rajarambapu Patil and Baramati Milk Unions, respectively.

Additionally, NDDB, through training programmes, is building the capacity of CFP officers to formulate and manufacture quality compound feed. In 2023-24, 35 Quality Control officers from 23 CFPs were trained. Further, NDDB renewed agreements with eight Milk Producer Organisations (MPOs) and signed agreements with two new ones, for the production of "Samvriddhi", a feed supplement aimed at enhancing fat and SNF content in milk. Approximately, 442 MT of Samvriddhi was produced and distributed to the dairy farmers by nine CFPs. Two CFPs produced 1.8 MT of "Pashu Sheetvardhak", a feed supplement designed to mitigate heat stress in dairy animals during the summer season.

Fodder seed production

Fertility Feed for Optimising Reproduction in Dairy Animals

The production efficiency of dairy animals is dependent on their reproductive performance. Deficiencies of various trace minerals, inadequate intake of vitamins and imbalance of energy and proteins are major contributors to infertility and poor reproductive performance in animals such as delayed puberty or delayed post-partum oestrus, anoestrus and repeat breeding. Among all the reproductive disorders, repeat breeding and true anoestrus showed highest prevalence under field conditions. Poor reproductive performance of animals also results in heavy economic losses to dairy farmers. In addition, repeated AI failure also results in an increased interval between two calvings, thereby reducing the chances of obtaining one calf-a-year from dairy animals.

In view of this, NDDB has developed a specialised 'Fertility Feed' to cater to the specific nutrient needs for optimal reproduction. A field study was conducted in the Kolhapur Milk Union of Maharashtra on regular cyclic mid-late lactating crossbred cows and buffaloes. The findings showed successful AI induced conception rates of 1.5 and 1.7 in cows and buffaloes respectively. Additionally, the study demonstrated an improvement in Fat Corrected Milk (FCM) yield of 1.5 kg/day in cows and 1.1 kg/day in buffaloes. Fertility Feed therefore has the potential to improve reproduction efficiency in repeat breeder animals and is also effective in improving milk production amongst animals.

Increasing Fodder Production

Inclusion of an adequate quantity of green fodder in the diet of dairy animals not only helps in enhancing their productivity but also decreases the cost of milk production. To achieve this, NDDB follows a multi-pronged approach. It persistently strives to improve the availability of good quality fodder seeds to farmers at reasonable prices and demonstrates improved agronomic practices. NDDB also assists the dairy cooperatives in conserving green and dry fodder as well as in augmenting fodder resources by utilising wastes such as empty pea pods from vegetable processing industries.

NDDB extends technical support to various CFPs, assisting them in providing least-cost formulation (LCF) and designing feed variants tailored to different physiological stages.

Development of Seed Multiplication Chain

In 2023-24, NDDB facilitated 15 dairy cooperatives with access to 13.78 MT of breeder seed (4.90 MT in Kharif and 8.88 MT in Rabi season) from the Indian Council of Agricultural Research (ICAR) and state agriculture universities. Under this programme, many newly modified varieties of fodder crops were brought into the seed multiplication chain for fodder & silage purposes. Breeder seeds of these improved varieties were used by dairy cooperatives for seed multiplication purpose to produce foundation and certified seed, which helped the farmers to improve their fodder production per unit area.

Awareness on Forage Production Technologies

Along with existing, new varieties of various fodder crops (annual and perennial), such as fodder bajra (GFB-4) and maize (Anand Tall), were demonstrated at the fodder demonstration unit (FDU), Anand to generate awareness among the milk producers. Farmers gained knowledge on cultivating maize and sorghum hybrids for silage production, berseem & oats varieties for green fodder production and silage-making from hybrid-Napier grass. To popularise year-round green fodder production system, around 4.01 lakh stem cuttings of Hybrid Napier were supplied to the farmers. Technical support was also provided to the Cow Sanctuary Project, Uttar Pradesh and Kotyark Gaushala, Gujarat & Central Cattle Breeding Farm (CCBF), Dhamrod, Gujarat to develop fodder farms.

Animal Health

Brucellosis Control - Focussing on One Health Approach

The Government of India's flagship disease control programme, the National Animal Disease Control Programme (NADCP), now includes the vaccination of female bovine calves to control brucellosis. NDDB's brucellosis control model focusses on the One Health approach, as this zoonosis in humans is widely underdiagnosed and significantly impairs one's ability to work. In collaboration with a medical institute, the model aims to uncover the linkages between the disease in animals and humans. Since the project's inception in 2017, more than 4,726 farmers and animal health workers have been tested and 137 patients with brucellosis symptoms have received successful treatment that has restored their health and working capacity.

In addition to vaccination under NADCP, emphasis is placed on other essential control measures such as proper disposal of placenta, awareness creation, disinfection of infected premises and animal isolation. These measures are as important as vaccination in preventing the spread of the disease.

Disease Control through Alternate Methods

The Disease Control through Alternate Methods (DCAM) project continued in 15 milk unions/producer companies across 8 states (Kerala, Karnataka, Maharashtra, Gujarat, Punjab, Assam, Andhra Pradesh and Uttar Pradesh). This project also focuses on One Health by rationalising antibiotic use to reduce Antimicrobial Usage (AMU) and Antimicrobial Resistance (AMR) through Ethnoveterinary Medicine (EVM). As of March 2024, more than 9,80,000 cases of EVM interventions have been documented in the project regions, with an overall cure rate of above 80 per cent. Increasing numbers of farmers are opting to use EVM to treat common ailments independently. Surveillance of mastitis pathogens with zoonotic importance is being conducted in both animals and humans in the project regions to study its implications.

To support EVM manufacturing, NDDB offers grants up to 30 per cent of the total project cost for establishing EVM manufacturing facilities. For this purpose, NDDB

Ethno Veterinary Medicine – cost effective method to treat common ailments

has allocated five crore rupees for a three-year period beginning in 2021-22. Through this programme, the Sabarkantha, Kaira, Banaskantha and Kolhapur Milk Unions have established or improved their EVM manufacturing plants. The milk unions that have extensively adopted EVM have significantly reduced their medicine purchases, particularly antibiotics.

With successful validations of empirical data on EVM cure rates using individual animal data, NDDB is now supporting veterinary colleges and other research organisations to further validate the formulations scientifically. The scientific validation of an immunity-enhancing formulation has been completed successfully and other validations on EVM for mastitis and tick control are progressing well.

Bovine Disease Screening and Monitoring

The laboratory tested nearly 27,000 specimen samples, mostly sera, from cattle and buffalo bulls for bovine diseases and disease-causing agents during the financial year 2023-24. These samples originated from 56 sources across 13 states, including semen stations and agencies involved in the selection of high genetic merit bull calves for semen production. The diseases screened were those prescribed in the Minimum Standards, the Government of India's manual of protocols for bovine semen production (MSP).

The disease testing involved examining 14,614 samples from the 18 implementing agencies under RGM to include disease-free high genetic merit bull calves for enhancement of indigenous bovine breeds.

Cost-effective Collection & Transport of Clinical Samples

The smallholder, resource-limited dairying systems in India pose unique challenges for the collection, storage and transport of clinical samples, hindering studies on disease prevalence and epidemiology. NDDB's laboratory has made significant efforts over the years to select cost-effective systems to address these challenges. Flinders Technology Associates (FTA®) cards for the collection and transport of body fluids and Nobuto® (NFP) and Whatman® Grade-III (WFP) filter-paper strips for the collection and transport of sera, were evaluated for downstream PCR/qPCR and ELISA assays respectively and found suitable for use. These paper-based matrices enable easy and cost-effective sample collection, transport (at room temperature) and laboratory screening for diseases and disease-causing agents.

In the current year, NFP and WFP were evaluated for the suitability of sample collection, storage and shipment of bovine blood samples. ELISA results from dried blood spots on both filter papers closely matched those from regular liquid serum samples. Results showed that WFP had an 84.68 per cent agreement with serum ELISA for

S.N.	Disease	Test	Specimen	Samples	% Positive
1	Brucellosis	Antibody ELISA	Serum	9,358	1.06
2	IBR*	Antibody ELISA	Serum	9,240	12.04
3	IBR*	DIVA+ (gE ELISA)	Serum	72	6.94
4	IBR*	Real-time PCR	Frozen semen	3,073	3.25
5	BVD**	Antigen ELISA	Serum	4,643	0.21
6	BVD**	Real-time RT-PCR	Serum	63	0.00
7	EBL***	ELISA	Serum	226	1.32

*IBR = Infectious Bovine Rhinotracheitis

**BVD = Bovine Viral Diarrhoea

***EBL = Enzootic Bovine Leucosis

+DIVA = Differentiating Infected and Vaccinated Animals

Veterinarian at farmer's doorstep to monitor bovine's health

Brucella and 89 per cent for IBR. NFP performed even better, with agreements of 85.5 per cent for Brucella and 93.3 per cent for IBR compared to serum ELISA results.

Bacteria Causing Bovine Mastitis & Antibiotic Susceptibility Test (AST)

NDDB is conducting a field evaluation programme on alternative methods for controlling important bovine diseases, including mastitis, under the Disease Control through Alternate Methods (DCAM) project with participating Milk Unions (MUs) and Milk Producer Organisations (MPOs). Milk samples from cows with subclinical and clinical mastitis, received from the DCAM project partners, were analysed to identify the causative bacteria and their respective antibiotic susceptibility. A total of 202 bacterial species were isolated from 122 milk samples. Staphylococcus spp. was the predominant bacteria (22 per cent), followed by Streptococcus (10 per cent), Enterococcus (3.5 per cent), Corynebacterium (2.5 per cent), E. coli (2 per cent) and Klebsiella (2 per cent). The results of the AST for the bacteria in the samples, determined using an automated microbial identification and AST system, were shared with the respective MUs and MPOs as an indicative guide to the appropriate choice of antibiotics for treating of chronic and recalcitrant cases.

One Health approach on Anti-microbial Resistance (AMR) in Dairy Environment

NDDB has adopted a One Health (OH) approach under the DCAM project on AMR in collaboration with Shree Krishna Medical College, Karamsad, Gujarat. This OH approach aims to determine the presence of Staphylococcus aureus infection in animals, susceptible human subjects, its prevalence in dairy environments and the transmission of AMR, particularly MRSA, across the dairy ecosystem.

Samples (135) from human nares as well as milk, nasal and rectal swabs of mastitis-infected animals (cattle and buffaloes) and environmental samples (drinking water and sewage) were collected from sites of four MUs. Bacterial isolation, identification and AST determination are being performed. Molecular analyses (PCR/qPCR, sequence typing) will be undertaken to determine the prevalence and transmission of AMR bacteria in the dairy environment.

Investigation of Disease Outbreaks

The NDDB R&D Laboratory conducts detailed investigation into disease outbreaks in bovines and offers consultation on biosecurity and disease control measures to be adopted in such situations. Comprehensive investigations into disease occurrences at various locations in the country have revealed a multitude of causative organisms including blood protozoans, B. abortus and C. novyi type b to be responsible.

Quality Management System and Proficiency Testing

The laboratory of NDDB has consistently maintained accreditations like ISO/IEC 17025:2017 (NABL) and ISO 9001:2015 as per the international quality standards for bovine disease testing since 2015. In order to maintain competency in the disease testing methods, the laboratory had also enrolled for 3 proficiency testing programmes offered by Vetqas, Animal and Plant Health Agency (APHA), United Kingdom, for BVD, IBR and brucellosis in 2023-24.

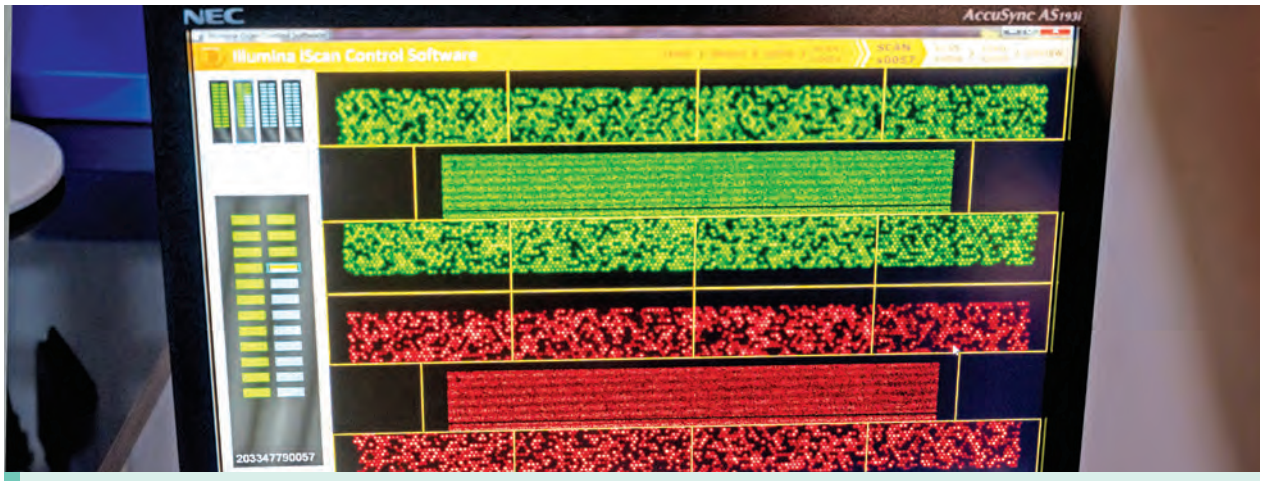
Pooled Serum Sample Testing (PST) for Determination of Herd Disease Status

PST is an affordable approach for disease screening of herds, particularly in low and middle-income countries, due to its cost-effectiveness and broader scope in determining disease prevalence. In an evaluation study with 1800 serum samples, PST using pools of 10 sera was found effective for screening herds with low prevalence of enzootic bovine leucosis (0.91 per cent) and brucellosis (1.68 per cent). PST showed high sensitivity (>97 per cent) and specificity (>96 per cent). Cost analysis indicated that choosing PST can result in cost savings of 70 per cent and 80 per cent for testing brucellosis and EBL, respectively.

Reference Standards for use in IBR Diagnosis

NDDB R&D laboratory has developed a panel of reference sera following ISO and WHO guidance manuals for serological diagnosis of IBR. This panel includes sera of various disease statuses: strong positive, moderate positive, low positive and negative, serving as quality control standards for laboratory diagnosis across India. Aliquots of these sera were analysed at WRL-IBR, confirming their status and suitability for use in laboratory diagnosis.

Cattle vaccination



Scanning of genotyping chip on iScan

Innovation

GauSort™ - Indigenously Developed Sex-Sorting Technology

A technology that ensures the birth of female calves through Artificial Insemination not only reduces the financial burden on dairy farmers by eliminating the need to care for male calves but also offers the potential to produce more replacement heifers from the best cows. In India, there was a need for a cost-effective sex-sorting technology that could boost the income of dairy farmers. However, the available technologies were owned by multinational corporations, making the sex-sorted semen doses unaffordable for our farmers. In line with the Hon'ble Prime Minister's vision of 'Make in India' and 'Atmanirbhar Bharat', NDDB Dairy Services has undertaken the development of an indigenous, affordable sex-sorting technology and is being funded under the Rashtriya Gokul Mission. This initiative is aimed at increasing the availability of sex-sorted semen at an affordable price to our farmers.

The indigenously developed sex-sorting machine, GauSort™, is now fully functional and ready to be used. This machine is expected to significantly reduce the cost of a sex-sorted semen dose, which will benefit the eight crore small and marginal farmers across the country engaged in dairying.

Setting up of a Pilot Dung-based Green Hydrogen Plant

In collaboration with the Sustain Plus Energy Foundation, NDDB established a ground-breaking pilot dung-based green hydrogen plant at Banas Dairy's BioCNG plant. This facility pioneers the production of hydrogen and carbon black from BioCNG, marking a significant advancement in sustainable energy initiatives.

Unified Genotyping Chips for Converging Efforts in Genomic Selection

Various agencies in the country have been independently working towards genomic selection of Bovines. However, each organisation was using genomic chips that were developed independently. In order to expand the reference population for genomic selection, it is imperative that data generated by various agencies on various breeds are combined. For this to happen, the genotyping chips being used should be compatible.

To achieve this convergence, NDDB took the initiative to develop a common genotyping chip by combining data generated by various organisations. Large genotype data generated independently by ICAR-

National Bureau of Animal Genetic Resources (NBAGR), BAIF Research Foundation, National Institute of Animal Biotechnology (NIAB) and NDDB were used to select a panel that has desired variability for Indigenous breeds of cattle and buffaloes and also help to attribute back to original chip versions.

The unified genotyping chips, INDUSCHIP4 and BUFFCHIP4, have been successfully developed, manufactured and independently validated by both ICAR-NBAGR and NDDB. These chips are now commercially available, marking a significant milestone in the field of genomic selection. Furthermore, genomic selection services are being provided to farmers, enabling them to make early selections of heifers and young bulls.

Development of Indigenous IVF Media Suite

NDDB's Ovum Pick-Up, *In-vitro* Embryo Production and Embryo Transfer (OPU-IVEP-ET) facility continued its endeavours to enhance the efficiency and affordability of the technique for cattle and buffaloes. A significant cost factor for IVF embryos is the use of imported media. NDDB, in collaboration with Indian Immunologicals Ltd (IIL), a wholly-owned subsidiary of NDDB, has undertaken the development of an Indigenous OPU-IVEP-ET culture media suite, which contains five different media used in the entire process of IVEP. The initial results of the media suite trials are promising, leading to the birth of live and healthy calves. Using an indigenously developed solution has resulted in about a two-thirds reduction in cost, which is expected to bolster its acceptance in the Indian dairy farming landscape.

Ready-to-Use Culture

Research and development efforts in Ready-to-Use Culture (RUC) development continued this year with a focus on enhancing productivity by refining the harvesting and drying steps of the RUC process for cultures with texturising properties. Thirty lactic acid bacteria strains exhibiting relevant technological attributes were isolated and identified. These bacteria are undergoing testing in the RUC process, formulation into multi-strain blends and are being subjected to product trials, sensory evaluations and shelf-life studies.

Preparation of multi-strain formulations of Ready-to-Use Culture

Millet-based Dairy Products

NDDB achieves the development and refinement of new products and processes through focussed research and development activities. This year, declared as the International Year of Millet by the United Nations General Assembly, NDDB concentrated on developing dairy products incorporating millets as key ingredients. These efforts resulted in two products: a millet-based fermented product resembling dahi and a millet-based medium-fat ice cream. Recipes for these products have been standardised to accommodate various types of millets, either alone or in combination, based on consumer preferences. Millets are rich in micronutrients, dietary fibre and offer multiple health benefits, including improving gastrointestinal health, blood lipid profiles and blood glucose clearance.

Hub & Spoke Model: Creating Sustainable Model for Propagation of OPU-IVEP-ET Technology

NDDB is implementing the Hub and Spoke model to bring Ovum pick-up, *In-vitro* embryo production and Embryo Transfer (OPU-IVEP-ET) Technology to farmers' doorsteps through collaboration with Milk Unions. This model aims to make embryo transfer sustainable in India by sharing responsibilities. In this model, the NDDB laboratory acts as the 'hub' for embryo production and provides crucial initial support for OPU and ET in the field. Milk Unions work as 'spokes' and identify elite donors, synchronise recipients, conduct heat detection, perform field embryo transfers and raise farmer awareness.

Starting with Amul Dairy and Banas Dairy, the network has expanded to include Sabar Dairy, Mehsana Dairy and Sumul Dairy, covering the five largest Milk Unions in Gujarat. A significant achievement of this approach is that at least 20 veterinarians are now available in these Milk Unions who can confidently transfer embryos, a testament to the model's success in developing trained manpower.

The positive response from farmers not only validates the effectiveness of the model but also highlights the need for advanced reproductive technologies in the dairy industry. With rising demand among farmers, Amul has already established its own laboratory, with Banas, Sabar

Calves born through OPU-IVEP-ET under the Hub & Spoke Model

Small-scale milk processing unit developed for entrepreneurs

and Mehsana MUs following suit. NDDB has played a crucial role in supporting these initiatives, providing expertise and assistance to establish and operationalise these laboratories effectively.

These efforts are geared to enhance herd genetics, improve productivity and ultimately boost farmers' incomes by extensively utilising OPU-IVEP-ET.

Silage from Fruit and Vegetable Processing Industries

To enhance fodder resources in the country, it is imperative to explore unconventional fodder resources alongside traditional fodder crops. Fruit and vegetable wastes, including pea wastes, hold significant potential as a source of quality fodder for dairy animals. However, the challenge lies in conserving these high-moisture materials. NDDB, in collaboration with various stakeholders, is exploring the possibilities of utilising such material for silage making.

After laboratory experiments and field trials, NDDB has successfully standardised the process of making silage using high-moisture pea wastes. During 2023-24, demonstrations of EPP silage production were conducted in collaboration with Mother Dairy Fruit & Vegetable Pvt Ltd (MDFVPL), Mangolpuri and Jharkhand Milk Federation (JMF), Ranchi. About 135 MT of EPP silage was produced at two different locations (54 MT in Ranchi and 81 MT in Mangolpuri). The production of EPP silage will pave the way for utilising vegetable wastes thus offering quality roughage for dairy animals at reasonable cost.

Small-scale Milk Processing Unit

To promote entrepreneurship in milk processing and dairy product manufacturing among small farmers, NDDB collaborated with IDMC Ltd to install and commission a small-scale milk processing equipment line capable of handling 100 litres of milk. This facility is equipped to produce and market milk, curd/lassi, khoa, ghee, mozzarella cheese and shrikhand.

Shri Narendra Modi ji, Hon'ble Prime Minister of India inaugurating the Gobar-based Biogas Generation Plant at Varanasi in the presence of Yogi Adiyanath, Hon'ble Chief Minister of Uttar Pradesh

Sustainability

Continuing its efforts in the manure management domain, NDDB undertook various initiatives to promote efficient manure management and developed various manure value chain models, resulting in the production of clean energy and the propagation of sustainable development.

Manure Management Initiatives

Zakariyapura Model

Since 2018, NDDB has undertaken various innovative manure management initiatives, culminating in the establishment of the Zakariyapura Model in Anand, Gujarat. This model integrates a comprehensive manure value chain, starting with the installation of small-scale biogas plants in the backyards of dairy farmers across 2-3 villages. The initiative includes a central slurry processing plant where biogas slurry is collected from these plants and processed into various value-added fertilisers. Building on the success of the Zakariyapura Model, NDDB partnered with the Sustain Plus Energy Foundation (a Tata Trusts initiative) to expand this model to nine locations across seven states in India. Installation of over 1,000 biogas plants was completed alongside commissioning slurry processing centres in each location. Production of different types of slurry-based organic fertilisers has been initiated in these slurry processing plants. A similar model was established by NDDB in Barauni Dairy with CSR support of IOCL which continued its successful operation during the year.

Implementation of Cluster Gobar Gas Model under GobarDhan scheme

NDDB was appointed as the "Main Implementing Agency" by the Government of Gujarat for the Centrally Sponsored Scheme 'GobarDhan' in 25 districts. Under this scheme, NDDB successfully installed 5,000 biogas plants in cluster mode following the Zakariyapura Model.

Varanasi Model

NDDB implemented the Varanasi Model at Varanasi Milk Union, featuring a Gobar-based Biogas Generation Plant capable of meeting the thermal and electrical energy

requirements of the dairy plant. This plant processes 100 MT of dung per day, sourced from farmers and Gaushalas within a 10-15 km radius, to produce 4,000 cubic metres of biogas daily. The biogas slurry generated is separated into solid and liquid components, utilised for production of organic fertilisers.

The Varanasi Model was inaugurated by Shri Narendra Modi ji, Hon'ble Prime Minister in July 2023. In the first year of operation, the plant processed 18,932 MT of dung. 1,940 MT of Organic Manure and PROM were sold during the year. The use of biogas in the dairy plant has reduced milk processing costs by 40-50 paise per litre, replacing the use of Light Diesel Oil (LDO). Based on its success, NDDB will replicate the Varanasi Model at locations such as Sabarkantha Milk Union in Gujarat and Barauni Dairy in Bihar. In this regard, a study was conducted to assess dung availability and procurement potential around the Sabarkantha Biogas Plant. Sabar Dairy, NDDB and NDDB Mrida Ltd collaborated to establish a 100 MTPD dung-based biogas plant at Himatnagar for biogas generation. An assessment around the plant identified potential dung procurement from 110 villages within a 15-kilometre radius, estimating daily dung production at 1,337 tones, with 428 tonnes net available daily considering farmer inclination to sell dung regularly.

NDDB will establish a Dung-based Biogas plant at Barauni Dairy on a pro bono basis and provide all necessary technical support. This plant will be established following the Varanasi Model. The biogas produced will be used to generate steam to meet the thermal energy requirements of the dairy plant, demonstrating an innovative approach to sustainable energy use. Moreover, slurry as a by-product will be processed to produce organic fertilisers. This initiative is funded through ONGC's CSR contribution under the NDDB Foundation for Nutrition's Go-Green Programme.

Banas Model

Banas Dairy launched an innovative manure management initiative by setting up a large-scale biogas unit in 2020, capable of generating 2,000 cubic metres of raw biogas. This model, known as the Banas Model, compresses and purifies raw biogas into Bio-CNG for vehicles, while also utilising biogas slurry to produce organic fertiliser. The plant

Shri Giriraj Singh, Hon'ble Minister of Rural Development & Panchayati Raj laying the foundation stone for a 100 MTPD capacity dung-based biogas plant at Barauni Dairy

aggregates 40 tonnes of dung daily from over 250 farmers across twelve villages. In collaboration with Suzuki R&D Center India Pvt Ltd (SRDI) and Banas Dairy, NDDB has embarked on setting-up four CBG projects in Banaskantha district to replicate the Banas Model, promoting dung-based Compressed Biogas (CBG) as a vehicle fuel.

Concentrated Solar Thermal (CST)

Hot water is essential for various cleaning and production operations in dairy plants. NDDB integrates Concentrated Solar Thermal (CST) systems into its engineering projects to harness solar radiation for generating hot water. This year, NDDB commissioned a CST project with a capacity of ten Lakh Kcal/day at Purabi Dairy, WAMUL in Assam.

Solar Photovoltaic (Solar PV)

Solar photovoltaic systems are crucial for generating electricity by capturing solar radiation. NDDB has commissioned two projects this year:

- A 250 KWp system at Sabarmati Ashram Gaushala, Bidaj, Gujarat
- A 25 KWp system at the Indian Dairy Association (IDA) House, Delhi

These installations utilise terraces and shadow-free areas, significantly reducing electricity consumption.

A calf's journey to a sustainable tomorrow

SYNERGISING GOVERNMENT'S EFFORTS FOR TAKING DAIRY TO NEXT LEVEL

Rashtriya Gokul Mission

NDDB is implementing and monitoring the implementation of various projects sanctioned under the Central Sector Rashtriya Gokul Mission (RGM) scheme of the Government of India. These projects are being implemented in association with the State Livestock Development Boards, Cooperative Milk Federations, Milk Unions, NGOs and NDDB subsidiaries.

Progeny Testing (PT) and Pedigree Selection (PS) programmes

Progeny Testing – Field-based, scientifically-designed PT programmes are underway to enhance the genetic potential of cattle and buffaloes for improving their productivity. These initiatives focus on selecting superior sires based on daughter performance and producing high-genetic-merit bulls from elite dams through nominated breeding. Implemented across nine states under the Rashtriya Gokul Mission (RGM), these programmes cover the following breeds of cattle: Gir, Sahiwal, Jersey, crossbreds of HF (CBHF) and Jersey (CBJY) and Murrah and Mehsana breeds of buffaloes.

During the year, these projects consistently delivered high-genetic-merit bulls by utilising an expanding database built upon precise tracking of milk recording activities using GPS coordinates coupled with multiple supervisory layers to monitor the breeding activities for ensuring data accuracy.

In 2023-24, all PT projects collectively tested 194 bulls and conducted milk recording for 55,880 animals. These efforts resulted in the procurement of high genetic merit bulls, which were then distributed to semen stations for the production of disease-free Frozen Semen Doses (FSD), facilitating widespread nationwide insemination. These bulls were selected based on their breeding values for milk yield and confirmation of parentage through DNA-based parentage testing. Screening of genetic disorders also formed a part of the selection criteria to ensure that the bulls produced and distributed for semen production were free from genetic disorders. Notably, these bulls were also tested for infectious diseases as per the guidelines prescribed by GoI to ensure that they were free of identified infectious/sexually transmitted diseases. Additionally, breeding values for traits such as fat, SNF, protein yields, open period, age at first calving and type traits were also estimated to further enhance genetic selection. Animal type classification is also carried under these projects. This comprehensive approach underscores the commitment of PT programmes and their effectiveness in advancing genetic improvement as well as increasing the productivity of dairy animals.

Details of PT Projects implemented under RGM scheme are mentioned in the table below:

Sr. No.	State	Name of the EIA	Breed
1	Andhra Pradesh	APLDA	Jersey CB
2	Gujarat	SAG	Murrah
3	Gujarat	SAG	HFCB
4	Gujarat	Mehsana Milk Union	Mehsana
5	Gujarat	Banas Milk Union	Mehsana
6	Gujarat	SAG	Gir
7	Haryana	HLDB	Murrah
8	Himachal Pradesh	HPLDB	Jersey
9	Kerala	KLDB	HFCB
10	Punjab	PLDB	Murrah
11	Punjab	PLDB	Sahiwal
12	Rajasthan	Sri Ganganagar Milk Union	Sahiwal
13	Tamil Nadu	TCMPF	Jersey CB
14	Uttar Pradesh	ABRO	Murrah

Milk recording under the Pedigree Selection programme

Pedigree Selection

Many indigenous cattle and buffalo breeds exhibit significant dairy potential along with desirable traits like adaptability to low-input systems, heat tolerance and disease resistance. However, due to poor adoption of AI, implementing PT programme in such breeds is not feasible. Pedigree Selection (PS) programs have been implemented to facilitate the genetic improvement of these breeds, with the goal of eventually transitioning these projects into progeny testing programs. This shift will occur once a sufficient number of Artificial Inseminations (AIs) have been recorded in the breeding tracts or concentrated geographical areas where these breeds are prevalent.

Moreover, the PS projects facilitate field-based development and conservation of these indigenous cattle and buffalo breeds. To enable this, superior animals are selected within the population and their genetics are disseminated to a wider population by establishing a robust infrastructure for AI delivery. Additionally, such projects raise awareness about the importance and benefits of genetic improvement programmes among the participating farmers, promoting sustainable breeding practices within these communities.

Under RGM, NDDB is actively engaged in implementing nine PS projects. These projects encompass breeds such as Gaolao, Hariana, Kankrej, Tharparkar and Rathi among cattle breeds and Banni, Jaffarabadi, Nili-Ravi and Pandharpuri among buffalo breeds. Throughout the year, the PS projects collectively carried out a total of 72,813 AIs, inducted 7,195 animals under milk recording. These efforts reflect a dedicated focus on enhancing the genetic potential and productivity of indigenous breeds which is essential for sustainable advancement of dairy sector in the respective regions.

Details of PS Projects implemented under RGM are provided in the table below:

Sr. No.	State	Name of the EIA	Breed
1	Gujarat	SAG	Jaffarabadi
2	Gujarat	Banas Milk Union	Kankrej
3	Gujarat	Kutch Milk Union	Banni
4	Haryana	HLDB	Hariana
5	Maharashtra	MLDB	Gaolao
6	Maharashtra	MLDB	Pandharpuri
7	Punjab	PLDB	Nili-Ravi
8	Rajasthan	RLDB	Tharparkar
9	Rajasthan	URMUL Trust	Rathi

Further, NDDB has developed a "Bull Distribution Software (BDS)" which is used to ensure automated, unbiased and timely distribution of HGM bulls, produced by the PT and PS projects, to various semen stations across the country.

National Bovine Genomic Centre for Indigenous Breeds (NBGC-IB)

Utilising the phenotype recording under the PT/PS projects of RGM, blood/tissue samples of milk-recorded animals were collected to continue building a reference population for genomic selection. A total of 18,363 blood/tissue samples from performance-recorded animals and bulls were collected and processed for DNA extraction. Samples for 14,433 animals were genotyped using the latest versions of INDUSCHIP and BUFFCHIP. Bull calves from Gir, Sahiwal, HF crossbred, Jersey crossbred cattle and Murrah & Mehsana buffalo breeds were selected based on their genomic breeding values.

Strengthening of ETT/IVF facility of SAG, Bidaj

Under the Government of India's Rashtriya Gokul Mission (RGM) scheme, NDDB implemented a project aimed at strengthening the Embryo Transfer (ET) and *In-vitro* Fertilisation (IVF) facility at SAG, Bidaj. The project's objective is to produce superior male and female calves for semen production and herd replacement, respectively. Throughout the year, a total of 180 embryos were successfully transferred into suitable recipients, leading to the birth of 20 calves during the period.

Accelerated Breed Improvement Programme to establish pregnancies using bovine IVF embryos produced using sexed semen (ABIP-IVF-ET)

This project,under the Rashtriya Gokul Mission (RGM) scheme, aims to enhance productivity through the multiplication of high-yielding animals using embryo transfer technology. The project was carried out in collaboration with various stakeholders, including Milk Federations, Milk Unions/Producer Companies, State Animal Husbandry Departments and State Livestock Development Boards.

NDDB, being the principal implementing agency, signed agreements with two service providers: Rahuri Semen Station, NDDB Dairy Services (NDS) and Tropical Animal Genetics (TAG). These service providers are responsible for producing and transferring embryos to the intended beneficiaries, with a projected target of approximately 66,000 confirmed pregnancies annually. To facilitate technology adoption, GoI is providing a subsidy of ₹5,000 for each confirmed pregnancy achieved using IVF embryos produced with sexed semen. During the year, a total of 27 action plans were approved for establishing 15,790 pregnancies.

Accelerated Breed Improvement Programme-using Sex-sorted Semen for Getting Assured Pregnancy

The project, sanctioned under the Rashtriya Gokul Mission (RGM) scheme, aims to promote the use of sex-sorted semen for assured production of female

calves, targeting a precision rate of 90 per cent. The project endeavours to establish a total of 51.63 lakh assured pregnancies over a period of five-years. NDDB, serving as the nodal monitoring agency, assumed responsibility for determining the rate of sexed semen doses, negotiating rate agreements with selected suppliers and overseeing project implementation by various implementing agencies.

NDDB has demonstrated its commitment to ensuring stable supply chain for sexed semen, supplying a total of 14.15 lakh sexed semen doses under the programme upto March, 2024. Furthermore, the implementing agencies carried out a total of 1.44 lakh inseminations using sexed semen in the field, as per the data available in the Bharat Pashudhan Application.

Management of Central Cattle Breeding Farms (CCBF)

NDDB has been assigned management of 3 Central Cattle Breeding Farms (CCBF) located at Alamadhi, Tamil Nadu; Andeshnagar, Uttar Pradesh and Dhamrod, Gujarat by Department of Animal Husbandry & Dairying, Government of India, with an objective to establish Dairy Innovation Centres as Centre of Excellence. The major activities envisaged are reengineering and streamlining farm operations, establishment of revenue generation model through forage production, establishment of state of the art training and demonstration centres for professionals and farmers on scientific herd management, production of high genetic merit heifers and male calves through OPU- IVEP-ET.

Breed Multiplication Farms

NDDB has been entrusted with the implementation and monitoring of the Breed Multiplication Farm (BMF) project under the aegis of RGM. This project aims to develop entrepreneurs for establishing Breed Multiplication Farms to produce disease-free, high-yielding elite heifers/pregnant heifers of indigenous breeds of cattle and buffalo through scientific breeding, including sex-sorted semen and IVF technology and make them available to farmers on cost basis. Till March 2024, total of 142 BMF proposals have been approved by DAHD and subsidy grant amounting to ₹ 40.79

Aerial view of SAG, Bidaj

crore has been released to 76 project beneficiaries. All the sanctioned BMF projects are progressing steadily and are at various stage of implementations with the monitoring efforts of NDDB.

Support to Semen Production – Strengthening of Existing Semen Stations

To ensure the availability of quality frozen semen doses for AI and create animal breeding infrastructure of international standards, the Government of India, under its RGM scheme, has sanctioned the strengthening of Semen Station Project to support existing semen stations in the production of quality semen in the country. NDDB has extended its assistance to different semen stations in drafting the project proposals. Till March 2024, total of 35 project proposals have been approved by DAHD, GoI after successful completion of assessment by NDDB.

Establishment of AI Training Institute and Monitoring of AI Network in NER

In order to create a solid infrastructure for the training of AI technicians in the North-Eastern Region (NER) of India, NDDB, at the request of the Assam Livestock Development Agency (ALDA), has established a state of-the-art AI training institute at Khanapara, Guwahati. Inaugurated in June 2023, the AI training institute provides comprehensive AI training that adheres to the rigorous standards prescribed by DAHD, GoI.

Further, NDDB is actively involved in the monitoring and supervision of the AI network in the North Eastern Region. Bharat Pashudhan App Training is being imparted by NDDB to increase AI coverage in NER states through MAITRIs (Multi-Purpose AI Technicians). In 2023-24, 1,580 MAITRIs were deployed in the field, carrying out 8.53 lakh AIs under this project.

Productivity Enhancement Projects

To augment the milk production in key milksheds like Bapudham in Bihar, Vidarbha Marathwada in Maharashtra and Varanasi in Uttar Pradesh, NDDB spearheaded various projects through NDDB Dairy Services, a wholly-owned subsidiary of NDDB. These initiatives encompassed several activities aimed at enhancing the productivity of dairy animals. Notable initiatives included induction of high-yielding animals in milk deficient areas, establishment of Artificial Insemination (AI) delivery networks facilitated by MAITRIs and implementation of reproductive technologies such as inseminations using conventional and sexed semen and embryo transfer using IVF embryos. These initiatives made significant contributions to the sustainable growth and development of dairy production system in the respective project areas.

Several additional projects have also been approved and field activities are yet to commence. These include the establishment of AI networks in various regions such as, Sheopur (MP), Harit Pradesh Milk Producer Company Limited (UP), Mayurbhanj (Odisha), Yavatmal and Washim (MH), Rayalseema (AP), Gorakhpur and Rohilkhand-Braj (UP) and Jharkhand state. Establishing a cow sanctuary in Muzaffarnagar, Uttar Pradesh, is also among the approved initiatives. These projects aim to expand the reach of artificial insemination services, foster sustainable dairy development and promote the conservation of indigenous cattle and buffalo breeds in their respective regions.

Projects	No. of Gir Cattle inducted	No. of AI centres established (MAITRIs)	No. of AI performed
Project Gir Varanasi	485	114	1,25,589
Productivity enhancement activities in Bapudham Milk Producer Company Limited	300	100	79,331
Productivity enhancement activities in Vidarbha Marathwada	2,000	463	1,82,149

SYNERGISING GOVERNMENT'S EFFORTS FOR TAKING DAIRY TO NEXT LEVEL

National Livestock Mission

As an implementing agency under the National Livestock Mission (NLM) – A Central Sector Scheme, NDDB enables multiple dairy cooperatives to enrol in the quality fodder seed production programme. During the kharif season in FY 2023-24, ten dairy cooperatives in seven states produced 29,223 quintals of certified fodder seed worth ₹ 2,683 lakh.

In the Rabi season of 2023-24, eleven dairy cooperatives across seven states participated in fodder seed production, yielding approximately 61,552 quintals of fodder seeds, valued at around ₹ 5,393 lakh. The quality fodder seeds produced were supplied to milk producers of various milk federations/milk unions/Milk Producer Organisations for fodder production.

In 2023-24, fifteen dairy cooperatives across seven states participated in fodder seed production, producing approximately 90,775 quintals of fodder seeds, valued at around ₹ 8,076 lakh

National Programme for Dairy Development (NPDD)

Component A

NDDB has been appointed as a State implementation agency for Milk Producer Companies (MPCs) and Farmer Producer Organisations (FPOs) to implement Component 'A' of the NPDD, a central sector scheme. The scheme focuses towards creating/strengthening of infrastructure for quality milk testing equipment as well as primary chilling facilities. During the year 2023-24, GoI sanctioned three project proposals of MPCs. The total outlay of these projects was ₹ 49.39 crore, including a grant-in-aid of ₹ 30.98 crore as a central share. On request of Milk Unions and Federations, NDDB is also involved in providing technical support in preparation of project proposals as well as implementation of the sanctioned projects.

Component B - Dairying through Cooperatives (DTC-JICA) – Key to Sustainable Livelihood

NDDB is the Implementing Agency for the "Dairying through Cooperatives (DTC)" - Component B of NPDD, a Central Sector Scheme by the Government of India. The scheme focuses to increase sales of milk and dairy products by increasing farmers' access to organised market, upgrading dairy processing facilities and marketing infrastructure and enhancing the capacity, thereby contributing to increase in return to milk producers in the project area.

Producer owned institutions including Milk Unions, Multi-State Milk Cooperatives, State Milk Federations and Milk Producer Organisations are eligible to participate in the project. The project area covers the states of Uttar Pradesh, Bihar, West Bengal, Madhya Pradesh, Andhra Pradesh, Telangana, Punjab, Rajasthan and Uttarakhand.

The total outlay of the project is ₹ 1,568.3 crore, with ₹ 924.6 crore as an Official Development Assistance (ODA) loan from Japan International Cooperation Agency (JICA), ₹ 475.5 crore as a grant by the Government of India (GoI) and rest as state/Participating Institution's (PI) contribution. Under the project, loans to Participating Institutions (PI) were provided at an interest rate of 1.5 per cent p.a. During 2023-24, 22 sub project plans were approved under the scheme with a total financial outlay of ₹ 1,130.6 crore, comprising loan of ₹ 705.5 crore, a grant of ₹ 329.7 crore and Participating Institutions' contribution of ₹ 95.4 crore.

The PIs have commenced activities under various categories such as strengthening of milk procurement infrastructure, processing and manufacturing facilities, marketing infrastructure, ICT Infrastructure, productivity enhancement and training & capacity development. During the year, ₹ 207.1 crore, comprising loan of ₹ 102.6 crore and a grant of ₹ 104.5 crore was released to the PIs.

Under productivity enhancement component of the project, various initiatives like the Calf Rearing Programme (CRP), Animal Nutrition Advisory Services (ANAS) and Fodder Development Programmes have been conceptualised.

Cutting fodder using a chaff cutter

The project is expected to provide better livelihood opportunities to small and marginal milk producers, improve the quality of milk in the value chain, strengthen the processing infrastructure of participating institutions, increase visibility of cooperative brands in market and build manpower capacity.

Dairy Processing & Infrastructure Development Fund (DIDF)

NDDB was the implementing agency for "Dairy Processing & Infrastructure Development Fund (DIDF)", a GoI scheme, that was implemented from 2018-19 to 2022-23. The scheme had a financial outlay of ₹ 11,184 crore comprising ₹ 8,004 crore as a loan, ₹ 2,001 crore as end borrowers' contribution, ₹ 12 crore as contribution by the participating institutions towards project management & learning and interest subvention of ₹ 1,167 crore from Government of India. The Cooperative Milk Unions, State Cooperative Dairy Federations, Multi-state Milk Cooperatives, Milk Producer Organisations and NDDB subsidiaries were the eligible end borrowers under DIDF.

The Government of India has now approved an extension of the Animal Husbandry Infrastructure Development Fund (AHIDF) as part of the Infrastructure Development Fund (IDF), amalgamating the Dairy Processing & Infrastructure Development Fund (DIDF) till 2025-26.

As of 31 March 2023, 36 projects with an outlay of ₹ 6,730.2 crore, including loan of ₹ 4,538.4 crore was approved. During 2023-24, loans amounting to total of ₹ 773.3 crore were disbursed to POIs. The milk processing capacity of POIs is expected to be increased by 15.54 million litres per day with the implementation of the approved projects. Till March, 2024, 14 projects have already been completed , creating milk processing capacity of 7.40 million litres per day.

SYNERGISING GOVERNMENT'S EFFORTS FOR TAKING DAIRY TO NEXT LEVEL

Interest Subvention to Producers' Owned Institutions for Working Capital Loans

Due to the challenges faced by the Producers' Owned Institutions (POIs) during COVID-19 pandemic restrictions, the Government of India (GoI) introduced a scheme for "Interest Subvention on working capital loans" during the year 2020-21, with an outlay of ₹ 203 crore. The scheme was further extended, with an outlay of ₹ 500 crore, for the period FY 2021-22 to FY 2025-26 and is being currently implemented by NDDB.

The scheme provides two per cent interest subvention p.a. on working capital loans availed by eligible Participating Agencies (PAs) from banks and financial institutions. An additional two per cent p.a. interest subvention is provided at the end of the loan repayment period for those who make prompt and timely repayments. The component of interest subvention has been included under the scheme 'Supporting Dairy Cooperatives and Farmer Producer Organisations engaged in dairy activities (SDCFPO)".

NDDB released interest subvention of ₹ 508.9 crore to the POIs, as of 31 March 2024. Through the interest subvention on working capital loans availed from Banks, the scheme enabled POIs to make timely payments to the dairy farmers.

Formation and Promotion of Farmer Producer Organisations (FPOs)

NDDB has been designated as the implementing agency for the Central Sector Scheme of "Formation and Promotion of 10,000 Farmer Producer Organisations (FPOs)"

As part of the implementation, NDDB has been assigned the task for formation of 100 Fodder Plus FPOs and 26 Beekeepers' FPOs across the country. As of March 2024, 97 Fodder Plus FPOs and 24 Beekeepers' FPOs have been formed under this scheme. NDDB is working closely through dairy cooperatives, Producer Owned Institutions and other agencies for implementation of this scheme.

NDDB is leveraging the dairy cooperative network to establish a value chain for honey and achieve the goal of a "Sweet Revolution". Honey FPOs have reached a membership of about 4000 farmers. Milk Unions are coming forward to provide forward market linkages for honey produced by FPO members by launching honey under their respective dairy brands. Setting up of key infrastructure for beekeeping such as honey testing laboratory, processing unit, beekeeping equipment manufacturing unit is also being promoted under National Beekeeping and Honey Mission (NBHM) with support of dairy cooperatives to further support these FPOs.

Training on Scientific Beekeeping

Fodder Harvesting using a harvester

The Fodder Plus FPOs have reached a total membership of about 12,000 farmers. NDDB actively provides technical support to FPOs and Cluster-Based Business Organisations (CBBOs) to enhance their capacity. In 2023-24, about 90 officers from 45 CBBOs were trained in fodder production and conservation. Technical support was also extended to 25 CBBOs to prepare business plans for FPOs in fodder related activities. Of the total registered Fodder FPOs, 45 have commenced field activities such as production and sale of green fodder, silage, fodder seeds and sale of dry fodder and stem cuttings of perennial grasses etc.

NDDB's coordination for fodder seed production under the National Livestock Mission ensured availability of good quality fodder seeds of improved varieties to the members of the FPOs. NDDB's continuous efforts in capacity building and hand holding of CBBOs and FPOs led to a cumulative turnover of about ₹ 1,064 lakh during 2023-24.

National Dairy Plan, Phase II

The National Dairy Plan, Phase II (NDP II) is planned to be implemented in six less dairy-developed states viz. Himachal Pradesh, Jharkhand, Madhya Pradesh, Odisha, Sikkim and Uttarakhand. The objective is to enhance competitiveness, improve resilience and reduce carbon footprint of the milk value chain, focussing on smallholder dairy farmers in project area.

All activities related to the Department of Economic Affairs and project readiness criteria have been completed. The project is currently in an advanced stage of approval by both the Government of India and the World Bank.

Digital Infrastructure: Bharat Pashudhan

NDDB, in collaboration with DAHD launched Bharat Pashudhan in Nov 2023 – a farmer-centric, technology-driven digital infrastructure aimed at enhancing productivity and health management in India's animal breeding, nutrition and health sectors. This ecosystem

SYNERGISING GOVERNMENT'S EFFORTS FOR TAKING DAIRY TO NEXT LEVEL

focusses on developing a connected livestock market, closed-loop breeding and disease surveillance systems and improving traceability of animals and animal products. The application covered 26 states and eight union territories till March 2024.

The application operates on a cloud-based platform, enabling field-level workers to record crucial interventions such as animal registrations, farmer registrations, ownership changes, vaccinations, treatments, artificial inseminations, calving events, ration balancing, e-prescriptions and milk recording.

Around 46 capacity-building programmes were conducted across various states, offline and online, exclusively for the Bharat Pashudhan application to ensure effective adoption. These programmes aimed to empower users with the necessary skills and knowledge to maximise the benefits of the digital infrastructure. Bharat Pashudhan represents a significant step towards integrating modern technology into India's livestock management practices, fostering efficiency, transparency and sustainability across the sector. As the initiative progresses through its subsequent phases, it is expected to streamline operations further, improve data-driven decision-making and enhance overall productivity in animal husbandry nationwide.

In December 2023, a pilot Digital Livestock Census using the Bharat Pashudhan App was conducted in the Vikas Nagar Block, Dehradun district. Results indicated that 95.5 per cent of the total animal population was tagged and verified. Compared to the 19th Livestock Census, both cattle and buffalo populations increased significantly and 100 per cent of the animals were registered. This initiative highlights Bharat

Training of trainers for Bharat Pashudhan

Pashudhan's capability in enhancing transparency and accountability in livestock management, facilitating effective resource allocation for managing stray animals and enhancing animal welfare.

On 02 March 2024, Hon'ble Prime Minister Shri Narendra Modi ji launched the 1962 Farmer's App, a pivotal component of the Bharat Pashudhan ecosystem. Available on the Play Store, this application empowers livestock farmers by providing direct access to essential resources and information. Farmers can utilise their registered mobile numbers to access the app, which serves as a centralised hub offering:

- **Comprehensive Livestock Management:** Each farmer and animal are assigned a unique QR code, enabling quick identification and efficient management within the system. The app maintains a chronological record of each animal's lifecycle, including interventions such as artificial insemination, vaccinations and health treatments. This data can be shared with stakeholders like insurance companies and bankers.
- **Access to Pashupedia:** A repository of detailed information about various livestock species, breeds and ethnoveterinary practices, empowering farmers with knowledge essential for efficient livestock farming.
- **Digital Trading Platform:** Facilitates livestock trading through a digital platform, enhancing market accessibility for farmers.

Integration and Expansion: To ensure effective implementation nationwide, NDDB and the Government of India have established state-level Project Monitoring Units (PMUs) in Karnataka, Andhra Pradesh, Maharashtra, Uttar Pradesh and Assam. These units provide technical and field support, ensuring seamless use of the application and enhance user engagement among farmers and stakeholders.

Sr. No.	Training Type	No. of Training
1	Bharat Pashudhan app Training Programme (online)	15
2	Bharat Pashudhan app Training Programme (offline)	24
3	Project Monitiring Unit (PMU) Training	3

Key statistics of Bharat Pashudhan database till date, are as under:

Sr. No.	Attribute Description	Total number of transactions
1	Animals registered	31,51,68,008
2	Owners registered	8,92,36,820
3	Villages covered	5,90,213
4	District covered	764
5	Organisations onboarded	253
6	Projects created	372
7	Treatment transactions	22,36,576
8	Vaccination transactions	68,07,37,423
9	AI transactions	13,20,82,143
10	Semen stations onboarded	74
11	Total no. of users	4,53,619
12	Downloads of farmers app	60,000

Cheese packaging at Sabar Cheese Plant

Quality & Food Safety Management, Quality Mark & CAS MMP

Quality and food safety remained a major focus area for NDDB, with initiatives like the Quality Mark continuing to demonstrate excellence in the dairy sector. Out of 117 applicants, 56 dairies have been awarded the Quality Mark, showcasing their commitment to stringent process certification from cow to consumer. Rest 61 dairies are in various stages of implementing food safety systems. More number of dairies are coming forward reflecting growing interest in attaining the Quality Mark.

To further strengthen the focus on quality and food safety, NDDB supported the Bureau of Indian Standards (BIS) in introducing the Conformity Assessment Scheme for Milk and Milk Products (CAS MMP). This initiative aims to achieve Product-FSMS-Process certification with a unified logo. Major and potential state milk federations and dairy cooperatives were encouraged to embark on CAS MMP through awareness programmes organised during the year.

Out of the 30 applications for CAS MMP from dairy cooperatives, five dairy plants have received the CAS MMP certification. Another fifteen dairy plants have undergone the audits and are in stage of implementing the improvements for certification. Quality Mark certified dairies are also being encouraged and supported to pursue CAS MMP certification.

Technical & Training Support to the Food Safety Stakeholders

NDDB continued its support to regulatory bodies such as the DAHD, Food Safety and Standards Authority of India (FSSAI), Codex Alimentarius Commission (CAC) and FAO. It also served as the Secretariat of the Indian National

Committee (INC) of the International Dairy Federation (IDF), coordinating various activities. Technical support was provided to Bureau of Indian Standards (BIS) through participation in scientific and technical committees for updating Indian Standards (IS) for milk and milk products. NDDB also assisted Export Inspection Council (EIC) in evaluating dairies export readiness as panellists.

Education and training remained a key tool for bringing about improvement in milk and milk product handling with focus on food safety across the dairy value chain. Training programmes covered areas such as clean milk production, food regulations and Quality Mark & CAS MMP systems. A specialised food safety training module was developed for senior officials to support the implementation of the "Dairying through Cooperatives" scheme financed by JICA under NPDD. This module encompasses tools and techniques like 5S, Kaizen, QC Circles and international systems such as ISO 22000/ FSSC 22000, ISO 14001, ISO 50001 and ISO 45001. These initiatives help dairy cooperatives promote food safety alongside environmental safety, energy conservation and occupational health and safety management systems for sustainable operations.

NDDB supported dairy cooperatives in enhancing operational efficiency through process improvements, technological interventions and system introductions.

Studies conducted during the year focussed on identifying and mitigating losses of milk solids and packaging materials in five dairy plants of MilkFed, Punjab. These efforts aimed to reduce losses to acceptable levels through targeted interventions.

NDDB also continued its efforts in laboratory modernisation by introducing advanced and rapid testing equipment. This initiative aims to enhance testing accuracy and to ensure meeting food safety standards consistently.

Gopal Ratna Award 2023-24

The Department of Animal Husbandry and Dairying organises the Gopal Ratna Award every year which recognises and encourages farmers, AI Technicians and dairy cooperative societies/Milk Producer Organisations (MPOs) working in this sector. NDDB facilitated the adjudication and promotion of the award in 2023-24. A total of 1,770 applications were received for the awards that are conferred in three categories:

- Best dairy farmer rearing Indigenous cattle/buffalo breeds
- Best Artificial Insemination Technician (AIT)
- Best dairy cooperative/milk producer organisation/ dairy farmer producer organisation

Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying presenting the Gopal Ratna Award 2023-24 during the National Milk Day at Veterinary College Ground in Guwahati, Assam

Dr Meenesh Shah, Chairman, NDDB, welcoming Shri Amit Shah ji, Hon'ble Union Minister of Home Affairs and Cooperation at NDDB's Delhi office

Shri Amit Shah ji, Hon'ble Union Minister of Home Affairs and Cooperation with Board of Directors of NDDB and its wholly-owned subsidiaries

EXPANDING COOPERATIVE COVERAGE - REALISING THE VISION OF "SAHKAR-SE-SAMRIDDHI"

Recognising the importance of cooperatives in promoting rapid and inclusive economic growth in the country, the vision of "*Sahkar-se-Samriddhi*" has been envisaged by the Hon'ble Prime Minister. The Cabinet approved the plan of establishing viable Primary Agriculture Credit Societies (PACS) in each uncovered Panchayat, viable DCS in each uncovered Panchayat/village and viable Fishery Cooperatives in each coastal Panchayat/ village having large water bodies, and strengthening the existing PACS/DCS & Fishery cooperative societies. This would provide farmer members all over the country with requisite forward and backward linkages to market their produce, enhance their income and obtain credit facilities and other services at the village level.

Under the plan, it is envisaged to establish 2.0 lakh PACS/DCS/Fishery Cooperative Societies in the next five years in all the uncovered Panchayats/Villages in the country to strengthen the cooperative movement and deepen its reach to the grassroots. NABARD, NDDB, NFDB and other agencies like National Federations, State/UT Governments and their agencies and district cooperative administration will be responsible for effective implementation of the action plan for formation of new Multipurpose PACS (M-PACS), DCS and Fishery Cooperatives respectively under the guidance and directions of Ministry of Cooperation (MoC), Government of India.

NDDB, in consultation with the Ministry of Cooperation, is committed to contribute towards realising this vision. As a precursor to the nationwide implementation of the scheme, NDDB in consultation with Ministry of Cooperation had launched pilot projects for the uncovered areas in three districts of Jind (Haryana), Indore (Madhya Pradesh) and Chikamagalur (Karnataka). So far, 79 village-level dairy cooperative societies have been established in these districts till March 2024, providing dairy farmers an opportunity to join the dairy cooperative network and sell their produce in a fair and transparent manner at remunerative prices. These new societies are currently procuring about 15 TKgPD of milk from about 2,500 dairy farmers.

Further, for initiating dairy activities under M-PACS, it has been realised that milk being a completely different commodity than the ones currently handled by PACS, some initial handholding and financial assistance will

"Sahkar-se-Samriddhi"

be required to be provided to M-PACS. A comprehensive Action Plan has been jointly prepared by NABARD, NDDB and NFDB to achieve the targets set under this initiative. NDDB will work in consultation with the Milk Unions/ Dairy Federations/Milk Producer Organisations (MPOs) in the country, help them avail financial assistance for expanding the coverage under various central government schemes, provide hand-holding and technical support for initiating milk procurement activities through the existing Milk Union/Federation/MPO and ensure forward linkages. To initiate milk procurement in M-PACS as an additional income generating activity, NDDB introduced a scheme called "Supporting M-PACS to initiate viable dairy activities". The scheme facilitates funding for willing and viable M-PACS and provide them with a grant of ₹ 40,000. The scheme would provide financial support to 1,000 M-PACS for basic milk procurement and testing equipment, as well as initial hand-holding and support, through the operational milk union/federation/MPO of the region. NDDB is reaching out to Milk Unions, DCCBs and M-PACS in uncovered areas for effective implementation of the scheme in a time-bound manner.

Multi-State Cooperative Societies

Three new national-level multistate cooperative societies namely, National Cooperative Organics Limited (NCOL), Bharatiya Beej Sahakari Samiti Limited (BBSSL) and National Cooperative Exports Limited (NCEL) were set up in January 2023. NDDB is one of the promoters for two of these societies, and also chief promoter for NCOL, aligning with the vision and mission of "Local to Global" contributing to the realisation of "*Sahkar-se-Samriddhi*".

National Cooperative Organics Limited

National Cooperative Organics Limited (NCOL), registered under the Multi-State Cooperative Societies Act, 2002, visions to function as an umbrella organisation for cooperatives to promote organic products. NDDB is the chief promoter of NCOL. The other promoters are National Cooperative Development Corporation (NCDC), National Cooperative Consumers' Federation of India Ltd (NCCF), Gujarat Cooperative Milk Marketing Federation Ltd (GCMMF-AMUL) and National Agricultural Cooperative Marketing Federation of India Ltd (NAFED). NCOL aims to increase the profitability of organic produce by offering direct market access to organic farmers and producer organisations by establishing a strong brand and facilitating access to both National and International markets. As of 31 March 2024, NCOL comprises over 3,778 registered member societies across various levels (primary, district, state, etc.), with nearly one million farmers affiliated with the organisation.

During the year, NCOL launched 11 organic products under the "Bharat Organic" brand, including Khandsari Sugar, Jowar Atta, Chana Dal, Toor/Arhar Dal, Moong Dal, Besan, Jaggery Powder, Kabuli Chana, Rajma Chitra, Masoor Malka and Dalia. These products were made available through SAFAL outlets and Flipkart in the Delhi NCR region, with plans underway for nationwide distribution through various channels to ensure that authentic organic products are accessible to customers at competitive prices across the nation.

NCOL hosted the National Symposium on Promoting Organic Agriculture at the ICAR Convention Centre, PUSA, New Delhi in November 2023. The event was addressed by Shri Amit Shah ji, Hon'ble Union Home Minister and Minister of Cooperation, who launched the NCOL logo, website, & brochure and distributed membership certificates to NCOL members.

Bhartiya Beej Sahakari Samiti Limited

BBSSL is a national level apex cooperative society with Krishak Bharati Cooperative Limited (KRIBHCO) as its chief promoter, along with other promoters like Indian Farmers Fertiliser Cooperative (IFFCO), NAFED, NDDB and NCDC. BBSSL was registered under the Multi-State Cooperative Societies Act, 2002.

Ministry of Agriculture and Farmers Welfare, GoI has impanelled BBSSL as a Central Nodal Seed Agency for Pulses & Oilseeds production under the National Food Security Mission (NFSM) programme from the financial year of 2023-24 onwards. The seed production programme through 78 farmers who are members of different cooperative societies (breeder to foundation) has been initiated in the Rabi season of FY 2023-24 in around 1,100 acre area. In the first phase of the seed production programme, 16 varieties of wheat, gram, mustard and pea are undertaken in four states (U.P., M.P., Rajasthan and Gujarat) and it is expected to produce around 1,500 MT of foundation seed of these crops.

Shri Amit Shah ji, Hon'ble Union Minister of Home Affairs & Cooperation inaugurating the offices of NCOL, BBSSL and NCEL

BBSSL organised a National Symposium on "Production of improved and traditional seeds through Co-operative sector" on 26 October 2023 in Vigyan Bhawan, New Delhi, in the gracious presence of Shri Amit Shah ji, Hon'ble Union Minister of Home and Cooperation, Government of India.The logo, website and brochure of BBSSL were also unveiled by the Hon'ble Union Minister in the Symposium.

NDDB's Schemes for Supporting Dairy Cooperatives

NDDB continues to support existing dairy cooperatives and producer institutions, enabling them to better serve their members. In this regard, NDDB initiated pilot interventions through its own schemes to support dairy cooperatives.

Revitalising Promising Producer-owned Institutions

NDDB implemented the "Revitalising Promising Producer-owned Institutions" scheme to support potential dairy cooperatives in milk procurement, institution building, processing infrastructure, ICT infrastructure, manpower support and training & capacity building.

Dairy cooperatives from various regions across the country, such as Varanasi Milk Union, Ernakulam Milk Union, West Assam Milk Union, Sundarban Milk Union, Midnapore Milk Union and Ferozepur Milk Union, have benefited from this scheme. The total outlay sanctioned for the project during 2023-24 is ₹ 9.32 crore, including ₹ 5.28 crore as grant-in-aid from NDDB and ₹ 2.46 crore as interest free loan.

Support to Strengthen Marketing Operations of Producers' Owned Institutions

NDDB has launched the scheme "Support to Strengthen Marketing Operations of Producers' Owned Institutions" for 5 years (FY 2021-22 to FY 2025-26) with an outlay of about ₹ 30 crore.

During 2023-24, NDDB's marketing support was extended to include two more dairy cooperatives bringing the total number of POIs supported under the scheme to 23. By the end of 2023-24, the total outlay of the projects under implementation reached ₹ 24.23 crore of which ₹ 11.41 crore is grant-in-aid from NDDB. Under the scheme, apart from support for cold chain infrastructure development, expanding booth network & brand visibility support, the cooperatives also received guidance and hand-holding support in sales and distribution and creative consultancy support for brand development.

Sales and distribution consultancy services were provided to Varanasi Milk Union, Magadh Milk Union, Vijayapura & Bagalkote Milk Union, Belagavi Milk Union, Midnapur Milk Union and Mizoram Milk Union. As part of the brand development support, brand refresh and packaging revamp was done for Chhattisgarh Rajya Sahakari Dugdh Mahasangh Maryadit, Raipur, Chhattisgarh, Ladakh UT Dairy Co-operative Federation Ltd, Leh, Ladakh and Mulukanoor Women's Mutually Aided Milk Producer's Co-operative Union Ltd.

Several training programmes and workshops were organised for capacity building of Marketing Managers and Officers of various cooperatives. Besides, the beneficiary POIs were also provided guidance in professionalising their Sales & Marketing function to establish proper manpower structure and also helping them in on-boarding qualified and experienced professionals.

Management Support to Milk Unions and Federations

Jharkhand Milk Federation

During the year, Jharkhand State Cooperative Milk Producers' Federation Limited (JMF) made significant progress across various aspects. JMF achieved a daily average milk procurement of about 190 TKgPD from more than 35,000 farmer producer members, covering about 3,100 villages, registering about 30.72 per cent increase from the previous year.

The federation paid ₹ 260 crore towards milk payment to milk producers through Direct Bank Transfer (DBT). During the year, the state government paid an incentive of ₹ 3 per litre to milk producers associated with JMF. 858 Data Processor Milk Collection Units (DPMCU) and 125 Automatic Milk Collection Units (AMCU) were also installed in village Milk Pooling Points (MPPs) to ensure transparent and efficient operations in the milk collection process.

JMF marketed 166 Thousand Litres of liquid milk per Day (TLPD) in the year 23-24, a 6.39 per cent increase from the previous year. The sale of liquid pouch milk increased by seven per cent to 160 TLPD. A new dairy plant at Palamu with a capacity of 50 TLPD (expandable to 100 TLPD) was inaugurated by Hon'ble Chief Minister of Jharkhand during the year. The foundation stone for two dairy processing plants of 50 TLPD each, at Giridih and Jamshedpur, were also laid during the year, in an endeavour to enhance the dairy processing infrastructure. To diversify its product offerings, JMF also launched the new Medha Rabri.

During the year, JMF distributed 29.26 MT of fodder crop seeds at subsidised rates to the associated milk producers. To promote perennial fodder grasses, free hybrid-Napier cuttings were provided to the milk

Shri Hemant Soren, Hon'ble Chief Minister of Jharkhand inaugurating the new Dairy Plant at Palamu, Jharkhand

producers. Over 64,550 Napier cuttings were distributed among the milk producers in Jharkhand.

In 2023-24, multiple breed improvement initiatives were undertaken by JMF. One of it was the implementation of IVF-Embyro Transfer Project as a part of the Accelerated Breed Improvement Programme, resulting in 25 successful pregnancies in recipient animals. An AI programme for breed improvement was also initiated in 12 districts of Jharkhand, in collaboration with NDDB Dairy Services. The programme was inaugurated by the Hon'ble Chief Minister of Jharkhand on 7 March 2024 in Jamshedpur.

During the year, 123 candidates from 12 districts of Jharkhand were trained in accredited AI training. Further, 75 AITs were deployed in the field for performing AI, resulting in a total of 1,561 AIs. To provide support to AI technicians in field training and address cases of infertility in animals, 21 infertility camps were conducted in JMF's milk pooling operational areas, treating 300 animals.

Under the Manure Management Programme, 100 flexi biogas units and a bio-slurry processing unit at Changani Tikratoli village in the Bero block of Ranchi district were successfully installed by JMF. During the year, the slurry processing units produced 15 MT of manure-based products.

Eighty new DCSs, two beekeepers FPOs and two fodder FPOs were registered during the year to strengthen the cooperative structure in the State.

Varanasi Milk Union

NDDB has continued to manage Varanasi Milk Union. During the year, the union reported an average milk procurement of around 174 TKgPD from 491 Dairy Cooperative Societies that covered 21,000 dairy farmers, by paying an average milk procurement price of ₹ 44.68 per kg of milk.

This year, a higher level of transparency was achieved in the village-level milk collection process through the installation of 250 DPMCUs and 20 AMCUs. Furthermore, installation of 15 BMCs at strategic locations along the milk collection routes significantly improved the quality of milk procured.

Varanasi Milk Union initiated adoption of NDERP to drive process efficiency and automate Dairy Plant operations.

In addition to ensuring the procurement of good quality milk at the farm level, Varanasi Milk Union further strengthened its Quality Assurance Laboratory. The Milk Union is in the process of obtaining ISO-22000 Certification for its dairy plant.

During the year, the milk union initiated adoption of the NDERP production module. This move aimed to drive process efficiency, automate dairy plant process and integrate them with the other processes of the milk union. Varanasi Milk Union received financial assistance under the "Revitalising Promising Producers' Owned Institutions Scheme" of NDDB and availed an interest-free loan of ₹ 394.2 lakh and a grant of ₹ 300 lakh. This significantly helped the milk union in strengthening its milk procurement operations, improving its processing capabilities and augmenting its ICT infrastructure. Furthermore, a grant of ₹ 49.77 lakh under the "Support to strengthening market operations of producers' owned institutions" scheme of NDDB, enabled brand visibility.

The Varanasi Milk Union engaged in providing various input services to its farmer members, such as the distribution of cattle feed, area specific mineral mixture and feed supplements at affordable prices. Training and capacity-building programmes were also organised for dairy farmers, route supervisors, marketing personnel and potential employees during the year.

Varanasi Milk Union sold around 16.33 TLPD of packed liquid milk every day during the year 2023-24, in addition to milk products like paneer, ghee, curd, lassi etc. under the brand 'Parag'. The union achieved a three-fold growth in the annual business turnover, from ₹ 54

Dr Meenesh Shah, Chairman, NDDB during the foundation stone laying ceremony for 50 MTPD fermented sections at Varanasi Milk Union

crore in 2022-23 to ₹ 172 crore during 2023-24, up by around 220 per cent.

The dung-based biogas plant installed by NDDB significantly supplemented the energy requirements of the dairy plant and saved on fuel costs. While creating an additional source of income for the dairy farmers through sale of dung, the plant is also helping the union to contribute towards reducing the carbon footprint by lowering the use of conventional fuels. Besides, it is also supporting the Swacch Bharat Mission and Green Energy programmes of the Central Government.

The foundation stone for establishment of 50 MTPD fermented sections was laid by the Chairman, NDDB during 2023-24. Additionally, commissioning of a powder plant with 20 MTPD capacity and a new sweet-making section within the dairy plant premises is in progress.

West Assam Milk Producers' Cooperative Union Limited

NDDB continued to manage the West Assam Milk Producers' Cooperative Union Limited (WAMUL), popularly known as "Purabi Dairy". During FY 2023-24, WAMUL was associated with around 34,000 dairy farmers through 885 functional dairy cooperative societies and reported an average milk procurement of 53,100 kg per day. The average milk procurement price paid by WAMUL to its dairy farmers through direct bank transfers was around ₹ 42.90 per kg, other than ₹ 1.50 per kg as additional milk procurement price.

During the year, WAMUL expanded its bulk milk cooling capacity of 43,000 litres by commissioning 13 village level BMC centres on a franchisee basis. WAMUL achieved around 20 per cent increase in the number of associated functional dairy farmers over the previous year.

The milk union continued to provide various input services such as doorstep Artificial Insemination (AI) delivery and distribution of cattle feed and feed supplements at affordable rates, as well as organising field demonstrations, training sessions and capacity-building programmes for its dairy farmers. As the End Implementing Agency of the formal dairy value chain component of the Assam Agribusiness and Rural Transformation Project (APART) financed by the World Bank, WAMUL delivered 9,87,424 doorstep artificial insemination (AI) services across 3,285 villages through a network of 424 mobile AI technicians (MAITs) in the districts falling under APART as of March 2024, resulting in 3,69,731 calves born. This year also marked the

shift of data recording from INAPH system to Bharat Pashudhan system.

During the year, WAMUL sold 6,089 tonnes of cattle feed, 74 per cent higher than the previous year. Other than this, it sold 34 tonnes of mineral mixture and distributed 31.17 lakh hybrid Napier slips to its dairy farmers. Bulk of the fodder slips received under the Assam Fodder Mission (implemented by Directorate of Animal Husbandry and Veterinary, Government of Assam) were also distributed by the union. In FY 2023-24, WAMUL continued the demonstrations of urea treated paddy straw and green fodder silage. It also developed nurseries and demonstration plots of fodder crops and medicinal plants under Pashu Ayurveda activities and initiated programmes such as Calf Nutrition Popularisation Programme and Ration Balancing Programme (RBP) for better feed management of young and adult milch animals. Besides, vaccination and health camps, including ethno veterinary camps, were conducted during the year, to safeguard animals against several diseases.

In this fiscal, WAMUL installed 299 units of solar powered automatic milk collection systems and 11 solar-powered instant milk chilling units to strengthen its village-based milk procurement activities in an environmentally sustainable manner. Furthermore, the work for commissioning a slurry processing centre, jointly funded by NDDB, Sustain Plus Energy Foundation and WAMUL at Maloibari village has been commenced successfully. Other than this, a gobar cooperative society - "Sakhi Jaibik Khar Samabai Samittee Ltd", comprising 100 women beneficiaries as members, has been registered aiming to supply slurry to the slurry processing centre at Maloibari for preparation and packaging of organic manure.

During the year, WAMUL launched a range of processed and purified honey in different pack sizes under "Purabi" brand. The product launch formed a part of an event organised by the Ministry of Agriculture & Farmers Welfare, Government of India, at the College of Agriculture, Waraseoni in Balaghat district of Madhya Pradesh on the occasion of World Bee Day on 20 May 2023.

WAMUL also received the NCDFI's "Active Participation Award" for the year 2022-23 from Shri Amit Shah ji, Hon'ble Union Minister of Home Affairs & Cooperation, at an event organised at Gandhinagar, Gujarat in December 2023.

During the year, Dr Himanta Biswa Sarma, Hon'ble Chief Minister of Assam, unveiled the expanded dairy plant of WAMUL at an inauguration event organised on 02

Shri Amit Shah ji, Hon'ble Union Minister of Home Affairs & Cooperation presented WAMUL with NCDFI's "Active Participation Award" for the year 2022-23

EXPANDING COOPERATIVE COVERAGE - REALISING THE VISION OF "SAHKAR-SE-SAMRIDDHI"

March 2024 at its dairy premises in Panjabari, Guwahati The newly expanded facility will enable the processing of 1.5 lakh litres of milk as against the earlier processing capacity of 60,000 litres per day. Besides, it can produce up to 10 MT of curd per day, 10,000 litres of lassi per day, 2 tonnes of paneer per day and up to 2,000 litres ice-cream per day. Aligned with its new ice-cream manufacturing capability, WAMUL also launched its range of ice creams under 'Purabi' brand in five different flavours viz. strawberry, vanilla, butterscotch, chocolate and fruit & nut. On 17 July 2023, WAMUL launched a new format milk parlour within its premise in Panjabari, Guwahati. This new-gen store is indicative of Purabi's journey of transformation to a more modern and fulfilling brand.

In FY 2023-24, WAMUL registered sales of 1,03,100 Litres per Day of packed liquid milk and milk equivalent of products such as paneer, sweet curd, plain curd, lassi, cream and ghee, thereby attaining a growth of around 25 per cent than the previous year. Besides, the share of milk equivalent of products to that of packed liquid milk increased by four per cent during the year in comparison to the previous year. This helped WAMUL to record a sales turnover of around ₹ 270 crore during FY 2023-24, around 32 per cent higher than the previous financial year.

To increase the coverage area and bring more villages under the cooperative network, at WAMUL's request, NDDB conducted studies to "Assess milk production and milk surplus in Sonitpur district" and "Status of Milk Production, Marketable Surplus and status of Dairying in Dima Hasao district" of Assam. Based on the study, it was found that the estimated milk production in Sonitpur district is approximately three LLPD. Further through these surveys across eight districts (survey in seven districts of Upper Assam was conducted in 2022-23), potential clusters for milk procurement have been identified, totalling about 12 LLPD of daily milk production and a producer surplus of about seven LLPD. Five potential clusters, covering 5,546 villages and accounting for nine LLPD of milk production and six LLPD of producer surplus, have been identified.

East Assam Milk Union Limited

A tripartite agreement was inked between the Government of Assam, NDDB and East Assam Milk Producers Cooperative Union Ltd (EAMUL) to augment dairy development in East Assam through dairy cooperatives. The agreement envisages initiation of dairy development activities in the districts of Darrang, Sonitpur, Lakhimpur, Dhemaji, Golaghat, Jorhat, Sivasagar, Dibrugarh and Tinsukia by creating the necessary infrastructure and establishing Dairy

Inauguration of Expanded Purabi Dairy Plant (150 TLPD), Guwahati by Dr Himanta Biswa Sarma, Hon'ble Chief Minister of Assam

A modern milk parlour - Purabi

Cooperative Societies (DCS) at village level. The administration and management of EAMUL was handed over to NDDB on 01 April 2023.

EAMUL has established bulk milk cooling capacity to the tune of 22,000 litre in seven districts of East Assam. Milk procurement activities were initiated and EAMUL procured an average of 3,134 litres of milk per day from 3,121 producer members of 543 villages. EAMUL has established a transparent milk procurement system which ensures that payment to the pourer member is done only to their bank accounts.

Under APART, EAMUL is conducting multiple productivity enhancement services such as Artificial Insemination (AI), Ration Balancing, animal health services through EVM, demonstration of urea treatment of straw and silage making etc. for dairy farmers.

Special emphasis was given to door-step AI delivery to improve genetic potential of dairy animals. During the year, a total of 29,470 AIs were done through a network of 116 mobile AI technicians across 1,055 villages.

To propagate green fodder cultivation and increase the impact area, 7.88 lakh slips of Hybrid Napier and 2.8 MT of maize seeds were distributed to the milk producers. During the year, 659 MT Compound Cattle Feed and 8.7 MT mineral mixture was also supplied to the dairy farmers at a reasonable rate. For capacity building of the stakeholders, various training and awareness programmes on BMC/DCS management, clean milk production, dairy animal management etc. are also being conducted regularly.

North East Dairy and Foods Limited (NEDFL)

The new company formed through a joint venture between the Government of Assam and NDDB began sales and distribution of milk and milk products under the brands 'Purabi' and 'Mother Dairy' totalling ₹ 110 lakh till March 2024.

Additionally, during the year, NEDFL ventured into silage making activities at Titapani in Barpeta district through an agreement with the local Bamuntary Anchalik DCS associated with WAMUL. The joint venture company has appointed the local DCS as its franchisee to operate

Shri Nitin Gadkari, Hon'ble Union Minister of Road Transport and Highways, Shri Radhakrishna Vikhe Patil, Hon'ble Minister of Revenue, Animal Husbandry & Dairy Development, Government of Maharashtra and Dr Meenesh Shah, Chairman, NDDB laid the foundation stone of Mother Dairy, Nagpur

the silage making unit installed at Titapani in Barpeta district by WAMUL under APART. NEDFL will source green fodder from the six DCS in the adjoining areas for continuous supply to the silage making unit. As on 31 March 2024, 58.26 tonnes silage worth ₹ 3.39 lakh was prepared from the green fodder supplied by the dairy farmers of Bamuntary Anchalik DUSS and Bankabhanga Anchalik DUSS.

The Vidarbha Marathwada Dairy Development Project

The Vidarbha Marathwada Dairy Development Project (VMDDP) continued to make progress in its objective of offering market access and fair price to the dairy farmers in the drought-prone Vidarbha and Marathwada regions of Maharashtra. This year, nearly 5,000 new dairy farmers were added to its procurement network, bringing the total count to 35,000 pourer members in about 3,300 villages. During the year, Mother Dairy achieved milk procurement of 4.60 lakh kg per day, with average daily procurement increasing to 3.30 lakh kg as compared to 2.40 lakh kg during the previous year.

In the coming years, milk procurement in the Vidarbha Marathwada project area is expected to increase significantly. Keeping this in view, Mother Dairy has planned to set-up a state-of-the-art mega-manufacturing plant for milk and milk products in Nagpur. Twenty-six acres land was acquired from the Maharashtra Industrial Development Corporation (MIDC) for this purpose.

The foundation stone of the state-of-the-art mega milk processing plant was laid by Shri Nitin Gadkari, Hon'ble Union Minister of Road Transport and Highways (MORTH) in the presence of Shri Radhakrishna Vikhe Patil, Hon'ble Minister for Revenue, Animal Husbandry & Dairy Development, Government of Maharashtra; Dr Meenesh Shah, Chairman, NDDB; Shri Manish Bandlish, MD, Mother Dairy and other dignitaries during the Agrovision 2023 held at Nagpur.

Once completed, this mega-manufacturing plant can process six lakh litres of milk every day with a provision for expansion to 10 LLPD. Value Added Dairy Products (VADP) such as lassi, mishti doi, flavoured milk, sweets

and ghee can also be manufactured in this facility, facilitating market expansion in western and southern India in addition to providing better service to the current customers.

The doorstep Artificial Insemination (AI) service being implemented in the project area by NDDB Dairy Services (NDS) under the Rashtriya Gokul Mission (RGM) continued to progress well. Currently more than 450 AI centres are functional in ten districts of the project area and nearly 1.75 lakh AIs completed. Additionally, 6,000 inseminations have been conducted using sex-sorted semen to exponentially increase the probability of the female calf births and benefiting dairy farmers.

As part of the 100 Fodder Farmer Producer Organisations (FPO) scheme of the Government of India, the 'Suchara Fodder FPO' was established in Wardha district of the project area, in partnership with the Kamalnayan Jamnalal Bajaj Foundation as the Cluster Based Business Organisation (CBBO). In a short span of ten months, the Suchara Fodder FPO has expanded its member base to more than 750 equity shareholders. Under the aegis of this FPO, green fodder is being cultivated as the sole crop on more than 50 acres of land. Nearly 175 Metric Tonnes (MT) of silage was produced during the year using a high-performance chopper-baler machine procured by the FPO.

Efforts are underway to expand the milk procurement footprint of the Vidarbha Marathwada Dairy Development Project to cover more villages. This will boost dairying in these regions, augment dairy farmers' incomes and improve the sustainability of dairying.

Ladakh UT Dairy Cooperative Federation Ltd

NDDB commenced operations and management of Ladakh Milk Federation (LMF) on 04 October 2023. Brig (Retd) Dr B D Mishra, Hon'ble Lieutenant Governor, Union Territory of Ladakh inaugurated the newly refurbished dairy plant of Ladakh Dairy Cooperative Federation in the presence of Dr Meenesh Shah, Chairman, NDDB, Dr Pawan Kotwal, Advisor to Hon'ble Lt Governor and other dignitaries.

To develop the dairy value chain in the UT and enhance animal productivity through appropriate nutrition and breeding intervention, a detailed Dairy Development Plan was prepared for a five-year period with a total outlay of ₹ 95.80 crore.

Brig (Retd) Dr B D Mishra, Hon'ble Lieutenant Governor, Union Territory of Ladakh with Dr Meenesh Shah, Chairman, NDDB inaugurating the newly refurbished dairy plant of Ladakh Dairy Cooperative Federation

Automation in dairy processing plant at Hyderabad, Telangana

DIGITALISATION OF INDIAN DAIRY SECTOR

Digital innovation is necessary to strengthen the dairy cooperative business and equip farmers/stakeholders with real-time information.

Digital Architecture for National Digital Livestock Mission (NDLM)

NDDB had established Information Network for Animal Productivity & Health (INAPH) as a digital platform for assisting in implementation of nationwide animal productivity enhancement and health management programmes by uniquely recording details of animals. To take it forward, NDDB collaborated with DAHD to put up an end-to-end digital ecosystem "Bharat Pashudhan" under NDLM for further enhancing the services for dairy farmers in the field of animal breeding, nutrition and health segments. NDDB has been providing technical as well as financial support to this endeavour.

NDDB Dairy ERP

NDDB Dairy ERP (NDERP) has been developed by customising an open source ERP based on the requirements of the dairy industry. It is integrated with Automatic Milk Collection Software (AMCS) and has all standard modules like Accounts, Purchase, Inventory, Sales, Production & Quality and HR & Payroll. It is available on both Android and iOS app for sales activities by the distributors. This is an integrated solution for organisations without proprietary cost and recurring licensing fees. Managing losses in dairy plant is a major challenge in dairy sector, which has been addressed by developing Mass balancing technique in production module as per the requirement of the dairy sector and integrated with NDERP. NDERP has been implemented in North East Dairy Foods Ltd, Jharkhand Milk Federation, West Assam Milk Union Ltd, Varanasi Milk Union, Karnataka Oil Federation, NDDB Mrida Ltd and NDDB CALF Ltd.

Automatic Milk Collection System

NDDB has developed a robust, integrated, multiplatform, multi-lingual software solution - AMCS for operations at the Dairy Cooperative Society level. The solution is based on Open Source technology stack and is integrated at Union/ Federation/National level to enable transparency and key informatics. The automation avoids manual intervention and integrates with milk testing equipment. Farmers get instant SMSs for every transaction, ensuring complete transparency and have access to all past transactions. AMCS is currently used in 12 states, covering more than 23,760 DCSs/MPPs and more than 11,01,200 milk pourers in more than 45 Milk Unions/Federations.

Semen Station Management System (SSMS)

SSMS is an integrated software covering the core activities of production of FSD to support process standardisation and enforcing Minimum Standard Protocols (MSP) defined by the Government of India. The system includes various activities of semen stations like Bull Lifecycle Management, Semen Production Management, Quality Control, Sales & CRM, Bio-Security and Environment Safety, Farm and Fodder Management. It can integrate with all required lab equipment as well as RFID Bull tags to ensure efficient, effective and error free process. The system provides fine grained traceability of semen doses and intelligent configurable movement at every level apart from barcode integration at every transaction level. 38 graded semen stations across the country are using this application.

Dairy Information System

Effective data management is crucial for evidence-based planning and implementation of projects in the dairy sector. NDDB's upgraded Internet-based Dairy Information System (i-DIS) provides a unified platform for dairy cooperatives to organise and analyse data systematically. Today, over 250 milk unions, marketing dairies, cattle-feed plants and milk federations nationwide utilise i-DIS, contributing to informed decision-making and policy formulation in the dairy sector. NDDB continues to focus on expanding the user base and providing technical support to ensure optimal utilisation of the system. NDDB has been conducting refresher workshops for Management Information System (MIS) officials from various milk unions regularly to update their skills and enhance proficiency in utilising i-DIS for strategic dairy management.

Milk Route Optimisation

Geospatial technology has been effectively used in route planning for businesses. Using GIS technology, it is possible to depict milk procurement routes on digitised maps, making the process of visualising alternative routes easier compared to current manual processes. In the dairy business, efficient route planning for milk transportation is essential for the dairy supply chain, both for procuring milk from villages and distributing milk & milk products to consumers. It is crucial to reduce costs per litre of procurement, processing and distribution to enhance the efficiency of supply chains.

NDDB initiated a milk route optimisation exercise in August 2022 for milk procurement in the Vidarbha Marathwada Dairy Development Project. Under this exercise, milk collection routes for four milk chilling centres were optimised, resulting in substantial savings in transportation costs. Similar exercises have also been initiated in Varanasi Milk Union, West Assam Milk Union, Jharkhand Milk Federation and Indore Milk Union. The results of the milk route optimisation exercise have been promising and reveal significant potential for saving transportation cost in dairy operations. NDDB has also developed a web-based dynamic route planning system to assist more cooperatives in systematically optimising routes. This will aid proper planning of milk procurement routes and lead to substantial savings in operational costs.

State-of-the-art Mega Dairy Plant, Hyderabad, Telangana

Milk processing plant, Ranchi, Jharkhand

EXPANDING COUNTRY'S DAIRY PROCESSING INFRASTRUCTURE

NDDB continues to provide engineering consultancy services nationwide, overseeing the implementation of infrastructure projects in the dairy sector. The key activities include conceptualisation, design, planning, execution and commissioning of new processing facilities, as well as the expansion and modernisation of existing dairy and cattle feed plants. Services are being extended for planning, execution and validation of Bio-Safety Labs (BSL), Animal Vaccine Production and Testing Facilities and Frozen Semen Stations. Projects promoting green initiatives such as solar energy and biogas are actively pursued. NDDB conducts studies to refurbish and modernise existing plants, aiming to enhance efficiency, ensure food safety and to reduce product losses.

Key Projects Commissioned

During the year, NDDB successfully commissioned seven engineering projects across India:

1. Cheese & Whey Drying Plant at Himmatnagar, Gujarat

- A state-of-the-art project having fully automated 30 MTPD Cheddar, 20 MTPD Mozzarella, 24 MTPD Processed cheese & 45 MTPD whey drying plant including 10 LLPD pre-processing plant equipped with bactofugation facilities is being executed
- A novel approach to reduce the civil foot print has been implemented using automated storage and retrieval system (ASRS)

2. Mega Dairy Plant, Hyderabad, Telangana

- Features a fully automated dairy with capacities including a five LLPD expandable to eight LLPD Liquid Milk Processing Plant, a one LLPD UHT (Ultra High Temperature) processing plant and facilities for curd, lassi, butter milk, butter, ghee and ice cream
- Equipped with SCADA based automation, regenerative & recovery systems, automated refrigeration and water treatment plants and steam generation facilities
- Inaugurated in October 2023, enhancing dairy product quality and sales in Telangana

3. Milk Product Plant, Guwahati, Assam

- Expanded from 60 TLPD to 150 TLPD, producing curd, sweet curd, lassi, paneer, ice cream and flavoured milk in bottles
- Designed for high-quality production, hygiene and operational flexibility
- Inaugurated in March 2024 by the Hon'ble Chief Minister of Assam

4. Dairy Waste Management Project - Effluent Treatment Plant, Haryana

- A 20 LLPD Effluent Treatment Plant using state-of-the-art anaerobic treatment with Continuous Stirred Tank Reactor (CSTR) and aerobic treatment with multi-path ejector based advanced aeration system has been established
- Commissioned on June 2023 at Rohtak Dairy Plant, Haryana, for Sabar Milk Union, setting a new standard in cooperative dairy industry waste management

5. Artificial Insemination Training Institute, Guwahati, Assam

- Includes classrooms for 60 trainees, hostel buildings, admin block and cow shed equipped with modern artificial insemination training equipment and ICT infrastructure
- A leading institution in Assam for training in AI technologies
- Inaugurated in June 2023 by the Hon'ble Chief Minister of Assam

6. Good Manufacturing Practice (GMP) Standard, Central Warehouse at IVPM, Ranipet

- Established as part of the Anthrax Spore Vaccine Production Facility and QA/QC Lab at the Institute of Veterinary Preventive Medicine (IVPM), Ranipet, Tamil Nadu
- Completed in April 2023, the GMP Warehouse supports storage of raw materials and finished products for vaccine production

Inauguration of Cheese Plant of Sabarkantha

Shri Narendra Modi ji, Hon'ble Prime Minister laid the foundation stone for a 30 metric tonnes Cheese Plant of Sabarkantha Milk Union, which will also produce 45 metric tonnes of whey powder and other value-added products. This plant has been set up under the DIDF Scheme of the Government of India at a total cost of ₹ 600 crore. NDDB built this plant and provided a loan of ₹ 480 crore with interest subvention from the Government of India. The Hon'ble Prime Minister inaugurated the Dairy Plant during the Golden Jubilee Celebrations of GCMMF to advance the dairy cooperative sector in the region, in the gracious presence of Shri Bhupendra Patel, Hon'ble Chief Minister of Gujarat among others.

Cheese Plant of Sabar Dairy, Himmatnagar, Gujarat

Major ongoing projects

The dairy sector, traditionally reliant on conventional farming practices, is undergoing a significant transformation driven by technological advancements, sustainability imperatives, and shifts in consumer preferences. Major engineering projects currently in progress aim to enhance efficiency, reduce environmental impact, and meet the growing demand for dairy products in a more sustainable and ethical manner.

AMULFED II Dairy at Rajkot for GCMMF

A fully automated 20 LLPD dairy plant along with a 150 MTPD powder plant for GCMMF at Rajkot, Gujarat has been conceived, with a project outlay of ₹ 990 crores. Additionally, the project will also include a UHT Processing-Aseptic Packaging plant with a capacity of about 4 LLPD, Butter plant of 100 MTPD and a Ghee Manufacturing plant of 40 MTPD. The plant will be equipped with advanced technologies resulting in improved energy efficiency and reduced product losses. Design of the plant imbibes the concepts of food safety and hygiene standards.

Establishment of Dairy plant with Value Added Products and Powder Plant at Mother Dairy, Nagpur, Maharashtra

A state-of-the-art, green field project having fully automated six LLPD (Expandable to 10 LLPD) Liquid Milk Processing Plant with diverse portfolio of value added products viz. 150 MTPD Fermented Products plant, 40 TLPD Shelf Life (ESL) Milk plant, 30 MTPD Powder Plant and 25 TLPD Ice-cream Plant etc. has been initiated for Mother Dairy at Nagpur, Maharashtra. The project is being executed with an outlay of ₹ 545 crores.

Cattle Feed Plant at Himmatnagar, Gujarat

A modern 800 MTPD expandable to 1600 MTPD cattle feed plant having fully automated operations is being executed at Himmatnagar, Gujarat. The plant is also equipped with flat storage facility to systematically handle raw material required for the production. The total outlay of the project is ₹ 255 crores.

New Animal Vaccine Manufacturing Plant for FMD vaccine & a combined vaccine (FMD & HS) at IIL, Hyderabad, Telangana

As a part of animal health interventions, a latest vaccine manufacturing facility to produce 150 million doses per annum, complying with the Central Drugs Standard Control Organisation (CDSCO) standards is being set-up with an initial outlay of ₹ 500 crores.

In-vitro Diagnostic Reagents Facility for Brucella and production of Ointment & Liniment facility at IVPM, Ranipet

This plant is equipped to manufacture diagnostic kits for brucella and GMP grade Pharmaceutical facility for production of Ointment and Liniment at Ranipet, Tamil Nadu with a project outlay of ₹ 17.69 crores.

Milk Processing Plant, Ladakh

EXPANDING COUNTRY'S DAIRY PROCESSING INFRASTRUCTURE

New dairy plant at Palamu, Jharkhand

Ongoing Projects

Project	Capacity	Location
Northern Region		
Establishment of Automated Dairy and ETP	5 LLPD LMP and 15 LLPD ETP	Mohali, Punjab
Establishment of Dairy Plant	50 TLPD (expandable to 100 TLPD)	Rajsamand, Rajasthan
Establishment of Tertiary Treatment Plant	800 KLD	Jaipur, Rajasthan
Upgradation and Strengthening of Dairy Plant	50 TLPD	Banswara, Rajasthan
Cattle Feed Plant	150 MTPD	Bhilwara, Rajasthan
UHT Plant	25 TLPD	Bhilwara, Rajasthan
Automated Dairy with Value Added Milk Products	1.5 LLPD (expandable to 3 LLPD)	Kangra, Himachal Pradesh
Strengthening of Frozen Semen Station	--	Khanna, Punjab
Fermented Product Plant and Expansion of Sweetened Flavoured Milk Plant	2.35 LLPD	Amritsar, Punjab
Western Region		
AMULFED II Dairy	LMP - 20 LLPD, Powder plant - 150 MTPD, Butter plant - 100 MTPD, Ghee Manufacturing plant - 40 MTPD and UHT Processing-Aseptic Packaging plant - 4 LLPD	Rajkot, Gujarat
Infrastructure project of Multi-storey Hostel at Institute of Rural Management Anand (IRMA)	126 Single Occupancy Rooms	Anand, Gujarat
Cattle Feed Plant (Civil works)	800 MTPD Exp. 1600 MTPD	Himmatnagar, Gujarat
Banas Suzuki – Dung Based CBG Plant	DUNG - 100 MTPD (1.5 MTPD CBG)	Bhukhala – Vadgam, Gujarat
Banas Suzuki – Dung Based CBG Plant	DUNG - 100 MTPD (1.5 MTPD CBG)	Agthala - Lakhani, Gujarat

Project	Capacity	Location
Establishment of Bull Rearing Centre	180 Animals	Malarpura, Kheda, Gujarat
Infrastructure Project at Sabarmati Ashram Gaushala	--	Bidaj, Gujarat
Infrastructure Project for NCDFI	--	Anand, Gujarat
Effluent Treatment Plant (PH II)	20 LLPD	Himmatnagar, Gujarat
Strengthening of Semen Station	--	SAG, Bidaj
Establishment of Dairy plant with Valued Added Products and Powder Plant at Mother Dairy	LMP – 6 LLPD (Expandable to 10 LLPD), Powder Plant – 30 MTPD, Fermented Products plant – 150 MTPD, Paneer plant – 3 MTPD, Flavoured Milk – 5 TLPD, Ice Cream Plant – 25 TLPD, ESL Milk – 40 TLPD	Nagpur, Maharashtra
Southern Region		
Strengthening of Semen Station & Allied works	--	Hessarghatta, Karnataka
New Animal Vaccine Manufacturing plant for FMD at IIL		Hyderabad, Telangana
Automated Dairy Plant	2 LLPD	Namakkal, Tamil Nadu
Establishment of (i) *In-vitro* Diagnostic Reagents facility (Brucella and Diagnostics) – GMP grade at IVPM, Ranipet, (ii) Pharmaceutical Division (GMP grade, Ointment and Liniment facility)	--	IVPM, Ranipet
Eastern Region		
Fermented Milk Products & Indigenous Sweet Plant	207 TLPD	Barauni, Bihar
Strengthening of Plant Utility Services	--	Barauni, Bihar
Additional work at 5 LLPD Automated Dairy plant	--	Arilo-Govindpur, Odisha
Establishment of Vaccine Production Facility	Anthrax - 5 million Doses/Annum Enteropaxeamia – 20 million Doses/ Annum	Berhampur, Odisha
Technical Consultancy Services		
Cattle Feed Plant (Mechanical)	800 MTPD Exp.1600 MTPD	Himmatnagar, Gujarat
Milk Powder Plant	120 MTPD	Mahesana, Gujarat
BSL4 Laboratory at GBRC	--	Gandhinagar, Gujarat
Fermented Product Plant	100 Exp. 150 MTPD Curd, 5 Exp. 10 MTPD Yoghurt	Rohtak, Haryana
Cow Sanctuary	--	Muzaffarnagar, Uttar Pradesh
Centre of Excellence of Genetic Improvement of Indigenous Cattle	--	SV Gosamrakshana Shala, Tirupati, AP

TLPD-Thousand Litres Per Day; MTPD-Metric Tonnes Per Day; LLPD-Lakh Litres per Day; Exp.-Expandable to

NDDB, Banas Dairy and Suzuki R&D Center India Pvt Ltd (SRDI), an Indian subsidiary of Suzuki Motor Corporation (SMC) entered into a tripartite agreement to set up four dung-based biogas plants for generating Compressed Biogas (CBG)

Delegates of the session on 'Partnerships to Strengthen National Veterinary Services' at 33rd Conference WOAH Regional Commission for Asia & Pacific

FOSTERING DEVELOPMENT THROUGH STRATEGIC COLLABORATIONS

NDDB collaborated with reputable national and international institutions to mobilise knowledge, promote innovations, strengthen capacities and provide evidence-based solutions for promoting sustainable dairying and improving the livelihood of dairy farmers.

NDDB, Suzuki & Banas Dairy to Set up First four Dung Based CBG Plants

Suzuki R&D Center India Pvt Ltd (SRDI), an Indian subsidiary of Suzuki Motor Corporation (SMC), Banas Dairy and NDDB entered into a tripartite agreement to set up four dung-based biogas plants for generating Compressed Biogas (CBG) in Banaskantha district of Gujarat. The agreement is a culmination of the MoU inked earlier undertaking biogas projects by leveraging the strength of dairy cooperative network.

This unique initiative is the first of its kind wherein automobile and dairy sector are collaborating to achieve multiple benefits such as enhance farmers' income through dung sale, use of dung-based biogas to power vehicles, production of organic fertilisers and in the process reducing carbon footprint of dairy and automobile sector.

WOAH Laboratory Twinning Programme and Establishing Research and Diagnostic Capabilities in IBR

IBR is an economically significant sexually transmitted bovine disease that can also impact reproductive health, leading to abortions. Minimum standards also recommend Bovine Herpesvirus (BoHV-1) free semen, highlighting the need to strengthen research and laboratory diagnosis of IBR. The NDDB R&D laboratory has therefore initiated a two-year World Organisation for Animal Health (WOAH) laboratory twinning programme with the Animal & Plant Health Agency (APHA), United Kingdom, which is a WOAH reference laboratory for IBR (WRL-IBR). This collaborative project began in January 2023 with the objective of enhancing and aligning the NDDB R&D laboratory's diagnostic and research capabilities on IBR to WOAH standards. The periodic progress reports submitted have received positive endorsement from WOAH. The technical exchange with WRL-IBR has enabled the development and establishment of a panel of reference materials for use in IBR research and diagnosis.

Monthly sessions with WRL-IBR over the past year have facilitated personnel training and fine-tuning of laboratory diagnostic aspects such as quality assurance, bio-risk management, test methods, documentation and method validation protocols to WOAH standards. Periodic progress reports submitted to WOAH have received positive endorsement from the organisation. A panel of 64 sera of known IBR status and six virus isolates were sent to WRL-IBR for serological and molecular analyses, respectively and results were compared between the laboratories. This technical exchange has enabled the development and establishment of a panel of reference materials for use in IBR research and diagnosis, as well as refinement of analytical techniques.

Dairy Sustainability Framework

The Dairy Sustainability Framework (DSF) is a global dairy sector initiative for monitoring and reporting the sustainable progress of the sector in a collaborative and pre-competitive manner. To encourage the participation of emerging dairy economies into the sustainability framework, DSF updated its sustainability reporting methodology at 'Stage 1 membership level'. The updated DSF methodology was developed through a multi-stakeholder consultation process, including inputs from NDDB.

Accordingly, in coordination with NDDB, the Stage 1 pilot will be implemented in Jharkhand State Cooperative Milk Producers' Federation Ltd, Jharkhand and Shreeja Mahila Milk Producer Company Ltd, Andhra Pradesh to monitor progress on selected sustainability criteria. Involving in the DSF Stage 1 pilot will help NDDB and these Milk Producer Organisations (MPOs) showcase the sector's sustainability progress.

Signing of MoU between NDDB and NCDC

Collaboration with the National Cooperative Dairy Corporation (NCDC)

A Memorandum of Understanding (MoU) was signed between the NCDC and the NDDB to take forward their shared objectives for the betterment of cooperatives across India.

This MoU will enable the organisations to combine their individual strengths and competencies, mainly in the sectors of livestock, dairy, edible oil and other agriculture-based and allied industries and biologicals and generate better outcomes.

Collaboration with MILKFED, Punjab and GADVASU, Ludhiana for Conservation of Green Paddy Stubbles into Silage

Despite shortage of dry fodder in many parts of the country, a huge quantity of crop residue is burnt every year, with Punjab alone contributing 25 million tonnes.

Crop residue burning not only affects the properties of agricultural soil but also results in significant nutrient loss, in addition to emitting greenhouse gases in the environment. The Biomass's negative effects on the environment, soil and human health can be avoided if it is efficiently secured immediately after harvesting and conserved in the form of green paddy stubble silage. To develop silage-making technology for green paddy crop residue, NDDB conducted a series of experimental trials in the lab and under field conditions. The trial results indicate that good-quality silage from green paddy stubbles can be produced using enzymes and silage culture.

Encouraged by the results, NDDB has embarked on a large-scale pilot project in collaboration with MILKFED, Punjab and GADVASU, Ludhiana for the production of green paddy stubble silage and conducting a study on feeding it to dairy animals. About 286 MT silage was produced by securing green paddy stubbles in three districts - Mohali, Ludhiana and Sangrur in Punjab.

Additionally, a feeding trial is underway in collaboration with GADVASU to evaluate the effects of feeding paddy stubble silage on the nutrient utilisation and productive performance of lactating buffaloes. The innovative project is expected to not only address the environmental concerns related to stubble burning but also offer potential benefits to thousands of dairy farmers through augmentation of feed resources in the country.

NDDB Reference Laboratory and Centre of Excellence

Shri Shankar Chaudhary, Speaker, Gujarat Vidhan Sabha & Chairman, Banas Dairy, Dr Meenesh Shah, Chairman, NDDB and Shri Jayen Mehta, MD, GCMMF discussed the establishment of National Reference Laboratory of NDDB and Centre of Excellence (CoE) for bovine breeding of Banas Dairy in Banaskantha. The NDDB-managed reference laboratory will have state-of-the-art disease diagnostic, disease surveillance, monitoring and R&D facilities. The CoE will house the superior elite donors of major breeds of Indigenous cattle and buffalo for accelerated multiplication using advanced reproductive technologies. The centre will act as a source of superior heifers of indigenous breeds for dairy farmers across the country.

Aflatoxin B1 Rapid Test Kit

NDDB in collaboration with International Crop Research Institute for Semi-Arid Tropics (ICRISAT) with funding support from Biotechnology Industry Research Assistance Council (BIRAC - a Government of India enterprise) developed a rapid test kit for qualitative/ semi-quantitative detection of aflatoxin B1 in feed raw materials and finished products with sensitivity of 5 to 20 ppb for aflatoxin B1.

Scientific Collaboration for Improving Animal Productivity

NDDB continued its research collaborations with various institutions like the National Institute of Animal Biotechnology (NIAB, Hyderabad), Gujarat Biotechnology Research Centre (GBRC, Gandhinagar), BAIF Development Research Foundation (BAIF, UruliKanchan, Pune), Anand Agricultural University (AAU, Anand), Kamdhenu University, Gandhinagar and IIL, Hyderabad.

GBRC and NDDB jointly organised an 11-day Genome-Wide Association Studies (GWAS) training. NDDB's officers also continue to serve on various working committees, such as the International Committee of Animal Recording (ICAR) and the Central Monitoring Unit of semen stations.

Shri Shankar Chaudhary, Speaker, Gujarat Vidhan Sabha & Chairman, Banas Dairy, Dr Meenesh Shah, Chairman, NDDB and Shri Jayen Mehta, MD, GCMMF discussing establishment of National Reference Laboratory of NDDB and Centre of Excellence

Inauguration of NDDB organised HRD Conclave at NDDB, Anand

OPU-IVEP-ET Training session at NDDB, Anand

TRAINING AND CAPACITY BUILDING OF HUMAN RESOURCES

NDDB remains committed to enhancing the capabilities of dairy industry stakeholders through comprehensive training programmes, fostering knowledge exchange and promoting best practices. Throughout the year, NDDB organised diverse training programmes covering various areas such as advancements in dairying, scientific animal management, milk processing, feed and fodder management, cost-effective breed upgrades, preventive health management in bovines, quality control, cooperative management and marketing strategies.

Focus on Hilly Belts and North Eastern States: NDDB prioritised capacity development in challenging terrains like the UT of Jammu & Kashmir and Northeastern states, training approximately 500 producers on modern animal husbandry and dairying practices.

Bharat Pashudhan Application Rollout: As part of the nationwide rollout of the Bharat Pashudhan application, NDDB conducted training programmes for about 3,000 personnel on implementation aspects, ensuring effective adoption and utilisation.

Dairying Through Cooperatives - JICA Capacity Development: Under the Dairying Through Cooperatives (DTC) - JICA collaboration, NDDB initiated specialised training programmes for executives, officers and Board of Directors (BODs) from various organisations. Approximately, 180 officers were trained in Animal Nutrition & Business Appreciation, while 70 BODs/ senior officials attended sessions on BOD orientation, Business/Marketing Management and Strategic Planning.

A-HELP Programme Expansion: Building on the success of the A-HELP (Accredited Agent for Health and Extension of Livestock Production) pilot programme, NDDB scaled up the initiative to train over 4,000 Pashusakhis as A-HELP in 11 states, empowering village-level women SHG members to serve as extension service agents.

Other Significant Trainings

Dairy Entrepreneurship Programme: More than 200 rural youth were trained under this programme to encourage dairying as a viable income source.

Quality Assurance and Dairy Plant Technical Programmes: Over 1,000 executives and technicians benefited from technical programmes focussing on quality assurance and dairy plant operations at MIT, Mehsana.

Artificial Insemination (AI) Training: Around 1,000 youth received basic and refresher training in AI, augmenting the AI workforce at the village level.

DCS Secretaries Training: Approximately, 560 Dairy Cooperative Society (DCS) secretaries attended training sessions to enhance their administrative skills.

ICT-Based Applications: Training sessions on NDDB ERP, AMCS and SSMS were conducted for 350 participants from various EIAs, ensuring proficiency in digital tools crucial for dairy management.

Sales and Distribution Strategies: Over 200 beneficiaries from different milk unions participated in specialised

MoU with the Agriculture Skill Council of India

NDDB entered into an MoU with the Agriculture Skill Council of India for a strategic partnership for skill development in the dairy sector. The MoU was signed by Shri Satyendra Arya, CEO, ASCI and Shri Lalit Prasad Karan, Senior General Manager, NDDB in the presence of Dr Meenesh Shah, Chairman, NDDB. The MoU aims at enhancing knowledge base, mapping skill gaps, developing capacity building programmes and providing extensive training for development of stakeholders in the Indian dairy sector.

training programmes focussing on sales and distribution strategies for milk and milk products.

Allied Sector Training: NDDB organised training for 300 farmers on Scientific Beekeeping under the National Beekeeping & Honey Mission (NBHM), further diversifying income sources for farmers.

Fostering Accurate & Quality-oriented Laboratory Testing: Laboratory personnel at NDDB CALF Ltd received training for conducting screening tests for diseases listed in the Minimum Standards Protocol (MSP). They are provided with validated methods, workflows, reference samples, testing and quality control systems and procedures.

A novel digital-PCR (dPCR) assay was optimised to verify percentage X chromosome bearing spermatozoa in sexed semen under ABIP-SS project of RGM. NDDB CALF Ltd personnel were trained in semen processing and dPCR assays for sexed/sex-sorted semen, with standard operating procedures transferred to NDDB CALF Ltd.

NDDB Samvad Digital Initiatives

Digital sessions under NDDB Samvad covered a wide range of topics, benefiting more than 18,000 participants with insights into livelihood enhancement through dairying innovations and NDDB applications. Interactive sessions on dairy farm management, advancements in animal breeding through ET technology, NDDB ERP, Bharat Pashudhan application, SSMS and AMCS were attended by over 5,000 participants. Sessions were recorded and made available on the NDDB YouTube channel, ensuring accessibility and flexibility for participants to view and benefit from content at their convenience.

Programmes conducted on digital platform/NDDB Samvad

Sr No	Subject area	No. of programmes	No. of participants
1	INAPH ToT	4	93
2	Bharat Pashudhan App Training	14	1,297
3	Training on NDDB ERP	16	109
4	Training on SSMS/AMCS RMRD	3	15
5	Route optimisation, data collection/Dairy surveyor	4	60
6	Heat Stress Management of Dairy Animals	1	707
7	Dairy Animal Management during Rainy Season	1	849
8	Scope of Farm Mechanisation	1	1,200
9	Clean Milk Production	1	1,023
10	7S: Tool to improve workplace efficiency and productivity	1	744
11	Breed Multiplication Farm Scheme	1	340
12	Roles and Responsibilities of Field Supervisor	1	988
13	Roles and Responsibilities of Management Committee member and Milk Producers	1	549
14	Roles and Responsibilities of Chairmen and DCS secretary	1	842
15	Bye-Laws of Dairy Cooperative Society	1	576
16	Fundamentals of Dairy Farm Management	1	3,170
17	New Generation dairy plants & operation efficiency	1	626
18	Advancement in Animal Breeding Embryo Transfer Technology	1	2,100
19	Basics of Genetic improvement through Genomic Selection	1	1,180
20	8 Wastes: Technique to improve workplace productivity	1	30
21	Women Leadership in Dairy Development	1	20
22	Digital Revolution in Dairying	1	782
23	दुग्ध व्यवसाय: नई पीढ़ी द्वारा किए गए कुछ नवीन प्रयोग	2	881
24	Environmental aspects in Dairy Business	1	243
	Grand Total	**61**	**18,424**

Conventional/in situ training programmes

Sr No	Subject area	No. of programmes	No. of participants
A	**Cooperative Services**		
	Farmers Induction/Orientation Programme	141	5,405
	Training/Refresher for Dairy Cooperative Society Secretary	20	555
	Dairy Cooperative Management for new recruits/senior officials	18	299
	Management Committee Members' Orientation Programme	3	198
	Board Orientation Programme	10	140
	Business Management/Strategic Planning/Marketing	3	27
B	**Dairy Entrepreneurship Programme on Animal Rearing**	**10**	**201**
C	**Milk Marketing**	**10**	**185**
D	**National Digital Livestock Mission**	**32**	**1,672**
E	**Productivity Enhancement**		
	Artificial Insemination-Basic/Refresher	34	982
	Dairy Animal Management	129	4,034
	Ovum pick-up and *In-vitro* embryo production and embryo transfer technology	3	12
	Training for Cattle Feed Plant Officers	2	41
	Productivity Enhancement through Nutrition	10	207
	Training for Resource persons	10	209
F	**Quality Assurance & Dairy Plant Management**		
	Quality Assurance & Management Systems in Dairy Plants	30	617
	Training on AMCU/BMCU	9	225
G	**Training on NDDB ERP/AMCS/SSMS/Dairy Surveyor/iDIS**	**29**	**416**
H	**Other Training Programmes for Milk Union Personnel**		
	Soft skills/Succession & Organisational effectiveness	7	100
	Orientation and training on Scientific Bee Keeping	12	300
	Refresher Training on Business Appreciation Programme	8	113
	Digital extension in dairying	1	11
	Training of Trainers - AHELP & Others	20	456
	Training for CBBO - Fodder plus FPO	7	159
	Training on accounting/GeM	5	83
	Route optimisation data collection	3	24
	Dung Assessment and Market Survey data entry	1	20
	Training on Hoof Management	1	30
	Training on milk recording	1	11
	International Programme on Dairy Development through Coop. Business Model	1	39
	International Workshop on Diagnosis of IBR	1	12
	Orientation on DTC-JICA project implementation	1	32
	Interaction with BBSSL	1	52
	Grand Total	**573**	**16,867**

Developing Human Resources

The success of an organisation depends immensely on its culture and on the quality of its human resources, as on other resources. Effective human resources consistently ensure implementation of the plans and programmes of the organisation within timelines and as per the established quality standards. NDDB has curated an ethical work culture and put-in place institutionalized systems and processes for development of its human resources. Employee-oriented policies, focus on continuous learning and development through training, exposures and employee engagement activities are playing catalysing role in expanding the capacity and capability of human resources in the organisation to deliver consistent performance.

NDDB prioritised specialised training to meet organisational needs and enhance employee capabilities. Programmes included:

- Dairy Training for Non-Dairy Personnel - Offering insights into dairy operations for non-specialists.
- Training of Trainers - Equipping employees to impart knowledge effectively.
- Women Leadership Development - Empowering women leaders for enhanced effectiveness and empowerment.
- Outbound Training - Focussed on passion at work, creativity and innovation.
- Creativity & Innovation Workshops - Fostering innovative thinking among staff.
- Holistic Stress Management & Self-Development - Promoting well-being and personal growth.
- Ethno-Veterinary Practices - Training on traditional veterinary methods.

Employee Engagement and Development

LEAD Initiative: Launched exclusively for women employees, providing learning opportunities and featuring sessions like the well-received talk by Padmashree Phoolbasan Bai Yadav.

Techtonics: A programme aimed at keeping employees updated of technological advancements.

HRD Week Celebrations: A week-long initiative focussing on 'Learn, Unlearn and Re-learn', featuring sessions by industry experts, institutional visits, experience sharing, gratitude activities and cultural performances.

Internship Facilitation: NDDB facilitated internships for thirty students from various institutions to enhance their employability.

Training of Officers from PSUs and PSBs

The Central Vigilance Commission (CVC) had identified NDDB as an “Institution of Excellence” for facilitating training on “attitudinal change” for induction stage and mid-career officers in Public Sector Undertakings and Public Sector Banks. As a part of the above initiative of the CVC, NDDB has been conducting five days training programme on “Developing Future Managers and Leaders” for induction stage officers and “Leading Organisational Change” for mid-career officers from PSUs and PSBs. These training programmes involve, both class room sessions and visit to village level institutions to showcase the role of transparency, ethicality and good governance for organisational effectiveness.

NDDB conducted nine training programmes for officers from PSUs and PSBs, covering topics such as leadership, ethics, organisational culture and interactive field visits, benefiting a total of 203 officers.

Subject area	No. of programmes	No. of participants
Training for NDDB employees	51	474
Training of officers from PSUs/PSBs/DAHD	12	231
Total	**63**	**705**

HRD Conclave on building great institutions at NDDB, Anand

HRD Conclave

NDDB organised a HRD Conclave themed "Building Great Institutions – Purpose, Governance & Imagination" in December 2023. The event drew about 550 participants, including Chief Executives and HR Officers from Milk Unions, Federations, Producer Companies and NDDB's Sister Institutions. The conclave featured distinguishing speakers like Dr Anil Khandelwal, former Chairman, Bank of Baroda, Dr TV Rao, Chairman, TV Rao Learning Systems Private Limited, Prof. Anup Singh, Director General, Nirma University, Dr Sunil Shukla, Director General, Entrepreneurship Development Institute amongst others. The two-day conclave was filled with enriching sessions and deliberations, attracting enthusiastic participation.

Sponsorship of Officers

NDDB sponsored 30 officers, from designated organisations, for the Executive Post Graduate Diploma in Rural Management at IRMA, Anand, enhancing their professional development and leadership capabilities.

Orientation of Officers from NDDB's Subsidiaries

To orient the new recruits in NDDB's subsidiaries to the activities, values and culture of NDDB, a five days orientation programme i.e. NDDB Connect Programme has been initiated. In total, seven batches of NDDB Connect Programme were organised covering 184 officers from the six subsidiary companies of NDDB.

Welfare Initiatives for SC/ST Employees

NDDB continued its commitment towards welfare measures for SC/ST employees, including recognition for academic achievements of their children, reimbursement of educational expenses and specialised training opportunities. These initiatives underscore NDDB's dedication to fostering a skilled, engaged and inclusive workforce, driving organisational excellence.

Empowering communities through dairy farming

STORIES OF INSPIRATION

Spreading Wings of Sweet Revolution in Valsad

Valsad District in Gujarat is one of the 26 districts allocated to NDDB for formation and promotion of beekeeper's FPO/honey cluster development under the 10,000 FPO scheme. NDDB has designated Valsad Milk Union as the Cluster Based Business Organisation (CBBO) for formation and promotion of beekeeper's FPO/honey cluster in Valsad District.

A beekeeper's FPO named Valsad Vibhag Madhmakhi Utpadak/Vechan Karnari Sahakari Mandali Ltd has been formed by organising milk producers/farmers of the area. These farmer members of the FPO were imparted Scientific Beekeeping Training with the support of NBB and NDDB under the National Beekeeping and Honey Mission (NBHM) Scheme. Continuous mobilisation and extension support have now resulted into FPO reaching a membership size of 316 members, with 265 being women and 304 belonging to Scheduled Tribe. Currently, the FPO manages 2,370 bee-boxes including 2,100 *Apis mellifera* and 270 *Trigona sp.* Valsad is well known as a horticulture hub in Gujarat. Therefore, promotion of beekeeping can play a crucial role in pollination and help farmer members improve crop yields and quality, leading to increased productivity in their horticultural and allied activities.

This beekeeping initiative is attracting milk producers to take up beekeeping as an additional activity to augment their income. Valsad Milk Union is providing forward linkage for the honey produced by FPO members by purchasing raw honey for value addition of dairy products at its different plants. To further support the FPO, the Milk union is also arranging retail sales of honey at its different outlets under the brand name "Vasudhara". The brand "Vasudhara" is well known for quality dairy products and has been in existence for 54 years. "Vasudhara" already symbolises the empowerment of marginalised tribal women farmers of Valsad district for a better life and livelihood. This gives a unique brand message to consumers that sets its honey business apart from the competition. In the last year, the FPO achieved a turnover of ₹ 54 lakh.

Valsad Honey FPO will pave the way for the economic empowerment of dairy farmers. Simultaneously, beekeeping will also play crucial role in securing a better future for upcoming generations by maintaining biodiversity and environmental stability. This initiative showcases a successful integration of beekeeping and dairy activities, ensuring remunerative prices for the beekeepers. With the presence of cooperative network in the local market, consumers can access quality products at reasonable rates. This effort not only promises economic growth for the region but also reflects a commitment to sustainable agriculture and community development.

Dr Meenesh Shah, Chairman, NDDB during the launch of 'Vasudhara' Honey of Valsad beekeeper's FPO

Liquid Nitrogen in use for storage of Frozen Semen Doses

Using Cold-chain Shipment as Alternative to Shipping Frozen Semen Dose Samples in Liquid Nitrogen

In India, Frozen Semen Dose (FSD) samples were traditionally shipped in containers of liquid nitrogen (LN_2) for detecting bovine herpesvirus-1 (BoHV-1) in semen. BoHV-1 causes Infectious Bovine Rhinotracheitis (IBR), a significant sexually transmitted bovine disease that can lead to abortions and reproductive disorders. However, LN_2 shipment posed logistical, safety and cost constraints for semen stations, affecting the economics, feasibility and compliance of FSD testing.

Since 2022, NDDB R&D Laboratory have been conducting a pilot study to evaluate cold-chain shipment (FSD straws packed in frozen gel-packs) as an alternative to LN_2. The pilot study, both in laboratory simulations and actual field scenarios, confirmed the suitability of the frozen gel-pack system for transporting FSD samples to the laboratory within a week for testing.

Testing of FSDs shipped via cold-chain began with the communication of packaging and shipping procedures using expanded polystyrene (thermocol) boxes with frozen gel-packs. Semen stations have been employing cold-chain shipment since April 2023. Data from nine months (until December 2023), compared with the same period in the previous year (2022), showed similar rates of positive results for FSD samples. The analysis confirms that test accuracy was not compromised with the change in shipment procedure.

Feedback surveys from semen stations using the tests revealed cost savings of nearly 75 per cent per shipment compared to LN_2 shipments. The survey also indicated high levels of appreciation and acceptance of cold-chain shipment among semen stations. FSD tests are now being utilised by semen stations beyond those routinely availing them at NDDB CALF Ltd, demonstrating greater acceptance and compliance with FSD screening for BoHV-1 due to reduced costs and improved transport convenience.

Reducing Antimicrobial Usage (AMU) through Ethnoveterinary Medicine

Antimicrobial agents play a significant role in animal health management and welfare. Prudent use of these antimicrobials is crucial to ensure food safety and public health. Mismanagement of antibiotics in animal disease management can lead to the emergence of antimicrobial resistance (AMR), which is a global issue. NDDB is promoting a cost-effective and efficacious alternative approach through the use of ethnoveterinary medicine (EVM) to manage around 30 common ailments in bovines, in collaboration with various milk producing institutions and universities.

Sabar Milk Union, a dairy cooperative in Gujarat has been propagating EVM in its milk shed area since 2017-18. To ensure a cost-effective supply of EVM formulations, Sabar Milk Union has established an EVM production plant with financial and technical support from NDDB. Currently, Sabar Milk Union produces seven different ready-to-use EVM formulations and supplies them to member producers through DCS and veterinary staff. After intensive promotion and awareness efforts, the purchase of antibiotics decreased by around 44 per cent from ₹ 1.89 crore to ₹ 0.89 crore. The overall outcome of EVM propagation has been very beneficial for dairy farmers and Milk Union in terms of savings. The reduction in antibiotic usage will surely contribute to minimising the development of AMR in the milk shed.

Biogas Slurry Helped Achieve Financial Independence

Manguben Dahyabhai Parmar, a resident of Mujkuva village owns three buffaloes and is a member of the Mujkuva Dairy Cooperative Society. Four years ago, she installed a two cubic metre biogas plant with the help of National Dairy Development Board. This plant has helped her save about ₹ 1,000 per month on LPG costs, eliminating the need to refill LPG cylinders. As the biogas plant consistently generates slurry, she joined Mujkuva Sakhi Khad Sahakari Mandali Ltd. Subsequently, she began generating an income of approximately ₹ 2,000 per month from the sale of slurry. She and her husband decided to apply the additional slurry to their 0.6 ha farm, which is conveniently located near the biogas plant. In the first year, they experienced a significant increase in produce quality and yield, cultivating little gourd, brinjal and coriander. The little gourd crop was grown using a trellis system, further improving the quality of vegetables.

Before the installation of the biogas plant, they used to apply chemical fertilisers (100 kgs. DAP, 100 kgs. Urea and 50 kgs. Ammonium sulphate). In the second year, they decided to forgo any chemical fertilisers and observed better results in vegetable production. Encouraged by this, they continued without chemical fertilisers. During 2023-24, they earned ₹ 70,000 from little gourd cultivated in 0.3 ha, ₹ 40,000 from okra cultivated in 0.12 ha and ₹ 25,000 from coriander cultivated in 0.18 ha. Their income nearly doubled compared to the previous four years.

They used this income to pay the annual electricity bill for agriculture and also purchased a van (car) using a portion of the income from the past three years. Their son now drives the van, which is used to transport school children, earning ₹ 10,000 per month, providing a stable source of income for the family.

Upon learning about organic agriculture, Manguben's husband took the lead in forming an organic cooperative in the village and they applied for organic certification in 2024. They discovered organic vegetables fetch higher prices in the market and their future plan is to become regular organic vegetable growers.

The small biogas unit has transformed their lives and they are confident that with organic agriculture certification, they will continue to grow and prosper.

Slurry Applicator being used in farmer's field

Mobile milk collection unit at Ladakh

VISION 2047 FOR THE DAIRY SECTOR

India's dairy industry, predominantly driven by smallholder farming, has become a cornerstone of rural development. India has evolved from a milk deficit scenario to becoming the world's largest milk producer due to strategic government support. To sustain this growth, it is crucial to focus on holistic development and align the sector with global standards, ensuring its competitiveness and sustainability.

Indian dairy industry characterized by smallholder dairying has shown its resilience and strength as a proven growth engine for rural development. Backed by apt and timely Government Interventions, the dairy industry has witnessed strides in all walks of the sector. Achievements of the sector have been numerous from self-sufficiency to largest milk producer in the world, increased outreach of dairy cooperatives, huge investments by private players and creation on vast milk collection and processing infrastructure.

To sustain the pace of dairy development in the country, it is essential that efforts made across the sub-sectors are focussed and converged towards holistic development of this sector.

Further, increasing importance of the livestock in Indian economy, increasing demand of milk and milk products, accelerated growth in demand of value-added products, huge potential of improving bovine productivity and thereby increasing country's milk production are indicators of positive transformation of this sector. Having surpassed the self-sufficiency in milk production, it is also the right time for India to test waters in overseas markets and become one of the leading players of global dairy trade.

It is a need of the hour to devise a roadmap so as to sustain the growth of dairy sector. The concerted efforts are required in the identified areas to take the sector forward.

Key Thrust Areas

India has approximately 107 million in-milk bovines that has grown by 2.7 per cent annually over the past decade. Productivity improvements, rather than increasing animal numbers, are crucial for sustainable growth of the sector. Enhanced productivity will help optimise milk production costs and improve returns for dairy farmers.

Currently, dairy cooperatives reach about one-third of Indian villages. Expanding this reach will integrate more farmers into the cooperative network, providing them with better market access and fair pricing. This will also increase the availability of high-quality, safe milk and milk products.

The demand for milk and dairy products is projected to grow significantly due to rising incomes and changing consumption patterns. While liquid milk remains dominant, growth in demand for value-added products and nutraceuticals is expected to outpace that of liquid milk. The demand for milk and milk products is projected to experience double-digit growth in the coming years.

Currently, liquid milk dominates the dairy consumption basket, it accounts for 47 per cent in the total consumption of milk & milk derivatives at the national level. In the coming years, the consumption of milk products will increase at a higher pace than liquid milk. Various reports and available data suggest that the accelerated demand of milk and milk products in the future will be mainly driven by value added & functional products and nutraceuticals.

With increasing milk production, India has great possibility to realise its export potential and rise to prominence in the dairy industry with increased availability of high-quality milk for processing & production of world class dairy products.

The country, with its 300 million bovines producing 165 million tonnes of manure annually, can leverage innovative manure management to generate additional income for farmers and reduce its carbon footprint.

Dairying - a source of sustainable livelihood

Dairy Animal Productivity

In the coming decades, the livestock sector will encounter increased challenges due to rising milk demand, competition for resources and climate change impacts. These factors could raise milk production costs and strain the sector's viability. To ensure a sustainable future for dairying, it is crucial to enhance animal productivity through improved breeding, nutrition, management and healthcare. This strategic focus on animal productivity will reassure stakeholders about the sector's sustainability.

Key intervention areas

Animal breeding

- Expanding recording and accurate selection
- Use of sex-sorted semen
- Rapid multiplication
- Policy and regulatory measures

Animal health

- Expanding vaccination reach
- Convenient and better diagnostics
- Focus on one-health
- Propagation of EVM
- Animal welfare

Animal feeding

- Improving feed conversion efficiency
- Reduce fodder deficit
- Reduce enteric methane emission

It is envisaged to increase in-milk yield from the present level of 2,080 to 5,200 Kg per animal per year by 2047.

Share of Organised Sector

India's total milk production is approximately 231 million tonnes, equating to around 6,300 lakh kg of milk per day. Producers in villages consume about 40 per cent of this milk, while the remaining 60 per cent is distributed between the organised and unorganised sectors. The unorganised sector dominates, controlling about two-thirds of the market, whereas the organised sector, including dairy cooperatives and private players, manages one-third of the marketable surplus.

Presently, dairy cooperatives cover 30-35 per cent of villages. Expanding cooperative coverage is essential to address challenges such as fair pricing, quality maintenance and consumer safety, thereby enhancing market access and strengthening the organised sector. This expansion will support improved milk quality and readiness for export markets.

Key Intervention Areas

- Expanding milk procurement areas with an emphasis on Producer Owned Institutions
- Deepening the reach of dairy cooperatives through handholding & support to weak cooperatives
- Increasing women's participation
- Convergence of activities in less dairy-developed areas
- Enabling policies and programmes

It is targeted to expand the cooperative coverage from 1.7 to 3.5 lakh villages during the next two decades.

Share of Value-Added Products

Rising demand for dairy products is driven by urbanisation, population growth and a rise in per capita income and health trends necessitate increased production of value-added products. The annual growth rate for major dairy products ranges between 15-20 per cent, with particularly high growth in fresh products such as curd, lassi, flavoured milk and buttermilk, as well as in innovative products like probiotics and organics. The growth rates for products like cheese, ice cream and flavoured milk are strong and this trend is expected to continue.

There is significant potential for developing dairy-based products tailored to specific consumer groups, such as infants, children, the elderly, pregnant women and athletes. High-value products like whey protein isolates, functional milk protein concentrates and complex dairy-derived ingredients offer substantial growth opportunities. Currently, only 25 per cent of milk procured by cooperatives is converted into dairy products. Increasing the share of value-added products can enhance profit margins compared to liquid milk, supporting better prices for dairy farmers and contributing to their socio-economic upliftment. The cooperative and organised private sectors need to focus on expanding this product range to benefit consumers and farmers alike.

Key Intervention Areas

- More milk flowing through the organised sector
- Increasing capacity utilisation for manufacturing milk products
- Enhancing milk processing capacity and modernising existing infrastructure
- Manufacturing products as per the consumer needs & preferences
- Incentivising processing infrastructure to reduce dependence on import of products like lactose and Whey Protein/Milk Albumin
- Investment in R&D for high-value-added products
- Export-oriented value-added products for the Indian diaspora residing in different countries

It is envisaged to increase the share of VAPs in the cooperative sector from 25 per cent to 50 per cent by 2047.

Advanced milk processing unit

India's Share in World Trade

Despite being a leading milk producer, India holds less than one per cent of the global dairy trade. As per NITI Aayog, milk production in India is expected to be 330 million tonnes by 2033, while demand is expected to be 292 million tonnes during the same period, so boosting dairy exports is essential for sector's growth. To enhance its global trade share, India must address challenges such as non-tariff barriers, uncompetitive prices and marketing inefficiencies. Concerted efforts are being made by GOI and NDDB to enhance and modernise the milk processing/quality testing capacities of the organised sector through erstwhile Dairy Processing Infrastructure Development Fund (DIDF), Animal Husbandry Infrastructure Development Fund (AHIDF) and National Programme for Dairy Development (NPDD). Further, the Government of India has also set up a National Cooperative Exports Limited (NCEL) under the Multi-State Cooperative Societies (MSCS) Act, 2002, during January 2023, aiming to overcome these hurdles and expand market access for Indian dairy products. The major factors hindering the growth in the export of milk and milk products are the uncompetitive prices, prevalence of FMD and other diseases, lack of traceability to cattle level, various Sanitary & Phytosanitary Measures (SPS), Technical Barriers to Trade (TBT) measures in the foreign market, low visibility of domestic products and ineffective marketing practices, etc.

Key Intervention Areas

- Increasing the share of the Organised Sector
- Ensuring quality
- Disease-free animals
- Implementation of NDLM
- Developing dairy export zones
- Promoting Indigenous products among the Indian diaspora
- Identifying potential markets - high potential and low trade barrier
- Effective handling of SPS & other trade-related notifications

The target is to increase India's share in the global dairy trade from <1 per cent to about 10 per cent by 2047.

Milk - a wholesome food

Sustainable Dairying

According to the Intergovernmental Panel on Climate Change (IPCC), global temperatures could rise by 3.7 to 4.8 °C by the end of the 21st century, posing severe and irreversible risks to the planet. In response, the Paris Agreement was adopted by many countries, aiming to limit global warming to 1.5 °C above pre-industrial levels. World leaders have committed to significant climate action, targeting net zero Greenhouse Gas (GHG) emissions.

In the dairy sector, enteric fermentation is a significant source of GHG emissions, accounting for approximately 70 per cent of total cradle-to-farm-gate emissions. Manure management, feed production and on-farm energy use contribute an additional 15 per cent, 10 per cent and 5 per cent, respectively. To achieve net zero in dairying, adopting sustainable practices such as scientific fodder production, feeding, manure and energy management and GHG removal through carbon sequestration is essential. This approach includes genetic improvement of livestock, animal health enhancement, promotion of solar energy and comprehensive carbon management.

Government incentives and policies to encourage farmers and milk unions to adopt these sustainable practices are needed to support the transition to net zero in the dairy sector.

Key Intervention Areas

- Scientific breeding and feeding
- Establishing household-level flexi biogas plants
- Cluster of bio-gas plants with a slurry processing centre for producing organic fertilisers
- Development of manure management model for Large Farms/Gaushalas
- Setup of the Large bio-gas/BioCNG plants
- Promotion of solar & other renewable energy
- Carbon sequestration

The goal is to achieve Net-Zero GHG emissions by 2050 through comprehensive sustainable practices.

Maneuvering potential of Manure for socio economic upliftment

A perfect blend of nutrition and deliciousness

NDDB FOUNDATION FOR NUTRITION

NDDB Foundation for Nutrition (NFN) is registered as a Society under the Societies Registration Act, 1860 and as a Trust under The Bombay Public Trust Act, 1950. It was registered in October 2015, at Anand, Gujarat.

The organisation aims to provide nutrition support to children by offering nutritious products to help eradicate malnutrition and promote the consumption of milk and fortified milk products. The efforts are focused on raising awareness about malnutrition and encouraging a healthy diet by seeking funding through donations, grants, and Corporate Social Responsibility (CSR) contributions, as outlined in the Companies Act, 2013. NFN also implements various programmes under the CSR of NDDB Subsidiary companies and other corporations.

Giftmilk Programme

Under its Giftmilk programme, NFN distributed 7.10 lakh litres of milk – equivalent to 35.4 lakh child milk days, covering about 41,700 children in 257 schools covering 11 states.

The Giftmilk Programmes were implemented under CSR of NDDB subsidiary companies - IDMC Ltd, Mother Dairy Fruit & Vegetable Pvt Ltd & IIL and other Public Sector Undertakings like-various units of SAIL - Bhilai Steel Plant, Durgapur Steel Plant, IISCO Steel Plant & Rourkela Steel Plant, Bokaro Power Supply Company (P) Ltd, NBCC (India) Limited, National Fertilizers Ltd, NTPC-SAIL Power Company Ltd. In addition to above programmes, agreements were executed with Yamaha Motor Solutions, India, Pvt Ltd & The Shipping Corporation of India Ltd for implementation of Giftmilk Programme in Palamu, Jharkhand & Muzaffarpur, Bihar respectively.

NFN actively celebrated Poshan Maah and World School Milk Day during September 2023 by organising a variety of activities. These included lectures, sprint and puzzle competitions, and games focused on promoting awareness of healthy eating habits and the regular consumption of milk among school children.

Shishu Sanjeevani

In May 2023, NFN launched its Shishu Sanjeevani Programme in Pune, in the presence of Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying and Dr Meenesh Shah, Chairman, NFN. This initiative, under the CSR of Mother Dairy Fruit & Vegetable Pvt Ltd, introduced Shishu Sanjeevani, an energy-dense fortified nutritional supplement designed for children aged 3-6 years. This ready-to-eat semi-solid supplement, rich in protein (18 per cent), provides approximately 200 kcal of energy per 40-gram serving, fulfilling about one-third of the daily Recommended Dietary Allowance of various micro-nutrients. The programme initially benefited around 5,000 children in the Aheri Block of Gadchiroli District, Maharashtra, in collaboration with the Integrated Child Development Services (ICDS) department of Gadchiroli, Maharashtra. During FY 2023-24, NFN distributed a total of 5.38 lakh units of Shishu Sanjeevani in Gadchiroli district, Maharashtra, significantly enhancing nutritional intake among young children.

Go-Green Initiative

Under its Go-Green programme, NFN focused on promoting access to clean energy at the household level. The foundation completed the installation of 150 household-level bio-gas units in Varanasi district, Uttar Pradesh, and Nalgonda district, Telangana, under the CSR initiatives of IIL. Additionally, 215 bio-gas plants were installed in Bharuch district, Gujarat, supported under CSR of Technip Energies, India Limited. Further, an agreement was signed for the installation of 50 bio-gas plants in Padra, Vadodara district, Gujarat, under the CSR of Archroma India Ltd. Notably, NFN also installed a 50-cubic metre bio-gas plant at Gaushala Level in Kheda, Gujarat, supported under CSR of IIL.

Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying launching the Shishu Sanjeevani Programme in Pune, Maharashtra

Dr Meenesh Shah, Chairman, NDDB receiving the Rajbhasha Kirti Puraskar – 2022-23 (Second Prize) from Shri Harivansh Narayan Singh, Hon'ble Deputy Chairman, Rajya Sabha in presence of Shri Ajay Kumar Mishra, Union Minister of State for Home Affairs and Shri Bhanu Pratap Singh Verma, Union Minister of State for Micro, Small and Medium Enterprises

Chairman, NDDB receiving the Annual Rajbhasha Puraskar for Official Language Implementation

PROGRESSIVE USE OF RAJBHASHA

During the fiscal year 2023-24, NDDB intensified efforts to promote the use of Hindi in its day-to-day official correspondence and operations through various activities and initiatives aligned with the official language policy.

Activities Undertaken

Sahitya-Samvad: NDDB organised two sessions of Sahitya-Samvad, focussing on literary discussions to enhance Hindi proficiency among employees.

Hindi Review Meetings and ICT Tools Training: Regular Hindi review meetings were conducted across all groups, emphasising template creation and training sessions on the latest ICT tools for translation to facilitate effective use of Hindi in official communications.

Quarterly Workshops in Official Language (OL): To reinforce language skills, NDDB organised quarterly workshops dedicated to official language usage.

Hindi Fortnight Celebrations: During 14 - 29 September 2023, NDDB offices celebrated Hindi Fortnight nationwide. Activities included workshops and competitions aimed at promoting Hindi language proficiency. External organisations associated with TOLIC Anand also participated in OL workshops organised by NDDB.

Hindi Competitions: Various competitions such as on-the-spot essay writing, poetry recitation and translation competitions were held, encouraging active participation from NDDB employees.

Hindi Diwas Pledge: On Hindi Diwas, NDDB employees took a pledge in Hindi to adhere to the guidelines of the Department of Official Language, Ministry of Home Affairs, further reinforcing commitment to promoting Hindi in official capacities.

Throughout the year, NDDB developed promotional extension materials and engaged in numerous other activities in Hindi, to foster a conducive environment for Hindi usage and proficiency among its workforce.

Recognition and Awards on Rajbhasha

NDDB's steadfast efforts in promoting the official language were recognised and celebrated. In September 2023, during the Hindi Diwas celebrations and the Third Akhil Bhartiya Rajbhasha Sammelan held in Pune, NDDB was honoured with the prestigious Rajbhasha Kirti Puraskar – 2022-23 (Second Prize). The award was presented to NDDB's Chairman, Dr Meenesh Shah by Shri Harivansh Narayan Singh, Hon'ble Deputy Chairman, Rajya Sabha in the presence of Shri Ajay Kumar Mishra, Hon'ble Union Minister of State for Home Affairs and Shri Bhanu Pratap Singh Verma, Hon'ble Union Minister of State for Micro, Small and Medium Enterprises.

From 14 to 29 September 2023, NDDB offices celebrated Hindi Fortnight nationwide. Activities included workshops and competitions aimed at promoting Hindi language proficiency.

Additionally, NDDB, Anand was bestowed with the Annual Rajbhasha Award (Second Prize) for Official Language Implementation for the year 2021-22, further highlighting its commitment to promoting Hindi language usage and compliance.

NDDB's Association with TOLIC Anand

During the fiscal year 2023-24, NDDB, Anand maintained its active association with the Town Official Language Implementation Committee (TOLIC), Anand, participating in its half-yearly meetings. Under the auspices of TOLIC Anand, NDDB organised a Hindi poetry recitation competition, which saw enthusiastic participation from employees of various organisations associated with TOLIC. Additionally, NDDB employees contributed essays and poetry to "Ujjawal Anand", a magazine published by TOLIC Anand.

Incentive Schemes for Hindi Promotion

NDDB implemented several incentive schemes to encourage the use of Hindi in office correspondence. One notable scheme was the Hindi Noting and Drafting Incentive Scheme, which attracted participation from more than 32 employees who won cash incentives during the year 2023-24. Furthermore, employees whose children scored 75 per cent or more in Hindi in Class 10th and 12th examinations were awarded cash prizes, fostering a culture of Hindi proficiency across generations.

EVENTS

Ground Breaking Ceremony for IIL's New Vaccine Plant

Dr Meenesh Shah, Chairman, NDDB & IIL, laid the foundation stone and performed the ground breaking ceremony for setting up a new vaccine plant at Karkapatla, Hyderabad of Indian Immunologicals Limited (IIL) in the presence of Dr K Anand Kumar, Managing Director, Indian Immunologicals Limited, Shri S Rajeev, Executive Director, NDDB, Dr CP Devanand, MD, NDDB Dairy Services, Dr Priyabrata Pattnaik, Dy. MD, IIL, Shri Sanjay Mehendale, Dr Kinnera Murthy, Directors and senior officers. In his address, Chairman, NDDB stated that this modern facility underscores NDDB and IIL's dedication to the 'One Health' concept, which ensures the well-being of both humans and animals. He opined that the new facility will certainly aid in the eradication of Foot and Mouth Disease in our country.

Ground Breaking Ceremony for IDMC's RUC Plant

The ground-breaking ceremony for the RUC plant to be built by IDMC Ltd was performed by Dr Meenesh Shah, Chairman, NDDB and IDMC Ltd on 30 August 2023. The plant will manufacture Ready-To-Use Culture for dahi using indigenous bacterial strains. The technology was transferred by NDDB to manage and market the product, supporting NDDB's vision to reduce dependency on foreign companies and curb forex outflow.

Ground Breaking Ceremony for fabrication shed at IDMC Ltd

Dr Meenesh Shah, Chairman, NDDB & IDMC Ltd performed the ground breaking ceremony for construction of a fabrication shed at Unit-V of IDMC Ltd, a wholly-owned subsidiary of NDDB in the presence of Shri Prakash Maheshwari, MD, IDMC Ltd and Shri R K Malik, ED, IDMC Ltd. The shed would be used to manufacture high capacity tanks required in dairy, pharmaceutical and biotech sectors.

Vibrant Gujarat Global Trade Show

Shri Narendra Modi ji, Hon'ble Prime Minister of India visited the Maruti Suzuki pavilion showcasing 3D model of dung-based Biogas plants in Banaskantha District, during the Vibrant Gujarat Global Trade Show. Shri Shankar Chaudhary, Speaker of Gujarat Legislative Assembly and Chairman of Banas Dairy, Dr Meenesh Shah, Chairman, NDDB and Mr T Suzuki, President, Suzuki Motor Corporation were present during his visit. NDDB, in collaboration with Maruti Suzuki and Banas Dairy, is establishing state-of-the-art biogas plants, aimed at promoting sustainable rural mobility solutions and innovation in dung management across the country.

NCDFI e-Market Awards

Shri Amit Shah ji, Hon'ble Union Minister for Home Affairs and Cooperation presented the NCDFI e-Market awards during 2022-23 in Gandhinagar. The Hon'ble Minister also laid the foundation stone for the new green powered office complex of NCDFI during the event. Dr Meenesh Shah, Chairman, NDDB received the Patron Award at the event. Shri Bhupendra Patel, Hon'ble Chief Minister, Gujarat, Shri Shankar Choudhary, Hon'ble Speaker, Gujarat Legislative Assembly, Shri Dilip Sanghani, President, NCUI and IFFCO and Shri Mangal Jit Rai, Chairman, NCDFI graced the programme.

Conferment of Doctorate of Science to Chairman, NDDB

Shri Acharya Devvrat, Hon'ble Governor of Gujarat and Chancellor of Kamdhenu University conferred an Honorary "Doctorate of Science" Degree upon Dr Meenesh Shah, Chairman, NDDB for his contribution to the dairy sector.

Dr D Sundaresan Memorial Oration Award Conferred upon Dr Meenesh Shah

Dr Meenesh Shah, Chairman, NDDB, received the "Dr D Sundaresan Memorial Oration Award for the year 2024" and also delivered the "Dr D Sundaresan Memorial Oration" on the theme 'Indian Dairy Sector-Retrospect and Prospects' at the National Dairy Research Institute (NDRI). Dr Dheer Singh, Director & Vice-Chancellor, faculty members and students of ICAR-NDRI were present among other dignitaries. Dr Shah expressed deep gratitude for the privilege of delivering the Memorial Oration, paying tribute to the late Dr D Sundaresan, a stalwart in national and international dairy research.

Dr Meenesh Shah appointed as the Chairman IRMA

Dr Meenesh Shah, Chairman, NDDB has been appointed as the Chairman of Institute of Rural Management, Anand. He is the first alumnus to take over as Chairman, IRMA.

Dr Meenesh Shah Elected as Chairman, NCDFI

Dr Meenesh Shah was unanimously elected as the Chairman of the apex body of dairy cooperatives, National Cooperative Dairy Federation of India Limited (NCDFI).

Round Table on Enhancing livestock keepers' Income through Certification for Milk and Dairy Products to Increase Market Access

Dr Meenesh Shah, Chairman, NDDB participated in the Round Table on 'Enhancing livestock keepers' income through certification for milk and dairy products to increase market access'. This was organised by FAO and Ministry of Fisheries, Animal Husbandry & Dairying, Government of India with participation of Ms Varsha Joshi, Additional Secretary, Department of Animal Husbandry & Dairying, Government of India; Mr Takayuki Hagiwara, Representative of the FAO in India; Mr Konda Chavva from FAO and others stakeholders. Dr Shah shared invaluable insights, delving into how the Dairy Board has a focused approach to improving the quality of milk through management practices and farmer awareness programmes, highlighting the importance of adhering to the dairy value chain approach in ensuring clean milk production.

World Sustainable Development Summit

During the World Sustainable Development Summit 2024 organised by The Energy and Resource Institute (TERI), New Delhi, Dr Meenesh Shah was a panellist in the thematic track on "Understanding Sustainability Dimensions of BioCNG in India" along with Dr Vibha Dhawan, Director General of TERI and Mr Kenichiro Toyofuku, Director at Maruti Suzuki India Ltd, among others. The panellists released a research report of TERI on "Comprehensive Environmental and Social Sustainability Assessment of BioCNG as Vehicle Fuel in India".

FAO Panel Discussion on One Health

Dr Meenesh Shah, Chairman, NDDB led the discussions for a technical session on 'Engaging community and private sector in animal health with One Health approach' as part of the Multisectoral experts' workshop on 'Animal Health with One Health' organised by the Food and Agriculture Organization (FAO) in New Delhi. The session included Dr Anup Kalra, Joint Secretary, Informatica Healthcare (INFAHC) and Dr Dipankar Ghose, Senior Director, Biodiversity Conservation, WWF-India Office as panellists.

Chairman, NDDB delivered keynote address at 50th IDA conference organised in Hyderabad

Dr Meenesh Shah, Chairman, NDDB delivered the keynote address at the 50th Dairy Industry Conference in Hyderabad organised by the Indian Dairy Association (IDA) with the theme 'Indian Dairying Innovation & Entrepreneurship'. Shri Mallu Bhatti Vikramarka, Hon'ble Deputy Chief Minister, Telangana; Shri Tummala Nageshwara Rao, Hon'ble Agriculture Minister, Telangana; Shri Adhar Sinha, Special Chief Secretary, Animal Husbandry & Fisheries, Government of Telangana; Ms Chittem Laxmi, MD, Telangana State Dairy Federation Ltd; Mr Piercristiano Brazalle, President, IDF; Dr RS Sodhi, President, IDA and other dignitaries were present in the conference.

Mother Dairy Enters in its Golden Jubilee Year

Mother Dairy Fruit & Vegetable Private Limited (MDFVPL), a wholly-owned subsidiary of NDDB entered its Golden Jubilee Year of nourishing the nation and providing better livelihood to farmers. Dr Meenesh Shah, Chairman, NDDB inaugurated the logo commemorating 50 years of MDFVPL, signifying its commitment. He also felicitated the farmers & concessionaires associated with MDFVPL and launched new products including ice creams, organic products, edible oil and bakery products.

Chairman, NDDB met Hon'ble Chief Minister of Gujarat

Dr Meenesh Shah, Chairman, NDDB along with Mr Kenichi Ayukawa Executive Vice President, Suzuki Motor Corporation and Mr Kenichiro Toyofuku, Director, Maruti Suzuki India Ltd met Shri Bhupendra Patel, Hon'ble Chief Minister of Gujarat. The discussions focused on leveraging dung as a source of both fuel and fertiliser as well as improving income and livelihoods for farmers. Chairman, NDDB briefed Hon'ble Chief Minister about the Manure Management initiatives of NDDB which started in Gujarat and later became a model and now is replicated across the country.

Meeting with Hon'ble Chief Minister of Himachal Pradesh

Dr Meenesh Shah, Chairman, NDDB made a presentation to Shri Sukhvinder Singh Sukhu, Hon'ble Chief Minister of Himachal Pradesh, on the status of the Dairy Sector in Himachal Pradesh and the proposal to establish a fully automatic milk processing plant in Dagwar, Kangra with a capacity of 1.5 LLPD expandable to 3 LLPD and also setting up milk procurement network to supplement it. Dr (Col) Dhani Ram Shandil, Hon'ble Minister of Health and Family Welfare, Government of Himachal Pradesh; Shri Chander Kumar, Hon'ble Minister of Animal Husbandry, Government of Himachal Pradesh; Shri Harshwardhan Chauhan, Hon'ble Minister of Industries, Government of Himachal Pradesh along with other dignitaries were present in the meeting in Shimla. The proposed dairy processing plant would be established with NDDB's technical guidance and it will also process a wide range of dairy products.

Meeting for Revival of Mahanand

Dr Meenesh Shah, Chairman, NDDB met Shri Rajesh Namdeorao Parjane Patil, Chairman, Maharashtra Rajya Sahakari Dudh Mahasangh Maryadit (Mahanand) in the presence of Shri Haribhau Bagde, MLA, Shri Manikrao Kokate, MLA and Shri Kanhuraj Bagate, Managing Director of Mahanand. During the meeting, discussions were held regarding the takeover of the powder plant at Varvand, Pune and Mahanand by NDDB. The Board members of Mahanand decided to approach the State Government to request NDDB to take over management of Mahanand. NDDB would work towards the revival of Mahanand in consultation with the State Government.

EVENTS

Dr Ambedkar Jayanti

NDDB celebrated Ambedkar Jayanti with officials paying tribute to Dr B R Ambedkar. The programme was followed by a musical performance by students of Anandalaya School celebrating the life and legacy of Dr Ambedkar. The performance highlighted his dedication to education, equality and the upliftment of marginalised communities.

World Veterinary Day

NDDB celebrated World Veterinary Day, honouring the contributions of veterinarians to dairy sector. Dr Meenesh Shah, Chairman, NDDB expressed gratitude to all veterinarians working to ensure One Health. Later, experts deliberated on innovations & mitigating the effects of climate change.

World Environment Day

NDDB employees on World Environment Day planted saplings while embracing the responsibility to protect our Earth. NDDB pledges to continue its efforts to develop the dairy sector sustainably.

Independence Day

During the 77th Independence Day celebration, Dr Meenesh Shah, Chairman, NDDB hoisted the National Flag at NDDB, Anand. Dr Shah, in presence of NDDB employees and their family members, in his address mentioned about the remarkable progress India has made over the past 76 years and stressed on NDDB's vital role in this journey.

Mahatma Gandhi and Shri Lal Bahadur Shastri Jayanti

NDDB employees celebrated the birth anniversaries of two of India's most revered leaders, Mahatma Gandhi and Shri Lal Bahadur Shastri, with a solemn ceremony at NDDB, Anand. The ceremony commenced with senior officials of NDDB offering garlands and flowers at the portraits of Mahatma Gandhi and Shri Lal Bahadur Shastri followed by the children of Anandalaya School's musical performance dedicated to the life and teachings of Gandhi ji and Shastri ji.

Tribhuvandas Patel Jayanti

NDDB observed the birth anniversary of Shri Tribhuvandas Patel, the visionary leader and pioneer of the cooperative movement in India. Senior officials of NDDB paid their respects by offering floral tributes to Shri Tribhuvandas Patel. This simple act of homage reflected the deep respect and gratitude that NDDB holds for his enduring legacy.

Sardar Vallabhbhai Patel Jayanti

NDDB employees led by Dr Meenesh Shah, Chairman, NDDB took the National Unity Day pledge on the occasion of the birth anniversary of Sardar Vallabhbhai Patel, the Iron Man of India. On this occasion, they dedicated themselves to preserve the unity, integrity and security of the nation.

National Milk Day

On National Milk Day, NDDB employees paid tribute to Dr Verghese Kurien's significant contribution to the socio-economic transformation of rural households through dairying. Dr Meenesh Shah, Chairman, NDDB, extended a warm welcome to the participants of the BioCNG-powered clean car fuel rally and the bicycle rally. The rallies visited various institutions created by Dr Verghese Kurien in Anand and paid tribute to him. Shri Jayen Mehta, MD of GCMMF; Mr Kenichiro Toyofuku, Director, Maruti Suzuki India Ltd; Shri Amit Vyas, MD of Amul Dairy and other dignitaries were also present. The BioCNG car rally from Pune to Anand showcased the potential of using manure as fuel in the transportation sector, providing additional income to farmers while reducing carbon emissions.

Republic Day

On the occasion of India's 75th Republic Day, Dr Meenesh Shah, Chairman, NDDB unfurled the National Flag in the presence of NDDB employees and their family members. Dr Shah emphasised NDDB's crucial role in promoting the socio-economic development of dairy farmers nationwide and commended the cooperative movement for its impact, especially in empowering women and establishing sustainable livelihoods. He also highlighted NDDB's initiatives to diversify into related sectors, foster innovation, encourage sustainable growth and generate additional sources of income for dairy farmers.

COMPLEMENTING NDDB'S EFFORTS - NDDB SUBSIDIARIES

Mother Dairy Fruit & Vegetable Private Limited

Dr Meenesh Shah, Chairman, NDDB and Mother Dairy, Mr. Manish Bandlish, Managing Director, Mother Dairy, and Members of the Board, felicitated women farmers during the company's Golden Jubilee celebratory event in Delhi.

Mother Dairy Fruit & Vegetable Private Limited, established in 1974 as part of the 'Operation Flood' initiative, has evolved into a cornerstone of India's dairy and food processing industry. As the company celebrates its Golden Jubilee, it remains committed to its vision of providing quality food and beverages at affordable prices while ensuring fair returns to producers. During 2023-24, Mother Dairy achieved a turnover of ₹ 15,036 crore, marking a three per cent growth despite challenges like moderate weather conditions and uneven rainfall affecting demand.

The Dairy business, integrating milk and dairy products, grew by nine per cent. Notably, cow milk saw a robust 15 per cent growth, while set curd surged by 22 per cent. The ice cream segment surpassed ₹ 500 crore in sales, becoming a significant category in the dairy products portfolio. Beyond Dairy, the edible oil brand Dhara witnessed a volume growth of 12 per cent in FY 2023-24. Safal, the horticulture arm, under its fresh F&V portfolio saw a four per cent increase in volume and an 8 per cent rise in value over the past year.

Expansion and Product Innovations

Mother Dairy expanded its product offerings significantly, introducing species-specific variants like buffalo milk to cater to diverse consumer preferences. The company launched over twenty new

products, including ready-to-eat custard, cold coffee variants and cookies. Notably, regional preferences were catered to with the introduction of Bengal's Nolen Gur taste in products like Nolen Gur Mishti Doi and Nolen Gur Kulfi.

To enhance consumer experience and expand its footprint, Mother Dairy introduced modern retail outlets and expanded into high-footfall areas such as Delhi Metro stations. A state-of-the-art mega milk processing plant in Nagpur, with an investment exceeding ₹ 500 crore, is set to bolster production capacity to 6,00,000 litres per day, extendable to 10,00,000 litres per day. This facility will produce a range of dairy products including packaged milk, ice creams, chaach, lassi and paneer.

Operational Challenges

The dairy business faced significant challenges owing to weather aberrations leading to subdued demand in key summer centric months. Beyond Dairy, Safal's frozen business faced a decline in green peas production due to increase in grain prices while the pulp business reeled under the impact of unfavorable weather that affected mango crops.

Sustainability Initiatives

Mother Dairy remains committed to sustainability with initiatives like recycling and processing plastic waste through its Extended Producer Responsibility (EPR) programme. The company achieved the status of a 'Plastic Waste Neutral Company' by sustainably managing over 36,000 tonnes of plastic waste. Environment related measures also include reducing carbon emissions by approximately 4,000 tonnes over the past three years.

Research and Development

The R&D efforts of Mother Dairy have been pivotal in introducing innovative products that meet consumer demands for safe, healthy and convenient food options. New product launches such as Rabri Lassi, Nolen Gur Mishti Doi and indulgent variants in ice creams underscore the company's commitment to product innovation and consumer satisfaction.

As Mother Dairy continues to strengthen its market presence and expand its product offerings, its dedication to quality, innovation and sustainability remains unwavering. With strategic investments in infrastructure and relentless focus on consumer needs, Mother Dairy is poised for continued growth and leadership in India's dairy and food processing industry.

Awards and Recognition

- Conferred with "SILVER AWARD" for the second consecutive year by Shri Rajnath Singh, Hon'ble Minister of Defence, Government of India at Armed Forces Flag Day - CSR Conclave 2023 for contribution towards the employment of ex-servicemen.
- Won the "DAIRY CHAMPION OF THE YEAR" and "PRODUCT INNOVATOR OF THE YEAR (CUSTARD)" at India Dairy Summit & Awards 2023.
- Won the Prestigious Awards of "DAIRY PACKAGING COMPANY OF THE YEAR" and "EXCELLENCE IN SUSTAINABLE PACKAGING" at 3rd Annual India F&B Pack Summit & Awards 2023.

Dr Meenesh Shah, Chairman, NDDB & Mother Dairy inaugurating Mother Dairy's New-Age Booth in Sector-79, Noida in the august presence of Major General Sharad Kapur, YSM, SM, Director General, Resettlement, Department of Ex-Servicemen Welfare (Ministry of Defence) and Mr Manish Bandlish, Managing Director, Mother Dairy.

IDMC Limited

Bulk Milk Cooler (BMC) manufacturing plant

IDMC Limited established in 1978, has evolved into a prominent player in the dairy processing and packaging solutions industry. With robust growth across its Metal and Plastics divisions, IDMC Ltd reported revenues of ₹ 1,031.85 crore for 2023-24. The Metal segment notably grew by 61.9 per cent, while the plastics segment supplied 15,067 metric tonnes of poly film.

Metal Segment Achievements

IDMC Ltd excelled in the Metal segment by deploying automated dairy plants with capacities ranging from 25,000 to 5,00,000 litres per day (LLPD), catering to diverse milk products like butter, cheese, paneer, ice cream, khoa and fermented products. The company also developed a 100-litre batch type mini dairy project for manufacturing of products such as paneer, curd, buttermilk, butter, ghee, mattha and mozzarella cheese. Furthermore, IDMC Ltd developed and supplied a 20 KL capacity aseptic tank for intermediate storage under sterile conditions, crucial for UHT sterilisation and aseptic filling processes. Notably, orders were secured for an aseptic bulk culture preparation system, a 25 KL aseptic tank and a large-capacity deaerator process module.

Thermal Management and Pharmaceutical Segment

IDMC Ltd successfully commissioned automated ammonia refrigeration systems with capacities ranging from 40 to 2,628 tonnes of refrigeration. The company's commitment to energy efficiency was underscored by the installation of stainless-steel ice silos, optimising energy use. In the pharmaceutical sector, IDMC Ltd manufactured large fermenters for penicillin production, demonstrating its capabilities in fermentation solutions.

Renewable Energy Initiatives

Under its renewable energy initiatives, IDMC Ltd established a biogas plant processing 100 MT of cow dung daily, generating 4,000 cubic metres of biogas per day. The company also secured contracts to set up 80 MTPD dung-based Compressed Biogas (CBG) plants, furthering its environmental sustainability efforts.

Product Portfolio and Innovation

IDMC Ltd offers a wide array of food processing equipment for dairy and allied industries, including milk silos, CIP systems, pasteurisers, UHT sterilisers, butter-making machines, khoa-making machines, ice cream freezers and more. The company's R&D department developed innovative products such as higher capacity centrifugal pumps, UHT sterilisers and specialised milking equipment.

Certifications and Patents

IDMC Ltd achieved 3A certification for pneumatic single-seat valves, mix-proof valves and CLA series centrifugal pumps, setting high standards in hygiene and quality. The company also obtained patents for innovative products, such as a device for measuring ice thickness on pipe surfaces.

Plastics Segment and CSR Initiatives

In the Plastics segment, IDMC Ltd meets packaging needs with films for liquid milk, ghee, curd and high-barrier laminates for milk powder and food products. The company actively supports NDDB Foundation for Nutrition's 'Gift Milk' initiative, supplying fortified flavoured pasteurised milk to government schools in Anand District, Gujarat.

Sustainability and Future Prospects

IDMC Ltd is committed to sustainability, installing 340 kW rooftop solar PV systems at its facilities and planning further expansions. With a focus on quality, innovation and market expansion, IDMC Ltd anticipates continued growth in the dairy and allied sectors, supported by export opportunities and a strong product portfolio.

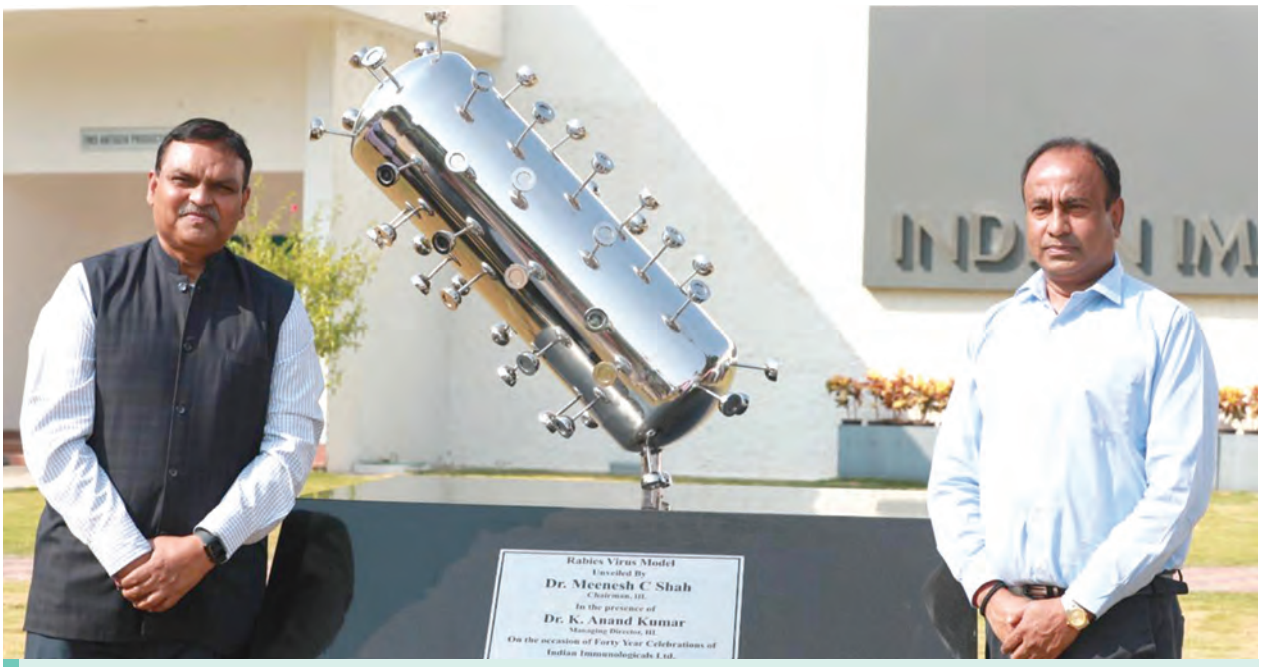
New Initiative: Manufacturing of Ready-to-Use Cultures

The ground breaking ceremony for the Ready-to-Use Cultures (RUC) plant was held on August 30, 2023, at IDMC Ltd Unit 4, marking a significant milestone in fostering self-reliance within the sector. The National Dairy Development Board has developed cultures to strengthen the Indian dairy industry. These indigenised cultures would reduce reliance on foreign suppliers, help in moderating its prices and boost *Aatmanirbharta*. With an annual capacity of 13,500 kgs, RUC is expected to enhance milk fermentation processes, offering high efficiency, ease of use, and consistent quality.

Inauguration of 'Banas Kashi Sankul'

Shri Narendra Modi ji, Hon'ble Prime Minister inaugurated the newly set up Milk Processing Plant - 'Banas Kashi Sankul' at Varanasi along with Yogi Adityanath, Hon'ble Chief Minister of Uttar Pradesh, Shri Shankar Chaudhary, Chairman, Banas Dairy & Speaker of Gujarat Legislative Assembly and other dignitaries. The Plant was commissioned by IDMC Ltd as a step towards Hon'ble Prime Minister's vision of 'Atmanirbhar Bharat' & 'Vocal for Local'.

Indian Immunologicals Limited



Dr Meenesh Shah, Chairman, NDDB & IIL unveiled a 'Rabies Virus Model' in the presence of Dr K Anand Kumar, MD, IIL, at Gachibowli, Hyderabad on the eve of 40th anniversary of IIL

Indian Immunologicals Limited (IIL) was established in 1982 by NDDB and was corporatised on 8 October 1999, with an objective to produce Foot & Mouth Disease (FMD) vaccine. Over the next two decades, IIL had developed several animal health vaccines that played a significant role in enhancing the milk productivity of the nation. At the behest of the nation, IIL ventured into human health segment by launching the anti-rabies vaccine manufactured at Ooty, Tamil Nadu. The total revenue earned for 2023-24 was ₹ 1,357 crore.

With their state-of-the-art vaccine manufacturing facilities situated at Gachibowli, Hyderabad (Telangana), Shameerpet (Telangana) and Ooty (Tamil Nadu), IIL is the largest producer of FMD and anti-rabies vaccine in the world. IIL's vaccine products are administered by the Government of India under various disease control programmes e.g., Foot & Mouth Disease Control Programme, Universal Immunisation Programme etc. IIL also exports vaccines to over 60 countries in the World.

Apart from the flagship products i.e., FMD and anti-rabies vaccine, IIL's animal health vaccines include Blue Tongue, Theileriosis, Classical Swine Fever, Brucella, Peste-des-Petits Ruminants (PPR), Cysticercosis etc., For human health, IIL manufactures Pentavalent, Hepatitis-B, Tetanus Toxoid, Diphtheria vaccines etc., apart from anti-rabies vaccine. During FY 2023-24, IIL has launched three new vaccines, namely, Hepatitis-A Vaccine, Measles-Rubella Vaccine (MR) and Tetanus Toxoid+ Diphtheria (Td).

Research and Development

Research and development team of IIL is currently working on the development of marker vaccine against Infectious Bovine Rhinotracheitis (IBR), Tetravalent Mastitis vaccine, Ten-in-one combination vaccine for Canines, Lumpy skin disease vaccine, Foot rot vaccine for sheep & goat, Tetravalent Dengue vaccine, Hexavalent vaccine, Live attenuated Zika vaccine, Kyasanoor Forest Disease (KFD) etc.

IIL's foreign subsidiary Pristine Biologicals NZ Ltd, Dargaville, near Auckland, New Zealand was set up in 2015 for supply of Adult Bovine Serum (ABS) which is a critical input for producing FMD vaccine and certain other vaccines. Contribution of this subsidiary was of utmost importance in continued production of FMD vaccine for India.

Quick adoption to the latest in technology keeps IIL's business operations abreast with the market trends. Automation of manufacturing operations, simplification of business processes, digital marketing, virtual medical representatives (eMOz), delivery of vaccines using drones, instant field reporting applications, e-commerce portal for distributors, dash boards for business excellence etc., are some of the initiatives taken by IIL over the past few years.

Corporate Social Responsibility

IIL is in the forefront of farmer's education and awareness programmes. The company has actively participated in various Krishi Melas in several parts of the country to create awareness amongst farmers. As a part of its Corporate Social Responsibility (CSR) initiative, IIL continues to provide health coverage to more than a lakh cattle in goushalas across the country. IIL has adopted three government schools (two schools in Laxmapur village and one school in Karakapatla village, Telangana state) and has created infrastructure for the well-being of students and provided them with uniforms, school bags and notebooks.

IIL supports NDDB Foundation for Nutrition's (NFN) flagship activities of Giftmilk for school children and biogas plants for domestic household. More than 3,000 school children and nearly 300 households were the beneficiaries of this CSR activity over the past three years, in the areas of Telangana and Tamil Nadu.

IIL is proud to work with the state of Kerala in eradicating the rabies disease from the state. With the help of an NGO named Compassion for Animals Welfare Association (CAWA), IIL is sponsoring the project "RABIES FREE KERALA". As part of this programme, vaccination of stray dogs, counselling to school children and patients in government hospitals, awareness programmes to public etc., are undertaken in Thiruvananthapuram, Kollam and Thrissur districts of Kerala.

Saving lives with vaccines developed using cutting edge research and transformative technology

NDDB Dairy Services

Strong Institutional foundations are crucial for the success of any producer owned enterprise

NDDB Dairy Services (NDS), a subsidiary of the National Dairy Development Board (NDDB), was established in 2009 as a not-for-profit entity under Section 8 of the Companies Act. Its primary objective is to promote Milk Producer Organisations (MPOs) and enhance productivity in the dairy sector.

Milk Producer Organisations (MPOs)

NDS facilitated the establishment of two MPOs, including Shri Baba Gorakhnath Kripaa MPO in Gorakhpur, Uttar Pradesh and Dudhshree MPO in Hooghly, West Bengal. Collectively, these 22 MPOs, supported by various state and national missions, have a significant impact on the lives of 10 lakh dairy farmers across 24,166 villages.

Notably, 74 per cent of these producers are women, with 65 per cent being smallholder milk producers. These MPOs collectively raised ₹ 233 crore in share capital, poured 46.7 LKgPD of milk and achieved a turnover of ₹ 8,909 crore.

Livelihood and Productivity Enhancement

The MPOs provide essential inputs like cattle feed, mineral mixtures and fodder seeds, along with services such as Artificial Insemination (AI) and Dairy Extension services. They promote ethno-veterinary practices to ensure antibiotic-free milk production.

NDS operates four semen stations that sold 4.73 crore frozen semen doses during the year. They also sold approximately 90.95 lakh semen doses from indigenous cattle breeds and 1.4 crore doses from buffalo breeds, contributing significantly to breed improvement initiatives.

Accelerated Breed Improvement Programme (ABIP IVF-ET)

Under the Rashtriya Gokul Mission, NDS conducted around 3,000 embryo transfers in multiple states, resulting in high-genetic-merit calves. This initiative aims to enhance milk production and productivity of milch animals.

Infrastructure and Initiatives

NDS ventured into marketing cattle feed under the brand SAG, benefiting over 10 lakh dairy farmers.

The cow sanctuary in Muzaffarnagar, Uttar Pradesh, operationalised in February 2024, aims to house 5,000

bovines and includes a Bio CNG plant and a training centre currently under construction.

Sex-Sorting Semen Technology is an innovative technique to increase the likelihood of female calf births to ease the economic burden on farmers.

In India, multinational companies hold a monopoly on the available Sex-Sorted Semen technology. In line with the Honorable Prime Minister's vision of 'Make in India' and '*Aatma Nirbhar Bharat Abhiyaan*', the National Dairy Development Board has taken decisive steps to develop an indigenous, cost-effective sex-sorting technology. The initiative aims to break the monopoly of foreign companies, offering dairy farmers a more affordable technical solution.

At the behest of NDDB, NDS in collaboration with IIT Chennai, IISc-Bangalore, and NCBS-Bangalore has developed GauSort™ an indigenous, cost-effective Sex-Sorting Semen Technology.

In view of its immense potential, the Department of Animal Husbandry and Dairying (DAHD), Government of India is funding this initiative under the Rashtriya Gokul Mission.

The indigenously developed Sex-Sorting Semen Technology is now fully operational and expected to bring about a revolutionary change in India's dairy sector.

By improving reproductive efficiency, it will significantly enhance animal productivity and milk production for dairy farmers. This sex-sorting semen technology will promote self-reliance and will help with the goal of doubling farmers' incomes, contributing to the broader vision of '*Aatmanirbhar Bharat Abhiyaan*'.

Parameters	Total of 22 MPOs
No. of Districts	155
No. of Villages Covered	24,116
No. of Members	10,05,773
Women Membership (%)	74
Smallholders (% of Members)	65
Paid-up Share Capital (₹ in crore)	233
Average Milk Procurement FYTD (TKgPD)	4,675
Gross Turnover FYTD (₹ in crore)	8,909 (unaudited)

IDF Innovation Award 2023 to Shreeja Mahila Milk Producer Organisation

Shreeja Mahila Milk Producer Organisation was adjudged winner of the prestigious IDF Innovation Award 2023 in the category of 'Innovation in Women Empowerment in the Dairy Sector'. The award was presented to Dr Meenesh Shah, Chairman, NDDB & NDS and Shri Jayatheertha Chary, Chief Executive, Shreeja during IDF World Dairy Summit 2023 at Chicago, USA in the presence of Ms Alka Upadhyaya, Secretary, Department of Animal Husbandry and Dairying, Government of India.

NDDB Mrida Limited

Biogas plant installed under "Gobar Se Samruddhi" Biogas Programme at Kolhapur, Maharasthra

NDDB Mrida Ltd was established on 1 July 2022 as an unlisted public company with core objectives to develop wide-ranging solutions related to dung, biogas and organic fertilisers. The focus areas of NDDB Mrida include execution of biogas & dung related projects such as household biogas, Bio-CNG, biogas-based energy generation for dairy plants and other industrial/commercial applications of biogas. Large-scale organised sale of dung based organic fertilisers being its major domain. NDDB Mrida reported a turnover of ₹ 853 lakh during the year.

NDDB Mrida Ltd is taking concerted steps for focussed Research and Development work and fostering collaboration with like-minded agencies to develop cost effective technologies for efficient dung management, supporting newer forms of dung-based innovations and fighting global climate change. The actions of NDDB Mrida Ltd are bringing synergy in the sectors of biogas, bio-energy, carbon emission reduction and organic fertilisers, at the same time creating direct and long-lasting impact on the lives of farmers as well as environment alike.

Operations of Biogas Plant and Sale of Biogas

During the year 2023-24, NDDB Mrida Ltd while operating the 100 MTPD biogas plant at Varanasi Milk Union sold more than 8 lakh cubic metre biogas substituting Light Diesel Oil. At the same time, NDDB Mrida Ltd has infused more than ₹ 150 lakh in the local rural economy for purchase of dung for the biogas plant.

Production & Sale of Organic Fertilisers

During the same year, NDDB Mrida Ltd has achieved total sales turnover of about ₹ 84 lakh through sale of fertilisers in bulk and under the iconic SuDhan brand.

Household Biogas Programmes

During the year 2023-24, under the unique "Gobar Se Samruddhi" Biogas Programme that was initiated to propagate modern biogas plants at a large scale by reducing the upfront investment cost for the farmers, NDDB Mrida Ltd in collaboration with biogas plant manufacturers, and with several Dairy Cooperatives and farmer focussed institutions installed domestic biogas plants across Maharashtra, Gujarat, Rajasthan, Uttar Pradesh and Bihar.

Being the National Level Programme Implementing Agency for MNRE Biogas Programme, NDDB Mrida Ltd installed biogas plants in 10 states. NDDB Mrida Ltd also installed biogas plants with the support from various CSR grants in Uttar Pradesh, Telangana, Gujarat and Haryana.

The cohesive efforts of NDDB Mrida Ltd have impacted the lives of about 22,000 women dairy farmers across twelve states i.e. Punjab, Haryana, Uttar Pradesh, Bihar, Jharkhand, Assam, West Bengal, Telangana, Madhya Pradesh, Gujarat, Rajasthan and Maharashtra. The farmers have not only saved time & energy required to arrange traditional kitchen fuel, but also expenses on alternate clean cooking fuel have been saved.

During the year, NDDB Mrida Ltd continued to support the nine Manure Management Projects that were jointly funded by NDDB & Sustain Plus across Maharashtra, Rajasthan, Uttar Pradesh, Jharkhand, West Bengal, Sikkim and Assam.

NDDB Mrida Ltd is determined to continue the farmer-centric approaches to simplify the lives of dairy farmers, especially the women by strategies such as helping to enhance effective dung management, encouraging wider use of gobar-gas as a clean kitchen fuel and greater use of biogas slurry-based fertilisers. Increased use of gobar-gas and slurry-based fertilisers across the country can help India to scale new heights of self-reliance in energy and fertiliser sector.

Slurry lifting using a slurry applicator

NDDB CALF Limited

Analysing samples

NDDB CALF Limited was incorporated as a wholly-owned subsidiary company of National Dairy Development Board in February 2023. The Company has completed its first year of operation after incorporation under the Companies Act 2013. For FY 2023-24, NDDB CALF Limited reported a turnover of ₹ 25.41 crore.

During the year the company provided testing services for a range of products such as dairy products, fats and oils, honey, ready to eat food products, processed food, organic food, fruits and vegetables, animal feed, mineral mixes and vitamin premixes. The laboratory at its state-of-the-art facility also provided to its customers services such as parentage verification and disease diagnosis in bovines, detection of chromosomal abnormalities, genetic disorders and also estimation of gender purity, breed purity, genomic breeding value in cows and buffaloes. The laboratory provided performance verification studies in analytical kits/ testing devices to various equipment manufacturing companies including start-ups.

The laboratory is accredited as per ISO/IEC 17025 by the National Accreditation Board for Testing and Calibration Laboratories (NABL). The facility is recognised by Bureau of Indian Standards (BIS), APEDA and Export promotion Council of India (EIC) for analysis of food, agricultural products and water. The laboratory is also recognised as the National Reference Laboratory for milk and milk products by FSSAI.

During the year, the company carried out testing and reporting of over 90,000 samples for chemical, microbiology and genetics analysis. These samples were tested for over 3.9 lakh parameters. Additionally, the company offered its Proficiency Testing services in which over one hundred laboratories participated.

MoU between NDDB CALF Ltd and Milma

An MoU was signed between NDDB CALF Ltd and Kerala Cooperative Milk Marketing Federation (Milma) as per which the management of State Central Quality Control Laboratory of Milma, located at Ernakulam, will be transferred to NDDB CALF Ltd. The MoU was signed by Shri K Yusuf, MD, Milma and Shri Rajesh Subramaniam, MD, NDDB CALF Ltd in the presence of Dr Meenesh Shah, Chairman, NDDB & NDDB CALF Ltd and Shri KS Mani, Chairman, Milma.

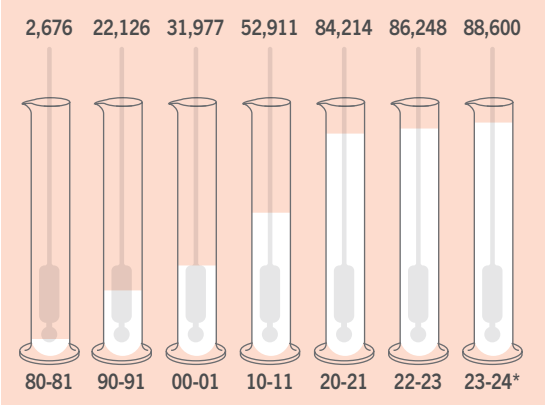
Overview of wet chemical analysis

PROGRESS OF DAIRY COOPERATIVES

Dairy Cooperative Societies (in numbers)^

North

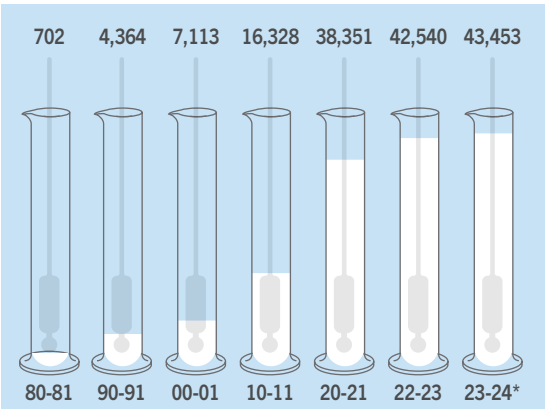
Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Haryana	505	3,229	3,318	7,019	7,837	7,412	7,686
Himachal Pradesh		210	288	740	1,084	1,107	1,130
Jammu & Kashmir		105	**	**	896	999	1,294
Ladakh							3
Punjab	490	5,726	6,823	7,069	8,539	8,923	8,799
Rajasthan	1,433	4,976	5,900	16,290	21,300	25,515	26,493
Uttar Pradesh	248	7,880	15,648	21,793	40,353	37,904	38,753
Uttarakhand					4,205	4,388	4,442
Regional Total	**2,676**	**22,126**	**31,977**	**52,911**	**84,214**	**86,248**	**88,600**



Region-wise dairy cooperative societies (North)

East

Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Assam		117	125	155	522	633	1,124
Bihar	118	2,060	3,525	9,425	26,275	29,570	29,479
Jharkhand				53	769	1,076	1,228
Manipur						233	196
Meghalaya					30	30	21
Mizoram					42	36	36
Nagaland		21	74	49	52	52	52
Odisha		736	1,412	3,256	6,151	6,316	6,523
Sikkim		134	174	287	587	675	687
Tripura		73	84	84	119	143	168
West Bengal	584	1,223	1,719	3,019	3,804	3,776	3,939
Regional Total	**702**	**4,364**	**7,113**	**16,328**	**38,351**	**42,540**	**43,453**



Region-wise dairy cooperative societies (East)

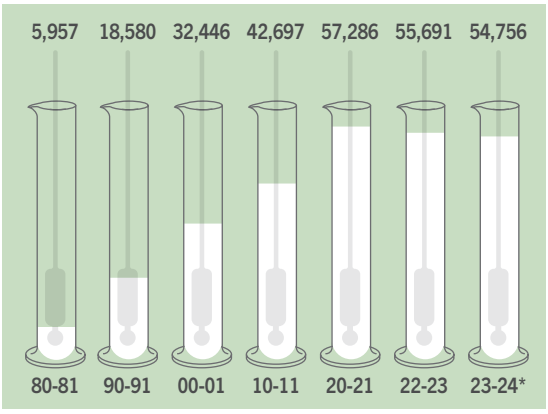
^ For dairy cooperatives it is organised (cumulative), includes conventional societies and taluka unions formed earlier. 2020-21 onwards data includes functional MPPs of MPOs & MPIs of MDFVPL.

* Provisional

** Not Reported

West

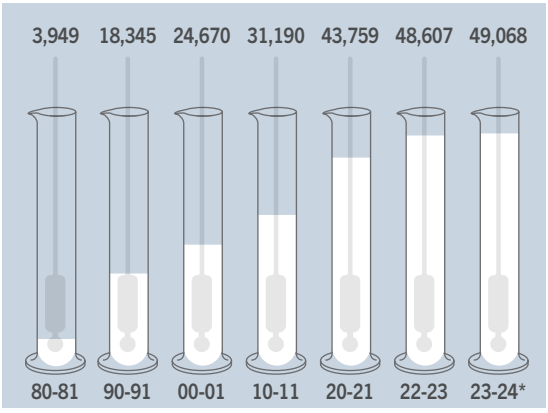
Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Chhattisgarh				757	1,110	961	986
Goa		124	166	178	183	183	181
Gujarat	4,798	10,056	10,679	14,347	22,341	22,662	22,752
Madhya Pradesh	441	3,865	4,877	6,216	10,757	11,572	11,641
Maharashtra	718	4,535	16,724	21,199	22,895	20,313	19,196
Regional Total	**5,957**	**18,580**	**32,446**	**42,697**	**57,286**	**55,691**	**54,756**



Region-wise dairy cooperative societies (West)

South

Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Andhra Pradesh	298	4,766	4,912	4,971	6,458	9,993	9,415
Karnataka	1,267	5,621	8,516	12,372	16,721	17,590	17,837
Kerala		1,016	2,781	3,666	3,337	3,399	3,417
Tamil Nadu	2,384	6,871	8,369	10,079	10,555	10,572	11,428
Telangana					6,581	6,945	6,862
Puducherry		71	92	102	107	108	109
Regional Total	**3,949**	**18,345**	**24,670**	**31,190**	**43,759**	**48,607**	**49,068**



Region-wise dairy cooperative societies (South)

Grand Total

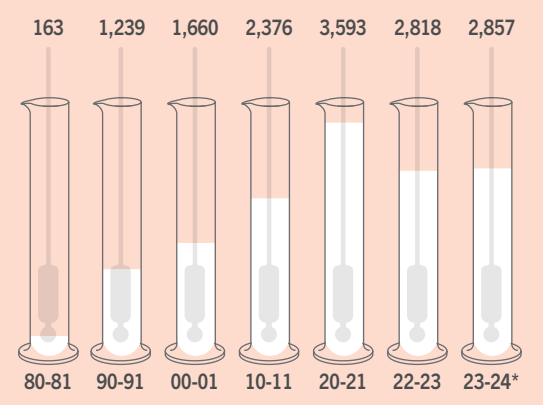
80-81	90-91	00-01	10-11	20-21	22-23	23-24*
13,284	63,415	96,206	1,43,126	2,23,610	2,33,086	2,35,877

Source: Milk Unions & Federations, NDDB-DS & MDFVPL

Producer Members (in thousands)

North

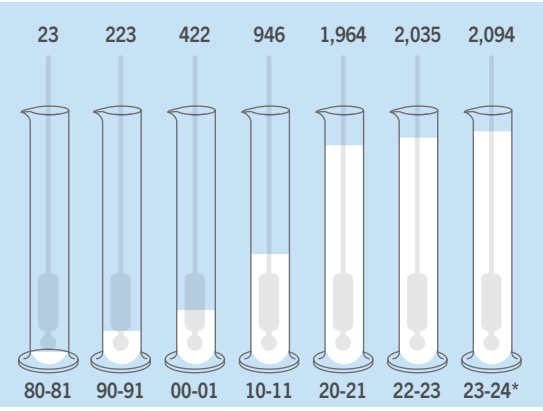
Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Haryana	39	184	185	313	326	324	328
Himachal Pradesh		17	20	32	46	47	48
Jammu & Kashmir		2	**	**	30	50	63
Ladakh							0.3
Punjab	26	304	370	385	419	423	402
Rajasthan	80	340	436	669	1,044	1,097	1,129
Uttar Pradesh	18	392	649	977	1,568	712	718
Uttarakhand					159	165	169
Regional Total	**163**	**1,239**	**1,660**	**2,376**	**3,593**	**2,818**	**2,857**



Region-wise producer members (North)

East

Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Assam		2	1	4	34	47	58
Bihar	3	100	184	523	1,308	1,408	1,426
Jharkhand				1	23	31	40
Manipur						6	4
Meghalaya					1	1	1
Mizoram					1	1	1
Nagaland		1	3	2	2	2	2
Odisha		46	111	187	325	319	336
Sikkim		4	5	10	15	17	18
Tripura		4	4	6	8	6	6
West Bengal	20	66	114	213	247	197	204
Regional Total	**23**	**223**	**422**	**946**	**1,964**	**2,035**	**2,094**



Region-wise producer members (East)

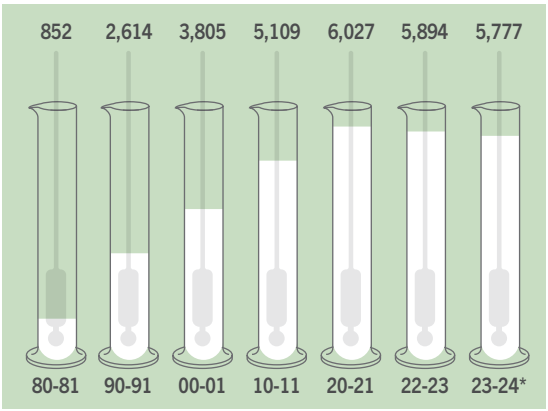
* Provisional

** Not reported

2020-21 onwards data includes functional MPPs of MPOs & MPIs of MDFVPL.

West

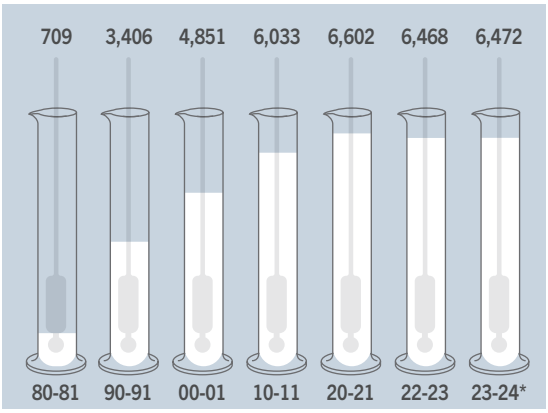
Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Chhattisgarh				31	43	38	38
Goa		12	18	19	19	19	19
Gujarat	741	1,612	2,147	2,970	3,740	3,754	3,754
Madhya Pradesh	24	150	242	271	372	401	407
Maharashtra	87	840	1,398	1,818	1,853	1,682	1,560
Regional Total	**852**	**2,614**	**3,805**	**5,109**	**6,027**	**5,894**	**5,777**



Region-wise producer members (West)

South

Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Andhra Pradesh	33	561	702	846	661	686	689
Karnataka	195	1,013	1,528	2,124	2,633	2,652	2,702
Kerala		225	637	851	1,025	1,063	1,064
Tamil Nadu	481	1,590	1,957	2,176	1,983	1,804	1,704
Telangana					258	221	271
Puducherry		17	27	36	42	42	42
Regional Total	**709**	**3,406**	**4,851**	**6,033**	**6,602**	**6,468**	**6,472**



Region-wise producer members (South)

Grand Total

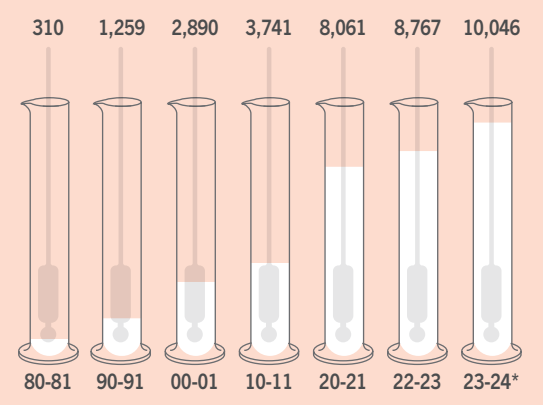
80-81	90-91	00-01	10-11	20-21	22-23	23-24*
1,747	7,482	10,738	14,464	18,185	17,215	17,200

Source: Milk Unions & Federations, NDDB-DS & MDFVPL

Milk Procurement (in thousand kilograms per day)#

North

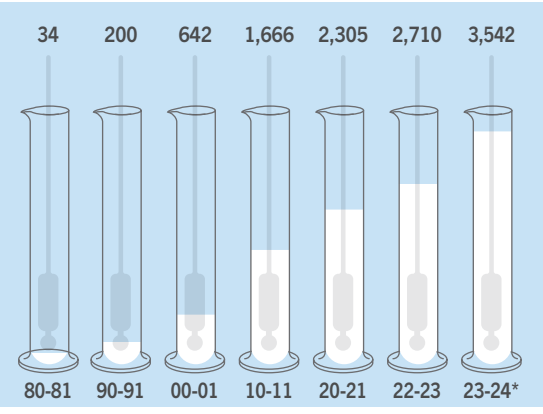
Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Haryana	33	94	276	511	590	458	593
Himachal Pradesh		14	24	60	92	109	98
Jammu & Kashmir		11	**	**	92	116	158
Ladakh							1
Punjab	75	394	912	1,037	2,155	2,173	2,343
Rajasthan	138	364	887	1,629	3,613	4,287	4,708
Uttar Pradesh	64	382	791	504	1,330	1,437	1,955
Uttarakhand					189	187	189
Regional Total	**310**	**1,259**	**2,890**	**3,741**	**8,061**	**8,767**	**10,046**



Region-wise milk procurement (North)

East

Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Assam		4	3	5	29	49	51
Bihar	3	95	330	1,091	1,505	1,766	2,395
Jharkhand				5	134	181	264
Manipur						4	2
Meghalaya					14	13	11
Mizoram					5	3	2
Nagaland		1	3	2	3	3	3
Odisha		41	94	276	366	410	492
Sikkim		4	7	12	40	52	50
Tripura		3	1	2	7	5	5
West Bengal	31	52	204	273	203	224	266
Regional Total	**34**	**200**	**642**	**1,666**	**2,305**	**2,710**	**3,542**



Region-wise milk procurement (East)

includes outside State operations

* provisional

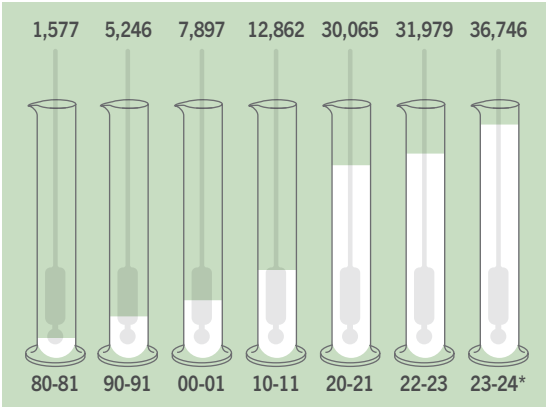
** not reported

Gujarat's total milk procurement in 2023-24 includes 9,027 TKgPD from outside the State and in 2022-23 the corresponding figure was 4,871 TKgPD

2020-21 onwards data includes procurement of MPOs & MPGs of MDFVPL

West

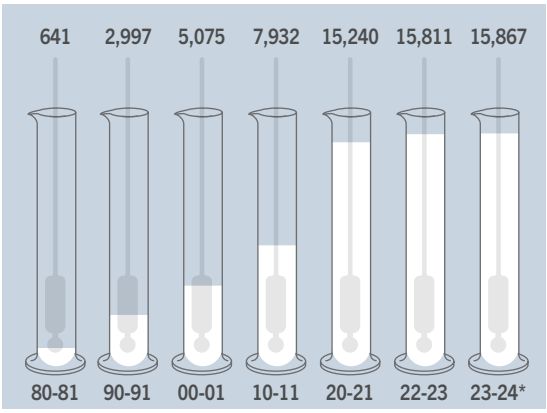
Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Chhattisgarh				25	68	57	68
Goa		16	32	38	55	49	41
Gujarat	1,344	3,102	4,567	9,158	25,237	27,315	31,359
Madhya Pradesh	68	256	319	588	954	921	1,190
Maharashtra	165	1,872	2,979	3,053	3,751	3,638	4,088
Regional Total	**1,577**	**5,246**	**7,897**	**12,862**	**30,065**	**31,979**	**36,746**



Region-wise milk procurement (West)

South

Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Andhra Pradesh	79	763	879	1,371	1,742	2,320	2,502
Karnataka	261	917	1,887	3,742	7,879	8,026	8,298
Kerala		185	646	688	1,388	1,437	1,292
Tamil Nadu	301	1,106	1,618	2,097	3,709	3,469	3,043
Telangana					461	491	676
Puducherry		26	45	35	60	68	56
Regional Total	**641**	**2,997**	**5,075**	**7,932**	**15,240**	**15,811**	**15,867**



Region-wise milk procurement (South)

Grand Total

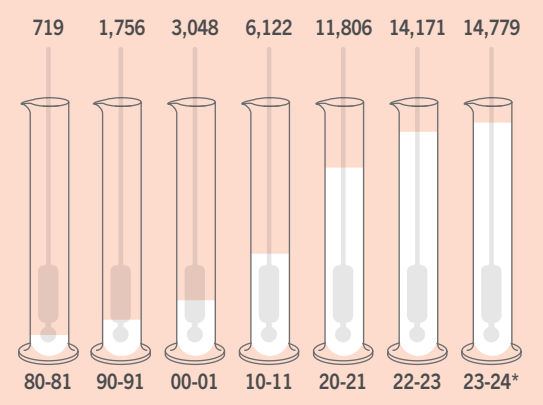
80-81	90-91	00-01	10-11	20-21	22-23	23-24*
2,562	9,702	16,504	26,202	55,672	59,267	66,200

Source: Milk Unions & Federations, NDDB-DS & MDFVPL

Liquid Milk Marketing (in thousand litres per day)#

North

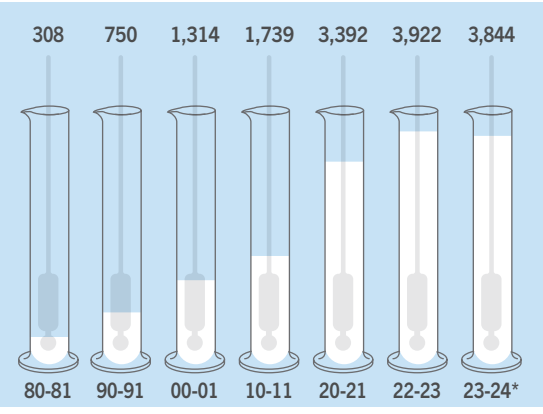
Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Haryana	2	80	108	362	289	331	278
Himachal Pradesh		15	20	23	25	28	24
Jammu & Kashmir		9	**	**	99	120	133
Ladakh							1
Punjab	7	139	420	802	1,013	1,213	1,288
Rajasthan	12	136	540	1,505	2,129	2,886	2,988
Uttar Pradesh	1	326	436	380	1,444	1,903	2,106
Uttarakhand					161	163	154
Delhi	697	1,051	1,524	3,050	6,647	7,526	7,806
Regional Total	**719**	**1,756**	**3,048**	**6,122**	**11,806**	**14,171**	**14,779**



Region-wise liquid milk marketing (North)

East

Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Assam		10	7	22	59	74	88
Bihar	8	111	324	454	1,269	1,557	1,478
Jharkhand				253	374	444	433
Manipur						3	2
Meghalaya					13	13	11
Mizoram					4	3	3
Nagaland		1	4	3	6	5	6
Odisha		65	98	290	324	350	333
Sikkim		5	7	17	44	44	50
Tripura		6	7	15	9	7	7
West Bengal	17	26	27	41	83	108	108
Kolkata	283	526	840	644	1,207	1,315	1,324
Regional Total	**308**	**750**	**1,314**	**1,739**	**3,392**	**3,922**	**3,844**



Region-wise liquid milk marketing (East)

includes metro dairies and outside State operations

* Provisional

** Not reported

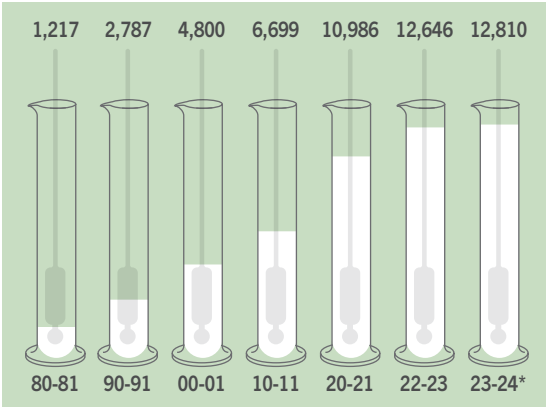
Gujarat's total milk marketing in 2023-24 including outside the State stands at 16, 696 TLPD and in 2022-23, the corresponding figure was 15,827 TLPD

In 2020-21, break-up of sales volume by Maharashtra Milk Union in Mumbai is not available

2020-21 onwards data includes sales of MPOs & MDFVPL

West

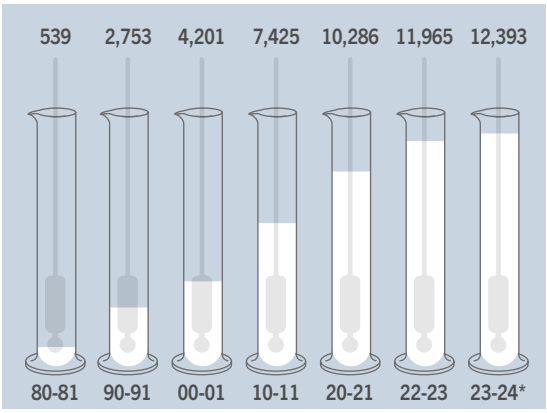
Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Chhattisgarh				34	176	242	261
Goa		36	83	69	57	50	52
Gujarat	210	1,052	1,905	3,237	5,663	6,419	6,584
Madhya Pradesh	39	279	244	495	800	952	950
Maharashtra	18	363	1,178	2,023	1,641	1,952	1,935
Mumbai	950	1,057	1,390	841	2,650	3,030	3,030
Regional Total	**1,217**	**2,787**	**4,800**	**6,699**	**10,986**	**12,646**	**12,810**



Region-wise liquid milk marketing (West)

South

Region/State	80-81	90-91	00-01	10-11	20-21	22-23	23-24*
Andhra Pradesh	19	552	733	1,565	1,346	1,397	1,427
Karnataka	166	889	1,501	2,661	4,261	5,041	5,269
Kerala		223	640	1,092	1,315	1,589	1,627
Tamil Nadu	109	405	559	989	1,175	1,500	1,571
Telangana					878	966	969
Puducherry		22	43	93	92	91	92
Chennai	245	662	725	1,025	1,220	1,381	1,438
Regional Total	**539**	**2,753**	**4,201**	**7,425**	**10,286**	**11,965**	**12,393**



Region-wise liquid milk marketing (South)

Grand Total

80-81	90-91	00-01	10-11	20-21	22-23	23-24*
2,783	8,046	13,363	21,985	36,470	42,704	43,826

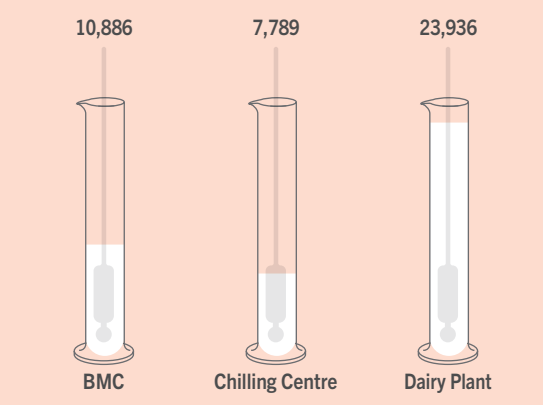
Source: Milk Unions & Federations, NDDB-DS & MDFVPL

Dairy Cooperatives' Cold Chain Infrastructure (capacity)*

(March 2024)^

North

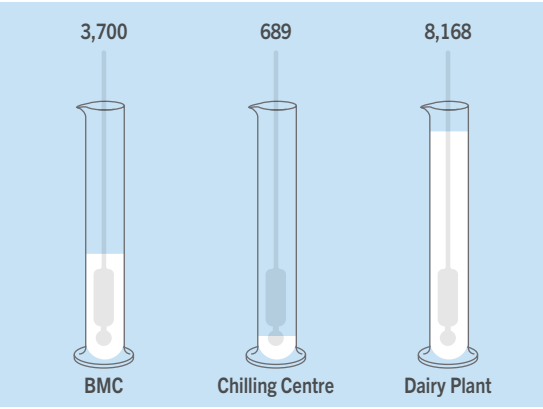
Region/State	BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)
Delhi			1,500
Haryana	489	350	7,525
Himachal Pradesh	174	79	130
Jammu & Kashmir	344		150
Ladakh			5
Punjab	2,736	777	3,810
Rajasthan	4,848	2,001	5,120
Uttar Pradesh	2,218	4,522	5,440
Uttarakhand	77	60	256
Regional Total	**10,886**	**7,789**	**23,936**



Region-wise cold chain capacity (North)

East

Region/State	BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)
Assam	134		150
Bihar	1,908	409	4,320
Jharkhand	325		840
Manipur	15		20
Meghalaya	6		80
Mizoram	12		35
Nagaland	1		10
Odisha	909	110	1,210
Sikkim	84		105
Tripura	19		24
West Bengal	290	170	1,374
Regional Total	**3,700**	**689**	**8,168**



Region-wise cold chain capacity (East)

* Provisional

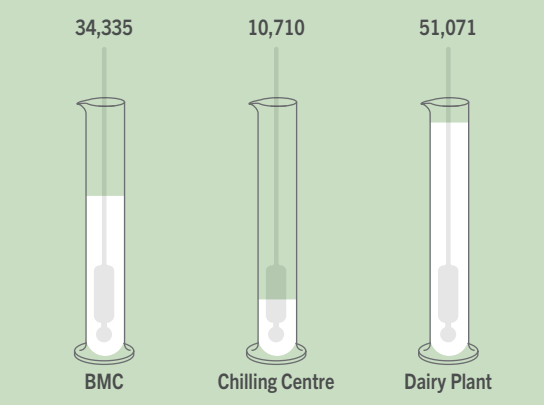
TL: Thousand Litres

TLPD: Thousand Litres Per Day

^ includes infrastructure owned by MPOs & MDFVPL

West

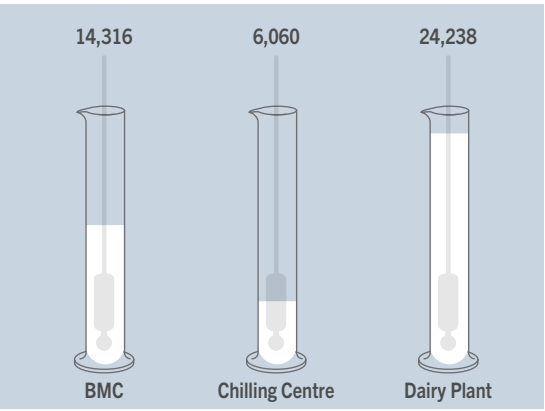
Region/State	BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)
Chhattisgarh	112	75	160
Goa	31		110
Gujarat	29,512	5,100	34,740
Madhya Pradesh	1,773	699	1,896
Maharashtra	2,908	4,836	14,165
Regional Total	**34,335**	**10,710**	**51,071**



Region-wise cold chain capacity (West)

South

Region/State	BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)
Andhra Pradesh	2,323	982	3,805
Karnataka	6,852	3,145	11,200
Kerala	1,723	60	2,950
Tamil Nadu	2,439	1,467	4,613
Telangana	915	406	1,550
Puducherry	65		120
Regional Total	**14,316**	**6,060**	**24,238**



Region-wise cold chain capacity (South)

Grand Total

63,237
BMC (TL)

25,248
Chilling Centre (TLPD)

1,07,413
Dairy Plant (TLPD)

Source: Milk Unions & Federations, NDDB-DS & MDFVPL

VISITORS

During FY 2023-24, NDDB received 2,497 guests from India and abroad.

Shri Giriraj Singh, Hon'ble Minister of Rural Development & Panchayati Raj, Government of India

Dr Bhagwat Kishanrao Karad, Hon'ble Minister of State for Ministry of Finance, Government of India

Smt J. Chinchurani, Hon'ble Minister for Animal Husbandry and Dairy Development, Government of Kerala

Mr Hamish Marr, Special Agriculture Envoy, Mr Hal Sellers, Ministry for Primary Industries and Ms Melanie Phillips Counsellor (Primary Industries), New Zealand High Commission

Padma Shri Phoolbasan Bai Yadav, Indian Social Worker

Ms Alka Upadhyaya, Secretary, Department of Animal Husbandry and Dairying, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India

Mr Ranjit Page, Deputy Chairman & CEO and Mr Chandana Kelegama, Senior Manager, Cargills (Ceylon) PLC, Sri Lanka

Mr Korbinian Maerz, Project Coordinator at DGRV (the German Cooperative Raiffeisen Confederation) and Mr CS Reddy, Founder & CEO of APMAS

Mr Anura Kumara Dissanayake, Leader, Janatha Vimukthi Peramuna, Sri Lanka

Shri Emil Patel, Grandson of Shri Tribhuvandas Patel, ED (IT Infrastructure) - MD Anderson Cancer Centre, USA

VISITORS

Mr Aaraon Kaufer and Mr Alec Ryncavage, Pennsylvania State Representatives and Shri Alpesh Patel, President, Indo American Community of Scranton, Pennsylvania

Mr Earl Rattray, Director, Dairy Link Ltd, New Zealand

Mr Daniel Schmit, Managing Director, Simon Freres SAS, France

Shri Tukaram Mundhe, IAS, Secretary, Animal Husbandry & Dairy Development, Government of Maharashtra

Mr Cassio Simoes, MD, Tetra Pak (South Asian Markets)

Shri Adhar Sinha, Special Chief Secretary, AHD & Fisheries, Government of Telangana & Shri Soma Bharat Kumar, Chairman, Telangana State Dairy Development Cooperative Federation Limited, Telangana

Dr Satish Kumar S, IAS, Managing Director, Madhya Pradesh State Cooperative Federation

Dr S. Vineeth, Managing Director, Tamil Nadu Cooperative Milk Producers Federation Limited (T.C.M.P.F)

Shri Deepak Gupta, IAS (Retd), Director General (DG) of the National Solar Energy Federation of India (NSEFI)

Shri Tsering Angchuk, Dy. Chief Executive Councillor,
Shri Tashi Namgyal, Executive Councillor (AH);
Shri Stanzin Chosphel, Executive Councillor (Cooperative) and
Shri Stanzin Chosfail, Councillor; Ladakh Autonomous Hill Development Council, Leh

MKPS & Associates
Chartered Accountants

Independent Auditor's Report

To
The Board of Directors of
National Dairy Development Board

Report on the audit of the Financial Statements

Opinion

1. We have audited the accompanying financial statements of National Dairy Development Board ('NDDB'), which comprise the balance sheet as at 31 March 2024, Income and Expenditure account and the Cash Flow Statement for the year then ended, and notes to the Financial Statements, including a summary of significant accounting policies and other explanatory information ('Financial Statements').

2. In our opinion and to the best of our information and according to the explanations given to us, the aforesaid Financial Statements give the information required by National Dairy Development Board Act, 1987 ('the Act') read with National Dairy Development Board (Administration of Funds, Accounts and Budget) Regulations, 1988 ('the Regulation') and exhibit a true and fair view, in conformity with the Accounting Standards notified by the Institute of Chartered Accountants of India ('ICAI') and accounting principles generally accepted in India, of the state of affairs of the NDDB as at 31 March 2024, its surplus and its cash flows for the year then ended.

Basis for Opinion

3. We conducted our audit in accordance with the Standards on Auditing ('SAs') issued by the ICAI. Our responsibilities under those SAs are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the NDDB in accordance with the Code of Ethics issued by the Institute of Chartered Accountants of India ('ICAI') together with the ethical requirements that are relevant to our audit of the Financial Statements under the provisions of the Regulation, and we have fulfilled our other ethical responsibilities in accordance with these requirements and the Code of Ethics. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion on the Financial Statements.

Other Information

4. The NDDB's Management and Board of Directors are responsible for the other information. The other information comprises the information included in the Report of Board of Directors and such other disclosures included in NDDB's annual report but does not include the Financial Statements and our auditors' report thereon. The Other Information is expected to be made available to us after the date of this auditor's report.

5. Our opinion on the Financial Statements does not cover the other information and we do not express any form of assurance or conclusion thereon.

B-301, Western Edge II, Off Western Express Highway,
Borivali (E), Mumbai - 400066, India.

Website: www.mkps.in | Email: mumbai@mkps.in | Board Line : +91 22 35 402 661/579

6. In connection with our audit of the Financial Statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the Financial Statements, or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

Management's responsibility for the Financial Statements

7. Management and the Board of Directors of NDDB are responsible for the preparation of the Financial Statements in accordance with the Regulation, that give a true and fair view of the financial position, financial performance, and cash flows of NDDB. This responsibility also includes maintenance of adequate accounting records for safeguarding the assets of the NDDB and for preventing and detecting frauds and other irregularities; selection and application of appropriate accounting policies, making judgments and estimates that are reasonable and prudent, design, implementation and maintenance of adequate internal financial controls, that were operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the Financial Statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

8. In preparing the Financial Statements, the Management and Board of Directors are also responsible for assessing NDDB's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless Management either intends to liquidate NDDB or to cease operations, or has no realistic alternative but to do so.

9. The Board of Directors are also responsible for overseeing NDDB's financial reporting process.

Auditor's Responsibility for the Audit of the Financial Statements

10. Our objectives are to obtain reasonable assurance about whether the Financial Statements, as a whole, are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with SAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these Financial Statements.

11. As part of an audit in accordance with SAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

    11.1 Identify and assess the risks of material misstatement of the Financial Statements, whether due to fraud or error, to design and perform audit procedures responsive to those risks and obtain audit evidence for material items that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls.

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11.2 Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the NDDB's internal control.

11.3 Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by Management.

11.4 Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the NDDB's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the Financial Statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the NDDB to cease to continue as a going concern.

11.5 Evaluate the overall presentation, structure and content of the Financial Statements, including the disclosures and whether the Financial Statements represent the underlying transactions and events in a manner that achieves fair presentation.

11.6 Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

11.7 We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

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Report on Other Legal and Regulatory Requirements

12. The Balance Sheet and the Income and Expenditure Account of NDDB have been drawn up as per Schedule 'I' and Schedule 'II' of Chapter II of the Regulation.

    As required by the provisions of the Regulation made thereunder, we further report that:

    12.1 We have sought and obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit.

    12.2 The transactions of NDDB, which have come to our notice in course of our audit, have been within the powers of the NDDB.

    12.3 In our opinion, the Financial Statement dealt with by this report are in agreement with the books of accounts.

    12.4 In our opinion, the Financial Statements comply with the applicable accounting standards.

For MKPS & Associates
Chartered Accountants
Firm Registration Number: 302014E

Vasudev Sunderdas Matta
Partner
ICAI Membership No: 046953
UDIN: 24046953BKEZKH7162

Place: Mumbai
Date: 16th August 2024

B-301, Western Edge II, Off Western Express Highway,
Borivali (E), Mumbai - 400066, India.

Website: www.mkps.in | Email: mumbai@mkps.in | Board Line : +91 22 35 402 661/579

Balance Sheet

AS AT 31ST MARCH, 2024

₹ in million

PARTICULARS	ANNEXURE	31.03.2024	31.03.2023
LIABILITIES			
NDDB Funds	I	32,972.74	32,763.64
Secured Loans	II	17,880.66	23,158.99
Current Liabilities and Provisions	III	8,398.50	7,641.85
Deferred Tax Liability	XVI (Note 8)	284.23	279.69
Total		**59,536.13**	**63,844.17**
ASSETS			
Cash and Bank Balances	IV	6,942.43	15,207.92
Inventories	V	0.21	0.31
Sundry Debtors		236.40	182.88
Loans, Advances and Other Current Assets	VI	31,562.04	24,450.34
Investments	VII	19,130.39	22,269.11
Property, Plant and Equipment	VIII	1,664.66	1,733.61
Total		**59,536.13**	**63,844.17**
Significant Accounting Policies forming part of Financial Statements	XV		
Notes to Accounts forming part of Financial Statements	XVI		

In terms of our report of even date attached.

For MKPS & Associates
Chartered Accountants
Firm Reg No. 302014E

Vasudev Sunderdas Matta
Partner
Membership No. 046953

Place: Mumbai
Date: 16th August 2024

For and on behalf of the Board,

Meenesh C Shah
Chairman & Managing Director

S Regupathi
Executive Director (Operations)

Amit Goel
Group Head (Accounts)

Place: Anand
Date: 16th August 2024

NATIONAL DAIRY DEVELOPMENT BOARD ("NDDB" or "the Board")
(A Body corporate constituted under the National Dairy Development Board Act, 1987)

Income and Expenditure Account

FOR THE YEAR ENDED 31ST MARCH, 2024

₹ in million

PARTICULARS	ANNEXURE	2023-24	2022-23
INCOME			
Interest		3,351.74	2,682.90
Service Charges	IX	382.17	321.94
Rent and Hire Charges		257.72	236.69
Dividend		169.84	347.05
Other Income	X	109.82	671.25
Total (A)		**4,271.29**	**4,259.83**
EXPENDITURE			
Interest and Financial Charges		1,127.38	710.37
Remuneration and Benefits to Employees	XI	1,248.00	1,081.59
Administrative Expenses	XII	203.89	195.78
Grants		161.80	325.66
Research and Development		83.96	123.58
Maintenance of Assets	XIII	276.53	233.83
Training Expenses		53.55	236.50
Computer Expenses		57.03	22.46
Other Expenses	XIV	274.83	94.88
Provision for Standard Asset, NPA and Contingency		200.00	300.00
Depreciation	VIII	165.72	193.57
Total (B)		**3,852.69**	**3,518.22**
Surplus during the year before tax (C) = (A - B)		**418.60**	**741.61**
Less: Provision for Taxation			
Current Tax		193.10	226.22
Deferred Tax	XVI (Note 8)	4.54	23.28
Surplus during the year after tax		**220.97**	**492.11**
Less: Appropriations to -			
Special Reserve	XVI (Note 13)	137.90	29.92
Balance carried to General Funds		83.07	462.19
Total (D) = (B + C)		**4,271.29**	**4,259.83**
Significant Accounting Policies forming part of Financial Statements	XV		
Notes to Accounts forming part of Financial Statements	XVI		

In terms of our report of even date attached.

For MKPS & Associates
Chartered Accountants
Firm Reg No. 302014E

Vasudev Sunderdas Matta
Partner
Membership No. 046953

Place: Mumbai
Date: 16th August 2024

For and on behalf of the Board,

Meenesh C Shah
Chairman & Managing Director

S Regupathi
Executive Director (Operations)

Amit Goel
Group Head (Accounts)

Place: Anand
Date: 16th August 2024

Cash Flow Statement

FOR THE YEAR ENDED ON 31ST MARCH, 2024

₹ in million

PARTICULARS	ANNEXURE	2023-24		2022-23	
Cash Flow From Operating Activities					
Surplus during the year before tax			**418.60**		**741.61**
Adjustments for:					
Depreciation		165.72		193.57	
Provision for Standard Asset, NPA and Contingency		200.00		300.00	
(Profit)/Loss on Sale of Investments		124.41		(10.61)	
Interest Income on Fixed Deposit and Bonds Considered Separaterly		(1,789.89)		(1,850.24)	
Dividend Income considered separaterly		(169.84)		(347.05)	
(Profit)/Loss on Sale of Fixed Assets Considered Separately		(0.37)		(148.57)	
Recoupment of Depreciation of Grant Assets		(15.41)		(17.10)	
Employee Retirement Benefit		146.63		34.97	
Interest and Financial Charges to Banks		138.37		60.77	
Premium Amortised on Bonds and State Development Loans		42.42	(1,157.96)	44.82	(1,739.44)
			(739.34)		**(997.83)**
Operating Cash Flow Before Changes in Working Capital					
(Increase)/ Decrease in Inventories		0.10		0.25	
(Increase)/ Decrease in Sundry Debtors		(53.52)		(65.39)	
(Increase)/ Decrease in Loans and Advances		(7,247.70)		(9,400.98)	
Increase/(Decrease) in Current Liabilities		410.01	(6,891.11)	(2,926.10)	(12,392.20)
Cash Flow Generated From /(Used In) Operating Activities			**(7,630.45)**		**(13,390.03)**
Tax Refunded / (Paid)			(287.17)		(193.56)
Net Cash Flow Generated From /(Used In) Operating Activities (A)			**(7,917.62)**		**(13,583.59)**
Cash Flow From Investing Activities					
Interest Income		2,019.95		1,814.98	
Dividend Income		169.84		347.05	
Proceeds from Maturity / sale of Investments (Bonds)		3,002.09		250.00	
Purchase of Investments (Shares)		(30.20)		(915.00)	
Purchase of Investments (Bonds and State Development Loans)		-		(324.51)	
Decrease / (Increase) in FDR's with banks more than 90 days (net)		3,486.19		4,099.00	
Proceeds From Sale of Fixed Assets		91.42		193.46	
Grant Received For Purchase of Fixed Asset/(Grant Refunded)		3.54		0.14	
Purchase of Fixed Assets		(187.81)		(237.58)	
Net Cash Flow Generated From /(Used In) Investing Activities (B)			**8,555.02**		**5,227.54**
Cash Flow From Financing Activities					
Proceeds / (Repayment) of Borrowed Funds			(5,278.33)		13,270.96
Interest and Financial Charges to Banks			(138.37)		(60.77)
Net Cash Flow From Financing Activities (C)			**(5,416.70)**		**13,210.19**
Net Cash Flow during the year (A+B+C)			**(4,779.30)**		**4,854.12**
Cash and Cash Equivalents at the beginning of the year			**7,131.17**		**2,277.05**
Cash and Cash Equivalents at the end of the year			**2,351.87**		**7,131.17**
Cash and Cash Equivalents					
Balances with Banks:					
In Fixed Deposits			4,734.18		12,816.56
Less: Deposits with original maturity more than 90 days			4,590.56		8,076.75
			143.62		**4,739.81**
In Current/Saving Accounts			2,208.22		2,391.33
Cash and Cheques on hand			0.03		0.03
Total			**2,351.87**		**7,131.17**
Significant Accounting Policies forming part of Financial Statements	**XV**				
Notes to Accounts forming part of Financial Statements	**XVI**				

Note: Cash Flow Statement has been prepared under the "Indirect Method" as set out in Accounting Standard-3 on Cash Flow Statements.

In terms of our report of even date attached.

For MKPS & Associates
Chartered Accountants
Firm Reg No. 302014E

Vasudev Sunderdas Matta
Partner
Membership No. 046953

Place: Mumbai
Date: 16th August 2024

For and on behalf of the Board,

Meenesh C Shah
Chairman & Managing Director

S Regupathi
Executive Director (Operations)

Amit Goel
Group Head (Accounts)

Place: Anand
Date: 16th August 2024

NDDB Funds

ANNEXURE - I

₹ in million

PARTICULARS		31.03.2024		31.03.2023
General Reserve (Note a)				
Balance as per last balance sheet		3,559.61		3,559.61
Grant for Fixed Assets (Note b)				
Balance as per last balance sheet	39.44		56.40	
Add: Grant received during the year	3.54		0.14	
Less: Recoupment of depreciation	15.41		17.10	
		27.57		39.44
Special Reserve under section 36 (1) (viii) of the Income Tax Act, 1961 (Refer Note 13 of Annexure XVI)				
Balance as per last balance sheet	1,624.24		1,594.32	
Add: Transfer from Income and Expenditure Account	137.90		29.92	
		1,762.14		1,624.24
Income and Expenditure Account				
Balance as per last balance sheet	27,540.35		27,078.16	
Add: Surplus after appropriation during the year	83.07		462.19	
		27,623.41		27,540.35
Total		**32,972.74**		**32,763.64**

Notes:

a. To promote, plan and organise programmes for development of dairy and other agriculture based and allied industries and biologicals as per the NDDB Act, 1987.

b. In accordance with Accounting Standard - 12 - 'Accounting for Government Grants'

Secured Loans

ANNEXURE - II

₹ in million

PARTICULARS	31.03.2024	31.03.2023
Bank Overdraft (Secured against lien on fixed deposits with Banks)	1,316.65	8,256.02
Loan from NABARD (Secured against loan given under DIDF scheme)	14,988.26	14,902.65
Loan for "Dairying through Cooperatives (DTC)" (JICA assisted project) Component-B of NPDD Scheme	1,573.10	-
Interest Accrued on Borrowed Loan {DIDF and "Dairying through Cooperatives (DTC)" (JICA assisted project) Component-B of NPDD Scheme}	2.65	0.32
Total	**17,880.66**	**23,158.99**

Current Liabilities and Provisions

ANNEXURE - III

₹ in million

PARTICULARS		31.03.2024		31.03.2023	
a)	**Current Liabilities**				
	Advances and Deposits		76.76		60.49
	Sundry Creditors (Refer Note 10 of Annexure XVI)		162.29		159.97
	Other Liabilities		116.63		152.72
	Net liability on account of Consultancy Project				
	Funds received	17,772.40		20,374.42	
	Add: Due to suppliers for expenses	1,084.62		913.29	
		18,857.02		21,287.71	
	Less: Expenditure incurred	15,738.83		18,953.31	
	Advance to suppliers	216.06		420.66	
		2,902.13		1,913.74	
	Add: Payable to NDDB	321.16		41.97	
	(Per contra, Refer Annexure VI)		3,223.29		1,955.71
b)	**Fund received for Government of India Projects**				
	Balance as per last balance sheet	2,746.89		4,179.02	
	Fund received from Govt of India	4,439.84		2,049.46	
	Add: Interest income accrued/(Expense)	4.44		(19.13)	
	Less: Expenditure incurred	3,802.99		2,926.91	
	Less: Advance to End Implementing Agencies	1,400.27		535.42	
	Less:NDLM contribution transfer to Grant	3.54		0.14	
			1,984.37		2,746.89
c)	**Provisions for:**				
	Non-performing assets (Refer Note 9 of Annexure XVI)	582.08		559.34	
	General contingency on Standard Assets (Refer Note 9 of Annexure XVI)	122.57		93.67	
	Contingency (Refer Note 9 of Annexure XVI)	1,903.61		1,755.25	
			2,608.26		2,408.26
d)	**Provisions for:**				
	Leave encashment (Refer Note 5 of Annexure XVI)	113.67		48.35	
	Post retirement medical scheme (Refer Note 5 of Annexure XVI)	113.23		109.45	
	VRS monthly benefits	-		0.02	
			226.91		157.82
Total			**8,398.50**		**7,641.85**

Cash and Bank Balances

ANNEXURE - IV

₹ in million

PARTICULARS	31.03.2024		31.03.2023	
Balances with Banks				
In fixed deposits (Refer Note a to e below)	4,734.18		12,816.56	
In saving account (Refer Note f below)	2,082.12		2,343.59	
In current account (Refer Note g below)	126.10		47.74	
		6,942.40		15,207.89
Cash and cheques on hand		0.03		0.03
Total		**6,942.43**		**15,207.92**

Note: Fixed deposits includes

a. ₹ 3,170 million (Previous Year ₹ 10,771.28 million) placed with Banks which are under lien for the overdraft facility.

b. ₹ 900.01 million (Previous Year ₹ 1,000.01 million) which are under lien in favour of NABARD for the DSRA account opened for loans availed under DIDF scheme.

c. ₹ 0.05 million (Previous Year ₹ 0.05 million) for bank guarantee margin money.

d. ₹ 350.41 million (Previous Year ₹ 376.31 million) of fund received for Government of India projects.

e. ₹ 313.22 million (Previous Year ₹ 468.9 million) being NDDB share in NDLM project earmarked for NDLM project.

f. ₹ 2,178.02 million(Previous year ₹ 2,343.59 million) of fund received for Government of India projects

g. Current accounts includes ₹ 16.53 million (Previous Year ₹ 23.19 million) of fund received for Government of India projects.

Inventories

ANNEXURE - V

₹ in million

PARTICULARS	31.03.2024		31.03.2023	
Stores, spares and others	1.36		1.43	
Project equipments	3.16		3.19	
	4.52		**4.62**	
Less: Provision for obsolescence	4.31		4.31	
		0.21		0.31
Total		**0.21**		**0.31**

Loans, Advances and Other Current Assets

ANNEXURE - VI

₹ in million

PARTICULARS		31.03.2024		31.03.2023	
Loans to cooperatives					
Milk -	Secured (Refer Note a & b below)	26,539.96		18,972.57	
	Unsecured	3.22		684.43	
			26,543.18		19,657.00
Oil -	Secured	80.00		80.00	
	Unsecured (including interest accrued)	578.57	658.57	578.57	658.57
Loans and advances to subsidiary companies / managed units					
Secured (Refer Note a & b below)		1,811.35		1,795.07	
Unsecured.		606.49		662.98	
			2,417.84		2,458.05
Loans to employees					
Secured		0.09		0.13	
Unsecured		6.31		6.55	
			6.40		6.68
Interest accrued on -					
Loans and advances		59.52		3.14	
Fixed deposits and investments		441.28		671.35	
			500.80		674.49
Advances to suppliers and contractors			9.42		40.15
Recoverable on account of turnkey projects			321.16		41.97
(Per contra, Refer Annexure III)					
Sundry deposits			17.65		18.20
Income Taxes paid (net of provisions) (Refer Note c below)			827.45		733.39
Prepaid Gratuity (Refer Note 5 of Annexure XVI)			39.25		52.39
Other receivables (Refer Note d below)			220.32		109.45
Total			**31,562.04**		**24,450.34**

Notes:

a. Secured loans are secured against the mortgage of assets and/or hypothecation of stocks/assets.

b. Secured loans includes ₹ 23,575.75 million (Previous Year ₹ 16,775.18 million) given under DIDF scheme.

c. Provision of tax netted off ₹ 2,440.31 million (Previous Year ₹ 2,247.21 million)

d. Other receivables include grants amounting to ₹ 14.72 million (Previous year ₹ 26.01 million) awaiting FUCs

Investments

ANNEXURE - VII

₹ in million

PARTICULARS		31.03.2024		31.03.2023
Long term investments (at cost):				
Equity Shares (unquoted) in subsidiary companies:				
Mother Dairy Fruit and Vegetable Private Limited (MDFVPL)	2,500.00		2,500.00	
IDMC Limited (IDMC)	283.90		283.90	
Indian Immunologicals Limited (IIL)	90.00		90.00	
NDDB Dairy Services (NDS)	2,000.00		2,000.00	
NDDB Mrida Limited	95.00		95.00	
NDDB CALF Limited	750.00		750.00	
		5,718.90		5,718.90
Equity Share (unquoted) in Joint Venture:				
North East Dairy and Foods Limited (Refer Note a below)		50.00		50.00
Bonds (quoted) of Government companies, financial institutions and banks (at cost net of amortised premium)		8,306.99		10,858.22
(aggregate market value of bonds is ₹ 8,441.07 million (Previous Year ₹ 10,924.46 million) as at the balance sheet date)				
State Development Loans (quoted) (at cost net of amortised premium)		4,985.40		5,603.09
(aggregate market value of State Development Loans is ₹ 4,957.73 million (Previous Year ₹ 5,557.73 million) as at the balance sheet date)				
Shares (unquoted) in Co-operatives and Federations	69.20		39.00	
Less: Provision for diminution in value of investments	0.10		0.10	
		69.10		38.90
Total		**19,130.39**		**22,269.11**

Details of Investment in Subsidiaries

NAME OF SUBSIDIARY	31.03.2024		31.03.2023	
	Number of Shares	Face Value (Per Share)	Number of Shares	Face Value (Per Share)
Mother Dairy Fruit and Vegetable Private Limited (MDFVPL)	250,000,070	10.00	250,000,070	10.00
IDMC Limited (IDMC)	12,144,544	10.00	12,144,544	10.00
Indian Immunologicals Limited (IIL) (Refer Note b below)	54,000,042	10.00	54,000,042	10.00
NDDB Dairy Services (NDS)	200,000,000	10.00	200,000,000	10.00
NDDB Mrida Limited	9,500,000	10.00	9,500,000	10.00
NDDB CALF Limited	75,000,000	10.00	75,000,000	10.00
	600,644,656		**600,644,656**	

Notes:

a. Joint venture company incorporated between NDDB and Government of Assam (GoA).

b. Including 4,50,00,035 bonus shares of face value of ₹ 10 each issued by Indian Immunologicals Limited(IIL).

Property, Plant and Equipment

ANNEXURE - VIII

₹ in million

PARTICULARS	Gross Block (at Cost)				Depreciation				Net Block	
	As at 01.04.2023	Addition	Deduction/ (Adjustment)	As at 31.03.2024	As at 01.04.2023	For the Year	Deduction/ (Adjustment)	As at 31.03.2024	As at 31.03.2024	As at 31.03.2023
Freehold Land (Refer Note 1 to 3)	412.49	-	-	412.49	-	-	-	-	412.49	412.49
Leasehold Land	64.16	-	-	64.16	16.07	0.75	-	16.82	47.34	48.09
Buildings and Roads	2,022.54	49.70	0.09	2,072.15	1,282.74	59.48	0.05	1,342.17	729.98	739.80
Plant and Machinery	11.08	4.26	4.49	10.85	10.92	0.56	4.47	7.01	3.84	0.16
Electrical Installations	192.12	16.04	15.03	193.13	150.16	9.19	12.03	147.32	45.81	41.96
Furniture, Computers and Others Equipments	1,154.56	73.95	307.90	920.61	945.95	59.84	220.79	785.00	135.61	191.95
Sotware Licence	277.05	3.02	2.77	277.30	258.98	12.97	2.77	269.18	8.12	34.72
Rail Milk Tankers	375.64	-	-	375.64	270.11	19.58	-	289.69	85.95	105.53
Vehicles	25.89	8.17	1.10	32.96	20.15	3.35	0.22	23.28	9.68	5.74
Total	**4,535.53**	**155.14**	**331.38**	**4,359.29**	**2,955.08**	**165.72**	**240.33**	**2,880.47**	**1,478.82**	**1,580.44**
Previous Year	***4,525.52***	***119.81***	***109.80***	***4,535.53***	***2,826.43***	***193.57***	***64.91***	***2,955.09***	***1,580.44***	***1,699.09***
Capital Work in Progress including Capital Advances									**185.84**	**153.17**
Total Fixed Assets									**1,664.66**	**1,733.61**

Notes:

1. Land for FMD Control Project amounting to ₹ 0.39 million is obtained from Government of Tamil Nadu by alienation.
2. Freehold land includes land for Oil Tank Farm, Narela amounting to ₹ 17.94 million which has been obtained on perpetual lease for which lease deeds are yet to be executed.
3. Land amounting to ₹ 65.98 million at Kannamangala Horticulture Farm received from Agriculture and Horticulture Department, Government of Karnataka is in the name of the subsidiary company Mother Dairy Fruit and Vegetable Private Limited and transfer of title is pending.
4. During the FY 2023-24 movable assets worth ₹ 90.90 millions were transferred to wholly owned subsidiary company NDDB CALF Limited

Service Charges

ANNEXURE - IX

₹ in million

PARTICULARS	2023-24	2022-23
Training fees	22.71	20.11
Procurement and technical service fees	325.46	164.39
Testing charges	5.23	117.82
Fees from consultancy and feasibility studies	27.58	17.75
Royalty and process knowhow fees	1.19	1.87
Total	**382.17**	**321.94**

Other Income

ANNEXURE - X

₹ in million

PARTICULARS	2023-24	2022-23
Profit on sale of fixed assets (net)	0.37	148.57
Profit on sale of investments	-	10.61
Other interest income	40.98	38.34
Excess provision and NPAs written back	0.15	74.81
Recoupment of depreciation of grant assets	15.41	17.10
Sale of milk	2.47	2.02
Miscellaneous income	50.44	379.80
Total	**109.82**	**671.25**

Remuneration and Benefits to Employees

ANNEXURE - XI

₹ in million

PARTICULARS	2023-24	2022-23
Salaries and Wages (including ex-gratia)	944.91	841.77
Contribution to Provident, Superannuation fund and Gratuity	191.36	145.93
Staff welfare expenses	111.73	93.89
Total	**1,248.00**	**1,081.59**

Remuneration excludes ₹ 36.50 million (Previous Year: ₹ 35.58 million) shown as part of Research and Development expenses.

Administrative Expenses

ANNEXURE - XII

₹ in million

PARTICULARS	2023-24	2022-23
Printing and stationery	6.13	5.44
Communication charges	11.60	9.77
Audit fees and expenses (including taxes)		
Audit fees	0.76	1.09
Income Tax audit	0.22	0.33
Out of pocket expenses	0.05	0.02
	1.03	1.44
Legal fees	7.47	5.21
Professional fees	33.91	32.09
Vehicle expenses	4.99	4.45
Recruitment expenses	0.15	0.44
Advertisement expenses	5.46	10.94
Travelling and conveyance expenses	94.90	87.87
Electricity and rent	33.33	33.18
Other administrative expenses	4.92	4.95
Total	**203.89**	**195.78**

Maintenance of Assets

ANNEXURE - XIII

₹ in million

PARTICULARS	2023-24	2022-23
Repairs and maintenance		
Buildings	193.44	144.17
Others	69.89	73.31
Rates and taxes	10.51	13.34
Insurance	2.69	3.01
Total	**276.53**	**233.83**

Other Expense

ANNEXURE - XIV

₹ in million

PARTICULARS	2023-24	2022-23
Premium amortisation	42.42	44.82
Prior period expenditure	0.69	0.15
Loss on Sale of Investment	124.41	-
Other expenses	107.31	49.91
Total	**274.83**	**94.88**

Significant Accounting Policies forming part of financial Statement

ANNEXURE - XV

1. Basis of preparation

The financial statements are prepared on accrual basis, using the historical cost convention and Generally Accepted Accounting Principles ("GAAP") in India including accounting standards issued by the Institute of Chartered Accountants of India, as applicable to the Board. The financial statements are presented in Indian Rupees rounded off to the nearest million, unless otherwise stated.

2. Use of Estimates

The preparation of financial statements in conformity with the GAAP requires the management to make estimates and assumptions that affect the reported amounts of assets and liabilities, revenues and expenses and the disclosure of contingent liabilities as at the date of the financial statements. Such estimates and assumptions are based on the Management's evaluation of relevant facts and circumstances as on the date of the financial statements. Management believes that the estimates used in the preparation of the financial statements are prudent and reasonable; however the actual outcome may diverge from this estimate which is recognized prospectively in the current and future periods. Any changes in such estimates are recognized prospectively in current and future period.

3. Asset Classification and Provisioning

NDDB being a Public Financial Institution follows the guidelines of Reserve Bank of India (RBI) for asset classification applicable to "Systemically Important Non-Deposit taking Company and Deposit taking Company (Reserve Bank) Directions, 2016". Provision for Non-Performing and Standard Assets is made at the rates approved by the Board.

4. Revenue Recognition

Interest income on standard assets in accordance with the RBI guidelines is recognized on an accrual basis. Interest income from non-performing assets classified in conformity with the guidelines is accounted on cash basis upon realisation.

Interest income on fixed deposits with Bank and investment in Bonds is recognized on a time proportionate basis.

Income from Services to co-operatives etc. is recognized on proportionate completion basis and in accordance with the terms of relevant agreement.

Sale of milk commodities is accounted for on transfer of substantial risk and rewards, which is on dispatch of the commodities from the warehouse.

Dividend income is accounted for when unconditional right to receive income is established.

Other income is recognized when there is no uncertainty as to its ultimate collectability.

5. Grants

a. Grants relating to fixed assets are initially credited to Grant for Fixed Assets under the General Fund. This amount is recognized in the Income and Expenditure Account on a systematic basis over the useful life of such fixed asset as a recoupment of depreciation on such assets.

b. Revenue grants received during the year are recognized in the Income and Expenditure Account.

c. Grants received for specific projects are credited to the Project Funds and is utilized by disbursements for these projects.

6. Research and Development Expenditure

Research and Development Expenditure (other than cost of fixed assets acquired) are charged as expenses in the year in which they are incurred. Fixed assets used for the Research and Development purpose with alternate use is depreciated over its useful life based on the Board's policy.

Significant Accounting Policies forming part of financial Statement

ANNEXURE - XV

7. Employee Benefits

a. Defined Contribution Plan: Contribution to Provident Fund and Superannuation Fund is made at a predetermined rate and is charged to Income and Expenditure account. Shortfall if any, between the rate prescribed by the Employees' Provident Fund Organisation and actual earnings of National Dairy Development Board Staff Provident Fund Scheme, is contributed by the Board as debit to Income & Expenditure account.

b. Defined Benefit Plans: The Board's liabilities towards gratuity, compensated absences and post-retirement medical benefit schemes are determined using the projected unit credit method which considers each period of service giving rise to an additional unit of benefit entitlement and measures each unit separately to build up final obligation. Actuarial gains and losses based on actuarial valuation done by the independent actuary carried out annually are recognized immediately in the Income and Expenditure account as income or expense. Obligation is measured at the present value of estimated future cash flows using a discounted rate that is determined by reference to the market yields at the Balance sheet date on the Government bonds where the currency and terms of Governments bonds are consistent with the currency and estimated terms of defined benefit obligation.

Compensated absences: The Board has a scheme for compensated absences benefit for employees, the liability for which is determined on the basis of an actuarial valuation carried out at the end of the year.

The Board has funded its liability towards gratuity by participating in Group Gratuity cum Life Assurance Scheme of Life Insurance Corporation of India.

8. Property, Plant & Equipment (PPE) and Depreciation

Tangible fixed assets are carried at cost less depreciation and impairment loss. Cost comprises of purchase price, import duties and other non-refundable taxes or levies and any directly attributable costs to bring the asset ready for its intended use.

Depreciation on PPE costing more than ₹ 10,000 each is charged on Straight Line Method basis at the rates fixed by the Board. Depreciation is charged for the full year in the year of capitalization and no depreciation is charged in the year of disposal. Each asset costing ₹ 10,000 or less is depreciated at 100 percent in the year of purchase. Depreciation rates, as approved by the Board, for various classes of assets are as under:

ASSETS	Rate (in %)
Factory buildings, Godown and Roads	4.00
Other buildings	2.50
Cold storage	15.00
Electrical installation	5.00
Computers (including software)	33.33
Office and Lab equipment	15.00
Plant and machinery	10.00
Solar equipment	30.00
Furniture	10.00
Vehicles	20.00
Rail milk tankers	10.00

Significant Accounting Policies forming part of financial Statement

ANNEXURE - XV

Leasehold Land is amortized over the duration of lease. Depreciation on the assets located on leasehold land shall be at lower of lease duration or useful life of that asset.

Capital assets under installation / construction are stated in Balance Sheet as "Capital Work in Progress".

9. Impairment of Assets

The carrying value of assets at each Balance Sheet date is reviewed for impairment of assets. If any indication of such impairment exists, the recoverable amount of such asset is estimated and impairment is recognized, if the carrying amount of these assets exceeds the recoverable amount. The recoverable amount is greater of net selling price and their value in use. Value in use is arrived at by discounting their future cash flows to their present value based on appropriate discount factor. When there is indication that an impairment loss recognized for an asset in prior accounting periods no longer exists or may have decreased, such reversal of impairment loss is recognized in Income and Expenditure Account.

10. Investments

Long-term investments are valued as under:

a) Shares in Subsidiaries, Co-operatives and Federations – at cost of acquisition;

b) Debentures / bonds in Government Companies, Financial Institutions and Banks / State Development Loans - at cost of acquisition net of amortised premium, if any.

Current investments are valued at lower of cost or market value.

Long term Investments are valued at cost. In case cost price is higher than the face value, the premium is amortised over the remaining period of maturity of the underlying security. Such investments are stated in balance sheet at acquisition price less amortised premium.

Provision for any diminution other than temporary in value of investments is made in the year in which such diminution is assessed.

11. Inventories

Inventories including stores and project equipment are valued at cost or net realizable value whichever is lower, cost being worked out on first-in-first-out basis. Provision for obsolescence is made, wherever necessary.

12. Foreign Currency Transactions

Transactions in foreign currencies are recorded at the exchange rate prevailing on the date of the transactions.

Monetary items denominated in foreign currency and outstanding at the Balance Sheet date are translated at the exchange rate prevailing at the year-end. Non-monetary items are carried at historical cost.

Exchange differences arising on foreign currency transactions are recognised as income or expense in the period in which they arise.

13. Accounting for Voluntary Retirement scheme

The cost of voluntary retirement scheme including ex-gratia is charged to the Income and Expenditure Account in the period of separation of employees. A provision for Monthly Benefit Scheme is made for the employees opting for the voluntary retirement scheme in the period of separation of employees and the same is adjusted against the payments made.

Significant Accounting Policies forming part of financial Statement

ANNEXURE - XV

14. Taxes on Income

Current tax is the amount payable on the taxable income for the year as determined in accordance with the provisions of the Income Tax Act, 1961.

Deferred Tax is recognized on timing differences, being the differences between the taxable income and the accounting income that originate in one period and are capable of reversal in one or more subsequent periods.

Deferred Tax Assets in respect of unabsorbed depreciation and carry forward losses are recognized if there is a virtual certainty that there will be sufficient future taxable income available to set-off such tax losses. Other deferred tax assets are recognized when there is reasonable certainty that there will be sufficient future taxable income to realize such assets.

15. Leases

Lease arrangements where the risks and rewards incidental to ownership of an asset vest substantially with the lessor are recognized as operating leases. Lease rent under operating leases are recognized in the Income & Expenditure Account with reference to lease terms.

16. Provisions and Contingencies

A provision is recognized when the Board has a present obligation as a result of past events and it is probable that an outflow of resources will be required to settle the obligation, in respect of which a reliable estimate can be made. Provisions (excluding retirement benefits) are not discounted to their present value and are determined based on the estimate required to settle the obligation at the Balance Sheet date. These are reviewed at each Balance Sheet date and are adjusted to reflect the current best estimates. Contingent liabilities are disclosed in Notes to Accounts.

The Board created provisions in respect of loans and other assets prior to the year 2001-02. Based on the movement in underlying assets for which such provision was created, Board reallocates / write back, such provisions based on identified events. Accordingly, the Board creates additional provision or makes allocation of exiting contingency provision for possible diminution in value of its asset or for unforeseen events leading to such liability.

Notes to Accounts forming part of the Financial Statement

ANNEXURE - XVI

1 At the request of the concerned authorities, the NDDB has been managing The West Assam Milk Producers' Co-operative Union Limited., Jharkhand State Cooperative Milk Producers' Federation Limited., Shahjahanpur Mahila Dugdh Utpadak Sahakari Sangh Limited till February 2024, Jilha Dudh Utpadak Sahakari Sangh, Varanasi (Varanasi Milk Union), East Assam Milk Producers' Cooperative Union Limited and Ladakh UT Dairy Co-operative Federation. These are separate and independent entities and their accounts are maintained by the respective authorities and audited separately. Further, as per understanding with the concerned authorities, the Board is liable to bear the net cash loss while handing over the management of the Varanasi Milk Union. Necessary provision for cash losses, if any, shall be made at the time of handing over the management at the end of period of MoU with Varanasi Milk Union.

2 National Digital Livestock Mission (NDLM) is a project under Rastriya Gokul Mission (RGM) as a joint venture (JV) between Department of Animal Husbandry & Dairying (DAHD), Govt. of India (GoI) and National Dairy Development Board (NDDB) and a Special Purpose Vehicle ('SPV') will be formed having 50% equity contribution of (GoI) and NDDB each.

Till the time such SPV is formed, NDLM project revenue and expenditure for (i) NDDB's share is credited/debited respectively to Income & Expenditure Account of NDDB and (ii) for GoI's share, it is adjusted in "Fund received for Government of India projects" of NDDB. As regards NDLM project Capital Expenditure, for (iii) NDDB's share is fully capitalised in the books and depreciation is charged to Income and Expenditure account of NDDB and (iv) for GoI's share, it is transferred to "Grant for fixed assets" and depreciation to that extent is recouped from the same on annual basis. For Capital Work In Progress ('CWIP'), (v) NDDB's share is shown under "CWIP" of NDDB and (vi) of GoI's share, it is shown under the "Fund received for Government of India projects".

3 Contingent Liabilities:

3.1. Principal amount of claims not acknowledged as debt: ₹ 318.74 million (Previous Year: ₹ 132.71 million)

3.2. Guarantees outstanding: ₹ 0.05 million (Previous Year: ₹ 0.05 million)

3.3. Income tax demands (excluding interest and penalty applicable under respective statutory provisions) ₹ 1,185.93 million (Previous Year: ₹ 1,185.93 million)

3.4. Service tax demands ₹ 916.50 million (Previous Year: ₹ 916.50 million)

3.5. Other Demands

₹ in million

PARTICULARS	AUTHORITY	2023-24	2022-23
Settlement of Land dues	Land and Land Reform Department, Siliguri	3.94	3.94
Demand for Municipal Tax for Land at Itola	Taluka Development Officer, Vadodara	4.73	4.73
Property Tax	Brihan Mumbai Mahanagar Palika, Mumbai	0.29	0.19

Demands presented hereinabove at 3.3 to 3.5 have been contested by the Board before appropriate forums. Future cash flows in respect of the same are determinable only on outcome of judgment / decision of the forums where the demands are contested.

4 Segment information:

NDDB is a body corporate constituted under the National Dairy Development Board Act, 1987. As per the objectives set out in the Act, all the activities of NDDB revolve around the Dairy/Agriculture sector which in terms of Accounting Standard-17 on "Segment Reporting" constitute a single reportable segment.

Notes to Accounts forming part of the Financial Statement

ANNEXURE - XVI

5 Disclosure as per Accounting Standard 15 (Revised 2005) regarding Employee Benefits is as under:

Employee benefit plans

Defined Contribution Plans

The Company makes Provident Fund and Superannuation Fund contributions to defined contribution plans for qualifying employees. Under the Schemes, the Company is required to contribute a specified percentage of the payroll costs to fund the benefits. The Company recognised ₹ 81.24 million in the current year and ₹ 76.40 million in the previous year ended 31st March 2023 and ₹ 54.44 million in the current year and ₹ 50.88 million in the previous year ended 31st March 2023 for Superannuation Fund contributions in the Income and Expenditure Account. The contributions payable to these plans by the Company are at rates specified in the rules of the schemes.

Defined Benefit Plans

The Company offers the following employee benefit schemes to its employees:

i. Gratuity

ii. Post-Retirement medical benefits schemes (PRMBS)

iii. Leave Encashment

The following table sets out the funded status of the defined benefit schemes and the amount recognised in the financial statements:

(₹ in million)

PARTICULARS	Year ended 31 March, 2024			Year ended 31 March, 2023		
	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment
Components of employer expense						
Current service cost	36.93	0.92	33.00	36.53	1.08	29.81
Interest cost	38.77	8.21	46.27	35.95	7.75	43.08
Expected return on plan assets	(42.70)	-	(42.64)	(33.09)	-	(36.13)
Actuarial losses/(gains)	26.45	(1.16)	35.64	(20.74)	(4.52)	(30.69)
Total expense recognised in the Statement of Income & Expenditure	**59.45**	**7.97**	**72.27**	**18.65**	**4.31**	**6.07**
Actual contribution and benefit payments for year						
Actual benefit payments	(40.99)	(4.20)	(37.68)	(47.85)	(5.62)	(42.64)
Actual contributions	46.31	-	6.95	111.90	-	56.99
Net asset / (liability) recognised in the Balance Sheet						
Present value of defined benefit obligation	(572.26)	113.23	(688.21)	(516.97)	(109.45)	(616.91)
Fair value of plan assets	611.50	-	574.54	569.36	-	568.56
Net asset / (liability) recognised in the Balance Sheet	**39.25**	**113.23**	**(113.67)**	**52.39**	**(109.45)**	**(48.35)**
Change in defined benefit obligations (DBO) during the year						
Present value of DBO at beginning of the year	516.97	109.45	616.91	513.59	110.75	615.36

Notes to Accounts forming part of the Financial Statement

ANNEXURE - XVI

(₹ in million)

PARTICULARS	Year ended 31 March, 2024			Year ended 31 March, 2023		
	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment
Current service cost	36.93	0.92	33.00	36.53	1.08	29.81
Interest cost	38.77	8.21	46.27	35.95	7.75	43.08
Actuarial (gains) / losses	20.58	(1.16)	29.71	(21.25)	(4.52)	(28.70)
Benefits paid	(40.99)	(4.20)	(37.68)	(47.85)	(5.61)	(42.64)
Present value of DBO at the end of the year	**572.26**	**113.23**	**688.21**	**516.97**	**109.45**	**616.91**
Change in fair value of assets during the year						
Plan assets at beginning of the year	569.36	-	568.56	472.74	-	516.09
Acquisition adjustment	-	-	-	-	-	-
Expected return on plan assets	42.70	-	42.64	33.09	-	36.13
Actual company contributions (Excluding Contribution made by Gratuity Trust and charges deducted by LIC)	46.31	-	6.95	111.90	-	56.99
Actuarial gain / (loss)	(5.87)	-	(5.93)	(0.52)	-	1.99
Benefits paid	(40.99)	-	(37.68)	(47.85)	-	(42.64)
Plan assets at the end of the year	**611.50**	**-**	**574.54**	**569.36**	**-**	**568.56**
Actual return on plan assets	36.83	-	36.71	32.57	-	38.12
Composition of the plan assets is as follows:						
Government bonds	-	-	-	-	-	-
PSU bonds	-	-	-	-	-	-
Equity & Equity related Investments	-	-	-	-	-	-
Others	100%	-	100%	100%	-	100%
Actuarial assumptions						
Discount rate	7.19%	7.19%	7.19%	7.50%	7.50%	7.50%
Expected return on plan assets	7.19%	NA	7.19%	7.50%	NA	7.50%
Salary escalation	8.50%	3.00%	8.50%	8.50%	3.00%	8.50%
Attrition	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Medical cost inflation	NA	5.00%	NA	NA	5.00%	NA
Mortality tables	Indian Assured Lives (2012-14) ultimate Mortality Rates	Indian Assured Lives (2012-14) ultimate Mortality Rates	Indian Assured Lives (2012-14) ultimate Mortality Rates	Indian Assured Lives (2012-14) ultimate Mortality Rates	Indian Assured Lives (2012-14) ultimate Mortality Rates	Indian Assured Lives (2012-14) ultimate Mortality Rates

Notes to Accounts forming part of the Financial Statement

ANNEXURE - XVI

Experience adjustments

(₹ in million)

PARTICULARS	2023-24	2022-23	2021-22	2020-21	2019-20	2018-19
Gratuity						
Present value of DBO	572.26	516.97	513.59	458.98	449.30	389.45
Fair value of plan assets	(611.50)	(569.36)	(472.74)	(421.34)	(418.09)	(371.87)
Funded status [Surplus / (Deficit)]	39.25	52.39	(40.85)	(37.64)	(31.21)	(17.58)
Post-Retirement medical benefits schemes (PRMBS)						
Present value of DBO	113.23	109.45	110.75	111.16	81.01	69.98
Other defined benefit plans (Leave Encashment)						
Present value of DBO	688.21	616.91	615.36	542.14	522.08	419.02
Fair value of plan assets	(574.54)	(568.56)	(516.09)	(393.49)	(393.45)	-
Funded status [Surplus / (Deficit)]	(113.67)	(48.35)	(99.27)	(148.65)	(128.63)	-

PARTICULARS	For the year ended 31 March, 2024	For the year ended 31 March, 2023
Actuarial assumptions for long-term compensated absences		
Discount rate	7.19%	7.50%
Expected return on Gratuity plan assets	7.19%	7.50%
Expected return on Leave Encashment plan assets	7.19%	7.50%
Salary escalation	8.50%	8.50%
Attrition	1.00%	1.00%

The discount rate is based on the prevailing market yields of Government of India securities as at the Balance Sheet date for the estimated term of the obligations.

The estimate of future salary increases considered, takes into account the inflation, seniority, promotion, increments and other relevant factors.

The contribution expected to be made by the Board during FY 2024-25 has not been ascertained.

Notes to Accounts forming part of the Financial Statement

ANNEXURE - XVI

6 Disclosure of related party and Transactions with them for the year ended 31st March, 2024 as per Accounting Standard 18

a) Related Party and their relationship

1) **Wholly owned subsidiaries**

IDMC Limited
Indian Immunologicals Limited
Mother Dairy Fruit and Vegetable Private Limited
NDDB Dairy Services
Pristine Biologicals (NZ) Limited (wholly owned subsidiary of Indian Immunologicals Limited)
NDDB Mrida Limited
NDDB CALF Limited

2) **Other enterprises where management has significant influence over the management**

The West Assam Milk Producers' Co-operative Union Limited
Animal Breeding Research Organisation (India)
Anandalaya Education society
Jharkhand State Co-operative Milk Producers' Federation Limited
Shahjahanpur Mahila Dugdh Utpadak Sahakari Sangh Limited
NDDB Foundation for Nutrition
Varanasi Dugdh Utpadak Sahakari Sangh Limited
North East Dairy and Foods Limited
Bhartiya Beej Sahakari Samiti Limited
Ladakh UT Dairy Co Operative Federation
National Co-operative Organics Limited.
East Assam Milk Producers' Cooperative Union Limited

3) **Key management personnel**

Dr. Meenesh Shah	Chairman and Managing Director

NATIONAL DAIRY DEVELOPMENT BOARD ("NDDB" or "the Board")

Notes to Accounts forming part of the Financial Statement

ANNEXURE - XVI

b) Transactions with related parties

(figures in italic represent previous year figures)

(₹ in million)

PARTICULARS	Interest Income	Purchase of Equity shares	Purchase of Fixed Assets	Dividend	Rent (Income)	Other income	Grant	Other Expenditure	Current Account Balance outstanding Dr/(Cr)	Loan Disbursed	Loan repaid / Adjusted		Loan Balance outstanding Dr/(Cr)
											Principal	Interest	
IDMC Limited	7.64	-	-	60.72	0.53	0.16	0.05	0.10	0.02	243.23	157.92	7.64	85.31
	23.97	-	-	*24.29*	*0.35*	*5.22*	-	*10.63*	*0.03*	*474.27*	*244.22*	*23.97*	*230.05*
Indian Immunologicals Limited	51.34	-	-	108.00	29.38	43.80	-	7.38	(0.39)	728.45	173.61	51.34	554.84
	56.63	-	-	*72.00*	*29.32*	*14.47*	-	*6.60*	*3.77*	*893.28*	*166.77*	*56.63*	*726.51*
Mother Dairy Fruit and Vegetable Private Limited	89.52	-	-	-	130.97	19.57	-	3.25	84.15	1,407.29	238.03	89.52	1,169.26
	24.93	-	-	*250.00*	*119.10*	*27.17*	-	-	*21.46*	*937.25*	*98.74*	*24.93*	*838.51*
NDDB Mrida Limited	-	-	-	-	0.03	12.27	12.00	8.86	5.76	-	-	-	-
	-	*95.00*	-	-	*0.01*	*8.60*	-	*13.28*	*(2.01)*	-	-	-	-
NDDB Dairy Services	-	-	-	-	13.28	5.10	-	0.26	12.93	418.30	55.40	-	362.90
	-	-	-	-	*8.01*	*8.92*	-	*1.87*	*(0.81)*	*473.70*	*55.40*	-	*418.30*
NDDB CALF Limited	-	-	-	-	0.41	69.23	-	11.55	120.44	-	-	-	-
	-	*750.00*	-	-	-	-	-	-	-	-	-	-	-
Total	**148.50**	**-**	**-**	**168.72**	**174.60**	**150.13**	**12.05**	**31.40**	**222.91**	**2,797.27**	**624.96**	**148.50**	**2,172.31**
	105.53	***845.00***	**-**	***346.29***	***156.79***	***64.38***	**-**	***32.38***	***22.44***	***2,778.50***	***565.13***	***105.53***	***2,213.37***

(₹ in million)

PARTICULARS	Interest Income	Purchase of Equity shares	Purchase of Fixed Assets	Dividend	Rent (Income)	Other income	Grant	Other Expenditure	Current Account Balance outstanding Dr/(Cr)	Loan Disbursed	Loan repaid / Adjusted		Loan Balance outstanding Dr/(Cr)
											Principal	Interest	
Other enterprises where management has significant influence over the management													
The West Assam Milk Producers' Co-operative Union Limited	0.09	-	-	-	0.14	0.92	14.70	0.02	0.03	80.00	80.00	0.09	14.27
	1.62	-	-	-	*0.26*	*1.86*	-	*23.34*	*0.59*	*79.49*	*67.29*	*1.62*	*12.20*
Animal Breeding Research Organisation	-	-	-	-	-	0.60	-	-	0.29	-	-	-	-
	2.08	-	-	-	-	*4.10*	-	-	*1.61*	-	-	*2.08*	-
Anandalaya Education Society	-	-	-	-	0.48	0.13	-	0.02	0.01	-	-	-	-
	-	-	-	-	*0.59*	*1.08*	-	*0.03*	*0.13*	-	-	-	-
Jharkhand State Cooperative Milk Producers' Federation Limited	-	-	-	-	0.17	2.08	2.09	0.01	1.12	-	-	-	-
	-	-	-	-	*0.17*	*2.91*	-	*2.15*	*0.79*	-	-	-	-
Varanasi Dugdh Utpadak Sahakari Sangh Limited	-	-	-	-	0.01	0.04	23.90	0.54	(0.43)	280.00	37.13	-	255.43
	-	-	-	-	-	*0.29*	*227.11*	*6.22*	*4.35*	*453.91*	*221.43*	-	*232.48*
Ladakh UT Dairy Co-Operative Federation	-	-	-	-	-	-	3.32	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
North East Dairy and Foods Limited	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	*50.00*	-	-	-	-	-	-	-	-	-	-	-
Bhartiya Beej Sahakari Samiti Limited	-	10.10	-	-	-	-	-	-	-	-	-	-	-
	-	*10.00*	-	-	-	-	-	-	-	-	-	-	-
National Co-operative Organics Limited		20.10	-	-	-	-	-	-	-	-	-	-	-
	-	*10.00*	-	-	-	-	-	-	-	-	-	-	-
East Assam Milk Producers' Cooperative Union Limited	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**0.09**	**30.20**	**-**	**-**	**0.80**	**3.77**	**44.01**	**0.59**	**1.02**	**360.00**	**117.13**	**0.09**	**269.70**
	3.70	***70.00***	**-**	**-**	***1.02***	***10.24***	***227.11***	***31.74***	***7.47***	***533.40***	***288.72***	***3.70***	***244.68***

* All Net movable fixed assets, current assets deposits, loan and advances pertaining to NDDB Calf Limited have been transfered by NDDB to the wholly owned subsidiary NDDB Calf Ltd w.e.f 01.04.2023

** The Board has approved the proposal for taking over management of Ladakh UT Dairy Cooperative Federation till 16th August 2027 and undertaking Dairy Development activities in the Union Territory of Ladakh on 31st August 2023

Notes to Accounts forming part of the Financial Statement

ANNEXURE - XVI

Remuneration to key management personnel

	₹ in Million
Dr. Meenesh Shah	7.00
	6.37
Total	**7.00**
	6.37

Note: Only those related parties with whom transactions have occurred during the current and/or previous financial year have been disclosed.

7 Disclosure as per Accounting Standard 19 – 'Leases' (Refer Annexure VIII):

Operating lease arrangements entered into by the Board as a Lessor for following assets:

a) Nature of Assets leased

(₹ in million)

CLASS OF ASSET	Gross value of assets as at 31st March, 2024	Depreciation for the year	Accumulated Depreciation as at 31st March, 2024
Buildings and Roads#	1,633.00	42.52	1,120.58
	1,633.00	*42.52*	*1,078.06*
Electrical Installations#	30.16	0.89	28.34
	30.83	*1.00*	*28.10*
Furniture, fixtures, computers and office equipment	8.70	0.00	8.70
	8.73	*0.00*	*8.73*
Rail Milk Tankers	345.49	16.55	275.40
	345.49	*16.55*	*258.85*
Total	**2,017.35**	**59.96**	**1,433.02**
	2,018.05	***60.07***	***1,373.74***

including staff quarters and cold storage

(Figures in italics represent previous year figures)

These arrangements are cancellable with prior notice to the lessee.

b) Initial Direct cost relating to leasing arrangements is charged to Income and Expenditure account in the year of arrangement of lease.

c) Significant Leasing arrangements:

All assets mentioned above are leased out to subsidiaries, federations and others with an option to renew or cancellation of the agreement.

Notes to Accounts forming part of the Financial Statement

ANNEXURE - XVI

8 Deferred tax assets have been recognised as per Accounting Standard 22–'Accounting for Taxes on Income'. Details are as under:

(₹ in million)

PARTICULARS	Opening Balance as at 1st April, 2023	Adjustment during the year	Closing Balances at 31st March, 2024
Deferred Tax Assets /(Liability):			
Depreciation	(7.04)	8.90	1.86
	(17.00)	*9.96*	*(7.04)*
Expenditure allowable on payment basis	149.32	17.97	167.29
	151.57	*(2.25)*	*149.32*
Gratuity	(13.19)	3.31	(9.88)
	10.28	*(23.47)*	*(13.19)*
Voluntary Retirement Scheme	0.01	(0.01)	0.00
	0.01	*0.00*	*0.01*
Special Reserve	(408.79)	(34.71)	(443.50)
	(401.26)	*(7.53)*	*(408.79)*
TOTAL	**(279.69)**	**(4.54)**	**(284.23)**
	(256.40)	***(23.29)***	***(279.69)***

(Figures in italic represent previous year figures)

Note:

In line with Reserve Bank of India's (RBI's) Circular No. RBI/2013-14/412 DBOD.No.BP.BC.77/21.04.018/2013-14 dated 20 December 2013, the Board has created Deferred Tax Liability on the Special Reserve under section 36(1)(viii) of the Income Tax Act, 1961.

9 Disclosure as per Accounting Standard 29 – 'Provisions, Contingent Liabilities and Contingent Assets' is as follows:

(₹ in million)

PARTICULARS	Non-Performing Asset (NPA)	General Contingency on Standard Assets	Contingency	Total
Opening balance	559.34	93.67	1,755.25	2,408.26
	816.58	*51.79*	*1,497.87*	*2,366.24*
Created during the year	22.74	28.90	171.61	223.25
	0.74	*41.88*	*257.38*	*300.00*
Reversed/movement during the year	-	-	(23.25)	(23.25)
	(257.98)	-	-	*(257.98)*
Closing balance	**582.08**	**122.57**	**1,903.61**	**2,608.26**
	559.34	***93.67***	***1,755.25***	***2,408.26***

(Figures in italic represent previous year figures)

Notes to Accounts forming part of the Financial Statement

ANNEXURE - XVI

10 Based on the information available with Board as on 31st March 2024, sundry creditors that are classified as Micro and Small Enterprises under the Micro, Small and Medium Enterprises Development Act, 2006 were of ₹ 14.22 million (Previous Year: ₹ 21.07 million) and there were no overdue to these entities.

11 Interest income includes ₹ 1,723.53 million (Previous Year ₹ 838.59 million) from Loans & Advances and ₹ 1,144.55 million (Previous year ₹ 1,262.41 million) from long term Investment.

12 All dividends are from long-term investments.

13 As per the provisions of section 36(1)(viii) of Income Tax Act, 1961, Special Reserve is created since Assessment Year 2003-04 (the assessment year in which NDDB came into ambit of Income Tax Act, 1961), as NDDB believes that it is eligible for deduction under the said section. However, Income Tax Authorities disallowed such claim for the Assessment year 2003-04 and subsequent years. NDDB contested the same at various appellate forums. Hon'ble High Court, Gujarat decided the matter in favour of the Income Tax Department. NDDB filed Special Leave Petition before Hon'ble Supreme Court and matter is now pending before the Hon'ble Court for disposal. The management of NDDB is of the view that possibility of cash outflow in respect of income tax is remote and based on expert legal opinion, it has a good case; accordingly, NDDB continues to create special reserve in the books of account in the year under report and considered the claim as eligible for tax provision.

14 NDDB CALF Limited has been formed on 25 February 2023 to takeover CALF related activities, which were part of NDDB earlier. Movable fixed assets and net current assets related to CALF activities have been transferred w.e.f. 01 April, 2023 except fixed assets having book value of ₹ 40.99 million which NDDB has received as Grant from various Government Authorities. These Fixed assets will be transferred after receiving approval from the concerned Government Authorities.

15 Total capital commitment for capital work for the FY 2024-25 is ₹ 22.73 million.

16 Following capital investment are envisaged in future:

NAME OF COMPANY	₹ in million	Remarks
Indian Immunologicals Limited	1,000.00	Additional Share Capital
Bhartiya Beej Sahakari Samiti Limited.	479.90	Additional Share Capital
National Co-operative Organics Limited	169.90	Additional Share Capital
Joint Venture in Sri Lanka	257.00	Initial Share Capital

17 The figures of the previous year have been regrouped/re-arranged wherever necessary.

In terms of our report of even date attached.

For MKPS & Associates
Chartered Accountants
Firm Reg No. 302014E

Vasudev Sunderdas Matta
Partner
Membership No. 046953

Place: Mumbai
Date: 16th August 2024

For and on behalf of the Board,

Meenesh C Shah
Chairman & Managing Director

S Regupathi
Executive Director (Operations)

Amit Goel
Group Head (Accounts)

Place: Anand
Date: 16th August 2024

NDDB Officers

Head Office, Anand

Chairman & Chief Executive

Meenesh C Shah
B Sc (DT), PGDRDM,
Honorary Degree of Doctorate
of Science

Chief Executive's Office

Rajesh Kumar
SR MGR, B A (Eco), PGDRM

Managing Director

Meenesh C Shah
B Sc (DT), PGDRDM,
Honorary Degree of Doctorate
of Science

Managing Director's Office

Rajesh Singh
MGR, BCA, PGDM (Mktg & Fin)

Nikit Bansal
MGR, B Com, CA

Executive Director

S Regupathi
M Com, ICWA, PGDRDM

S Rajeev
B Tech (Industrial Engg), PGDRM

Senior General Managers

R O Gupta
BVSc, MVSc (Med)

AV Ramachandra Kumar
B E (Comp Engg), PGDM

S S Sinha
B E (Elect)

Accounts

Amit Goel
SR MGR, B Com, CA

Tusar Kanti Patra
SR MGR, B Com, ICWA

Vinai Gupta
SR MGR, B Com, ICWA,
PGDM (RM-X)

P V Subrahmanyam
SR MGR, BBM, MBA (Fin)

Ashutosh K Mishra
SR MGR, B Sc (E&I), PGDBA (Fin)

Rashmi Prateesh
MGR, M Com, ICWA

Swapnil Thaker
MGR, M Com, CA,
PGDM (RM-X)

Dipen R Shah
MGR, BBA,
MBA (Fin), ICWA

Vijay Kumar
MGR, B Com, CA

Kamalkant R Parmar
DY MGR, B Com, CA

Ramesh Kumar
DY MGR, B Com, CA

Kartik Patel
DY MGR, B Com, CA

Pankaj Sen
DY MGR, M Com, CA, CS

Administration

Dhirubhai C Parmar
SR MGR, M Com, LLB (Gen),
MSW, PGD-HRM

R P Dodamani
MGR, B Com, LLB

Nayankumar D Kathawala
DY MGR, B.Com., MHRM, LLB

Administration-Utility

Rupesh A Darji
SR MGR, B E (Elect)

Bibhash Biswas
MGR, Dip (Civil), DBM

Animal Breeding

S Gorani
GEN MGR, BVSc,
MVSc (Vety Gynecology & Obstetrics),
PGDMM

Sujit Saha
SR MGR, B Sc (Agri), M Sc (Dairying),
Ph D (Ani Gen & Brdg), PGDIM,
MBA (Oper. Mgt)

N G Nayee
SR MGR, BVSc, MVSc (Anim Brdg),
Ph D (Ani Gen & Brdg)

Parag R Pandya
SR MGR, BVSc & AH,
MBA (HRM)

V P Bhosale
SR MGR, BVSc & AH,
MVSc (Med)

Samata Dey
SR MGR, BVSc & AH,
MVSc (Vety Gynaec & Obst)

Ranmal M Ambaliya
SR MGR, B.E (Comp Engg),
PGDM (RM-X)

A Sudhakar
MGR, BVSc, MVSc,
Ph D (Ani Brdg)

Swapnil G Gajjar
MGR, BVSc & AH,
MVSc (Animal Gen & Breeding)

Krushna M Beura
MGR, BVSc & AH,
MBA (Rural Mgmt)

Shiraj M Sherasia
MGR, BVSc & AH,
MBA (Agri Bus.)

Surabhi Gupta
MGR, BVSc & AH, PGDRM

Atul C Mahajan
MGR, BVSc & AH,
MVSc (Animal Gen & Breeding),
Ph D (Animal Gen & Breeding)

Siddhartha S Layek
MGR, BVSc & AH,
MVSc (LPM), Ph D (LPM)

Karuppanasamy K
MGR, BVSc & AH, MVSc
(Vety Gynecology & Obstetrics)

Karmraj R Jaiswar
SCI I, B. Sc, M. Sc (Microbiology),
Certificate course in Bioinformatics

Sanket Prakash Patil
DY MGR, BVSc & AH, MVSc.
(Animal Reprod. Gyn. and Obs.)

Kathan Bhanubhai Raval
DY MGR, BVSc & AH,
MVSc (Vet. Gyn. and Obs.),
PhD (Vet. Gyn. and Obs.)

Animal Health

A V Hari Kumar
DY GEN MGR, BVSc & AH,
MVSc (Micro)

Pankaj Dutta
MGR, BVSc & AH, MVSc (Micro)

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Abbreviations

SR GEN MGR: Senior General Manager

GEN MGR: General Manager

DY GEN MGR: Deputy General Manager

SR SCI: Senior Scientist

SR MGR: Senior Manager

SCI III: Scientist III

MGR: Manager

SCI II: Scientist II

DY MGR: Deputy Manager

SCI I: Scientist I

Glossary

AAU - Anand Agricultural University

ABIP - Accelerated Breed Improvement Programme

ABIP IVF-ET - Accelerated Breed Improvement Programme, In-vitro Fertilisation and Embryo Transfer

ABIP-SS - Accelerated Breed Improvement Programme using sex-sorted semen

ABS - Adult Bovine Serum

ACU - Adult Cattle Unit

ADDP - Assam Dairy Development

A-HELP - Accredited Agent for Health and Extension of Livestock Production

AHIDF - Animal Husbandry Infrastructure Development Fund

AI - Artificial Insemination

AIT - Artificial Insemination Technician

AKF - Aga Khan Foundation

ALDA - Assam Livestock Development Agency

AMCS - Automatic Milk Collection System

AMCU - Automatic Milk Collection Units

AMR - Antimicrobial Resistance

AMU - Antimicrobial Usage

Amul Dairy - Kaira District Co-operative Milk Producers Union Ltd

ANAS - Animal Nutrition Advisory Services

APART - Assam Agribusiness and Rural Transformation Project

APEDA - Agricultural & Processed Food Products Export Development Authority

ARIAS - The Assam Rural Infrastructure and Agricultural Services Society

ASRS - Automated Storage and Retrieval System

AST - Antibiotic Susceptibility Test

AT - Action Team

AWG - Agriculture Working Group

BAIF - BAIF Development Research Foundation

Banas Dairy - Banaskantha District Co-operative Milk Producers Union Ltd

BB - Bovine Brucellosis

BBSSL - Bharatiya Beej Sahakari Samiti Limited

BCP - Brucellosis Control Programme

BDS - Bull Distribution Software

BDV - Bovine Viral Diarrhoea

BGC - Bovine Genital Campylobacteriosis

BioCNG - Bio-Compressed Natural Gas

BIRAC - Biotechnology Industry Research Assistance Council

BIS - Bureau of Indian Standards

BMC - Bulk Milk Cooler

BMF - Breed Multiplication Farm

BoHV-1 - Bovine Herpes Virus Type 1

BPSCL - Bokaro Power Supply Company Limited

BSL - Bio-Safety Labs

CAC - Codex Alimentarius Committee

CAS-MMP - Conformity Assessment Scheme for Milk & Milk Products

CAWA - Compassion for Animals Welfare Association

CBBO - Cluster Based Business Organisation

CBG - Compressed Biogas

CBHF - Crossbred of Holstein Friesian

CBJY - Crossbred of Jersey

CBMM - Continuous Butter-Making Machines

CCBF- Central Cattle Breeding Farms

CDSCO - Central Drugs Standard Control Organisation

CFP - Cattle Feed Plant

CFSP&TI - Central Frozen Semen Production and Training Institute

CII - Confederation of Indian Industry

CKMM - Continuous Khoa-Making Machines

CMT- California Mastitis Test

CNG - Compressed Natural Gas

CoE - Centre of Excellence

COVID-19 - 2019 novel coronavirus

CRP - Calf Rearing Programme

CSR - Corporate Social Responsibility

CST - Concentrated Solar Thermal

CSTR - Continuous Stirred Tank Reactor

CVC - Central Vigilance Commision

CWIP - Capital Work in Progress

DAHD - Department of Animal Husbandry and Dairying

DAP - Diammonium Phosphate

DBO - Defined Benefit Obligations

DCAM - Disease Control through Alternate Methods

DCCB - District Central Cooperative Bank

DCDC - District Cooperative Development Committee

DCS - Dairy Cooperative Society

DIDF - Dairy Processing Infrastructure Development Fund

DoRB - De-oiled Rice Bran

DPMCU - Data Processor based Milk Collection Units

DPR - Detailed Project Report

DRDO - Defence Research and Development Organisation

DSF - Dairy Sustainability Framework

DTC - Dairying through Cooperatives

EAMUL - East Assam Milk Producers Cooperative Union Ltd

EAP - Equity Action Plan

EBL - Enzootic bovine leukosis

ECIL - Electronics Corporations of India Limited

EFS - Extended Frozen Semen

EIAs - End Implementing Agencies

EIC - Export Inspection Council

ELISA - Enzyme Linked Immunosorbent Assay

eMOz - Virtual Medical Representative

EPP - Empty Pea Pods

ERP - Enterprise Resource Planning

ESAP - Environment and Social Action Plan

ESL - Extended Shelf Life

ET - Embryo Transfer

ETP - Effluent Treatment Plan

ETT - Embryo Transfer Technology

EVM - Ethno-Veterinary Medicine

eWG - e-Working Group

FAHD - Fisheries, Agriculture Husbandry and Dairying

FAO - Food and Agriculture Organisation of the United Nations

FCM - Fat Corrected Milk

FDU - Fodder Demonstration Unit

FMD - Foot and Mouth Disease

FMD-CP - Foot and Mouth Disease Control Programme

FoPL - Front-of-Pack Labelling

FP - Filter Paper

FPO - Farmer Producer Organisation

FSD - Frozen Semen Dose

FSMS - Food Safety Management System

FSSAI - Food Safety and Standards Authority of India

FTA - Flinders Technology Associates

GAAP - Generally Accepted Accounting Principles

GBRC - Gujarat Biotechnology Research Centre

GBV - Genomic Breeding Value

GCMMF - Gujarat Cooperative Milk Marketing Federation Ltd

GDT - Global Dairy Trade

GHG - Greenhouse Gas

GIS - Geographic Information Systems

GMP - Good Manufacturing Practice

GoA - Government of Assam

GoI - Government of India

GoM - Government of Maharashtra

GPS - Global Positioning System

GSFC - Gujarat State Fertilizers and Chemicals Ltd

GWAS - Genome-Wide Association Studies

HA - Hectare

HACCP - Hazard Analysis Critical Control Point

HGM - High Genetic Merit

HORTICORP - Kerala Horticultural Products Development Corporation

IA - Implementing Agency

IBR - Infectious Bovine Rhinotracheitis

ICAI - Institute of Chartered Accountants of India

ICAR - Indian Council of Agricultural Research

ICAR - International Committee of Animal Recording

ICDS - Integrated Child Develpoment Services

ICT - Information and Communications Technology

IDA - Indian Dairy Association

IDF - International Dairy Federation

IDF WDS-2022 - International Dairy Federation's World Dairy Summit-2022

i-DIS - Internet Based Dairy Information System

IETS - International Embryo Technology Society

IFCN - International Farm Comparison Network

IFFCO - Indian Farmers Fertilizer Cooperative Limited

IIL - Indian Immunologicals Limited

IISCO - Indian Iron & Steel Company

ILC- Inter Laboratory Comparison

IMC - Inter-Ministerial Committee

INAPH - Information Network for Animal Productivity and Health

INC-IDF - Indian National Committee of the International Dairy Federation

IPCC - Intergovernmental Panel on Climate Change

IRMA - Institute of Rural Management, Anand

IS - Indian Standards

ISO - International Organization for Standardization

ITSM - Institute of Secretariat Management and Training

IVEP - In Vitro Embryo Production

IVPM - Institute of Veterinary Preventive Medicine

JICA - Japan International Cooperation Agency

JMF - Jharkhand Milk Federation

JV - Joint Venture

KCMMF - Kerala Cooperative Milk Marketing Federation

KFD - Kyasanoor Forest Disease

KfW - Kreditanstalt für Wiederaufbau

Kg - Kilogram

KL - Kilo Liter

KLPH - thousand liters per hour

KOF - Karnataka Cooperative Oilseeds Growers' Federation

KRIBHCO - Krishak Bharati Cooperative Limited

LCA - Lifecycle Assessment

LCF - Least Cost Formulation

LDO - Light Diesel Oil

LH&DC- Livestock Health & Disease Control

LIC - Life Insurance Corporation of India

LKgPD - Lakh Kilograms Per Day

LLPD - Lakh Liters Per Day

LMF - Ladakh Milk Federation

LMP- Liquid Milk Processing

LN_2 - Liquid Nitrogen

LRP - Local Resource Person

LSD- Lumpy Skin Disease

LSDV - Lumpy Skin Disease Virus

LSHDCP - Livestock Health Disease Control Programme

MAFSU - Maharashtra Animal & Fishery Sciences University

MAITRIs- Multi-Purpose AI Technicians in Rural India

MAITs - Mobile AI Technicians

MCPP - Mastitis Control Popularisation Project

M-DCS Multipurpose Dairy Cooperative Society

MDFVPL - Mother Dairy Fruit & Vegetable Pvt. Ltd.

MDL - Mazagon Dock Shipbuilders

Mehsana Dairy - Mehsana District Co-operative Milk Producers Union Ltd

MIDC - Maharashtra Industrial Development Corporation

MILCO - Milk Industries of Lanka Co. Limited

MIT, Mehsana - Mansinh Institute of Training, Mehsana

MLST - Multi-Locus Sequence Typing Technique

MLVA - Multilocus Variable Tandem Repeat Analysis

MNRE - Ministry of New and Renewable Energy

MoC - Ministry of Cooperation

MoU - Memorandum of Understanding

M-PACS - Multipurpose Primary Agriculture Credit Societies

MPO - Milk Producer Organisation

MR - Measles-Rubella

MRL - Micro Nutrient Rich liquid

MRSA - Methicillin-resistant Staphylococcus aureus

MSP - Minimum Standard Protocol

MT - Metric Tonne

MTC - Micro Training Centres

MTPD - Metric Tonne Per Day

MU - Milk Unions

NABARD - National Bank for Agriculture and Rural Development

NABL - National Accreditation Board for Testing and Calibration Laboratories

NADCP - National Animal Disease Control Programme

NAFED - National Agricultural Cooperative Marketing Federation of India Ltd

NAIP - Nationwide Artificial Insemination Programme

NAR - National Academy of RUDSETI

NBAGR - National Bureau of Animal Genetics Resources

NBCC - National Buildings Construction Corporation

NBGC-IB - National Bovine Genomic Centre for Indigenious Breed

NBHM - National Beekeeping and Honey Mission

NCC - National Codex Committee

NCCF - National Cooperative Consumers' Federation of India Ltd

NCCSD - National Council for Climate Change Sustainable Development and Public Leadership

NCDC - National Cooperative Development Corporation

NCDFI - National Cooperative Dairy Federation of India Ltd

NCEL - National Cooperative Exports Limited

NCOL - National Cooperative Organics Limited

NCUI - National Cooperative Union of India

NDC - Nationally Determined Contribution

NDDB - National Dairy Development Board

NDERP - NDDB Dairy ERP

NDLM - National Digital Livestock Mission

NDP I - National Dairy Plan, Phase I

NDP II - National Dairy Plan, Phase II

NDRI - National Dairy Research Institute

NDS - NDDB Dairy Services

NEDFL - North East Dairy and Foods Limited

NER - North-Eastern States

NFDB - National Fisheries Development Board

NFL - National Fertilizers Limited

NFN - NDDB Foundation for Nutrition

NFP - Nobuto Filter Paper

NFSM - National Food Security Mission

NIAB - National Institute of Animal Biotechnology

NIAH - National Institute of Animal Health

NITI Aayog - National Institution for Transforming India

NLCC - National Level Coordination Committee

NLDB - National Livestock Development Board

NLM - National Livestock Mission

NPDD - National Programme for Dairy Development

NRC - National Research Centre on Meat

NRLM - National Rural Livelihoods Mission

NSC - National Steering Committee

NTPC - National Thermal Power Corporation Limited

ODA - Official Development Assistance

OH - One Health

OL - Official Language

ONGC - Oil and Natural Gas Corporation Limited

OPU - Ovum Pick-up

OPU-IVEP - Ovum Pick-Up and In Vitro Embryo Production

OPU-IVEP-ET - Ovum Pick-up, In-vitro Production and Embryo Transfer

PA - Participating Agency

PACS - Primary Agriculture Credit Societies

PAT - Profit After Tax

PBNL - Pristine Biologicals NZ Limited

PC- Producer Company

PCR - Polymerized Chain Reaction

PI - Participating Institutions

PIP - Project Implementation Plan

PMU - Project Monitoring Unit

POI - Producer Owned Institution

PPB - Parts Per Billion

PPE - Property, Plant and Equipment

PPR - Peste-des-Petits Ruminants

PRMBS - Post-Retirement Medical Benefits Schemes

PROM - Phosphate Rich Organic Manure

PS - Pedigree Selection

PSB - Public Sector Banks

PST - Pooled Serum Sample Testing

PSU - Public Sector Undertakings

PT- Progeny Testing

QC Circle - Quality Control Circle

QCI - Quality Council of India

QPR - Quarterly Progress Report

RBI - Reserve Bank of India

RBP - Ration Balancing Programme

RDDL - Regional Disease Diagnostic Laboratory

RFID - Radio Frequency Identification

RGM - Rashtriya Gokul Mission

RMP - Residue Monitoring Plans

RSFP&D - Regional Stations for Forage Production and Demonstration

RUC - Ready-to-Use Culture

SA - Standards on Auditing

SABAR DAIRY - Sabarkantha District Co-operative Milk Producers' Union Ltd

SAI Platform - Sustainable Agriculture Initiative Platform

SAIL - Steel Authority of India Limited

SCADA - Supervisory Control & Data Acquisition

SCC - Somatic Cell Counts

SCDC - State Cooperative Development Committee

SCENV - Standing Committee on Environment

SCI - Shipping Corporation of India Limited

SCM - Sub-Clinical Mastitis

SDCFPO - Supporting Dairy Cooperatives and Farmer Producer Organisations

SDGs - Sustainable Development Goals

SHG - Small Help Group

SMLU - Sundarban Co-Operative Milk & Livestock Producers' Union Ltd.

SMP - Skimmed Milk Powder

SNF - Solids Not Fat

SNT - Serum Neutralisation Test

SOPs - Standard Operating Procedures

SPCC - Spill Prevention, Control and Countermeasure

SPS - Sanitary & Phytosanitary Mesaures

SPV - Special Purpose Vehicle

SRDI - Suzuki R&D Center India Pvt Ltd

SRLM - State Rural Livelihood Missions

SS - Semen Stations

SS&SM - Sero-surveillance and Sero-monitoring

SSMS - Semen Station Management System

ST - Sequence Types

Sumul Dairy - Surat Tapi District Co-operative Milk Producers Union Ltd

TBT - Technical Barriers to Trade

TERI - The Energy and Resource Institute

TKgPD - Thousand Kg Per Day

TLPD - Thousand Litres per Day

TMR - Total Mixed Ration

TOLIC - Town Official Language Implementation Committee

ToT - Training of Trainers

TPH - Ton Per Hour

TR - Tons of Refrigeration

TRQ - Tariff Rate Quota

TSDDCFL - Telangana State Dairy Development Co-operative Federation Ltd

UAT - User Acceptance Testing

UHC - Universal Health Care

UHT - Ultra Heat Treated

USAID - United States Agency for International Development

USIEF - United States-India Educational Foundation

UT - Union Territories

VADP - Value-Added Dairy Products

VBMPS - Village-Based Milk Procurement Systems

VMDDP - Vidarbha Marathwada Dairy Development Project

WAMUL - West Assam Milk Producers' Cooperative Union Limited

WFP - Whatman Grade-III Filter Paper

WGVFPCL - Wayanad Grama Vikas Farmer Producer Company Limited

WOAH - World Organisation for Animal Health

WRL-IBR - World Reference Laboratory for Infectious Bovine Rhinotracheitis

WWF-India - World Wide Fund for Nature-India

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- Institute of Rural Management Anand, Anandalaya Education Society and Vidya Dairy
- Multistate Cooperative Societies - National Cooperative Dairy Federation of India Ltd, National Cooperative Organics Limited, Bhartiya Beej Sahakari Samiti Limited, National Cooperative Exports Limited, National Cooperative Consumers' Federation of India Ltd, National Agricultural Cooperative Marketing Federation of India, Krishak Bharati Cooperative Limited and Indian Farmers Fertilizer Cooperative Limited
- Multi-sectoral International Organisations including World Bank, International Dairy Federation, Food and Agriculture Organisation of the United Nations, World Organisation for Animal Health, Dairy Sustainability Framework, Dairy Asia, Global Dairy Platform, International Committee for Animal Recording and Japan International Cooperation Agency
- ICAR-National Bureau of Animal Genetic Resources, National Institute of Animal Biotechnology and National Cooperative Development Corporation
- Bureau of Indian Standards, Food Safety and Standards Authority of India, Codex Alimentarius Commission and Export Inspection Council; and
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