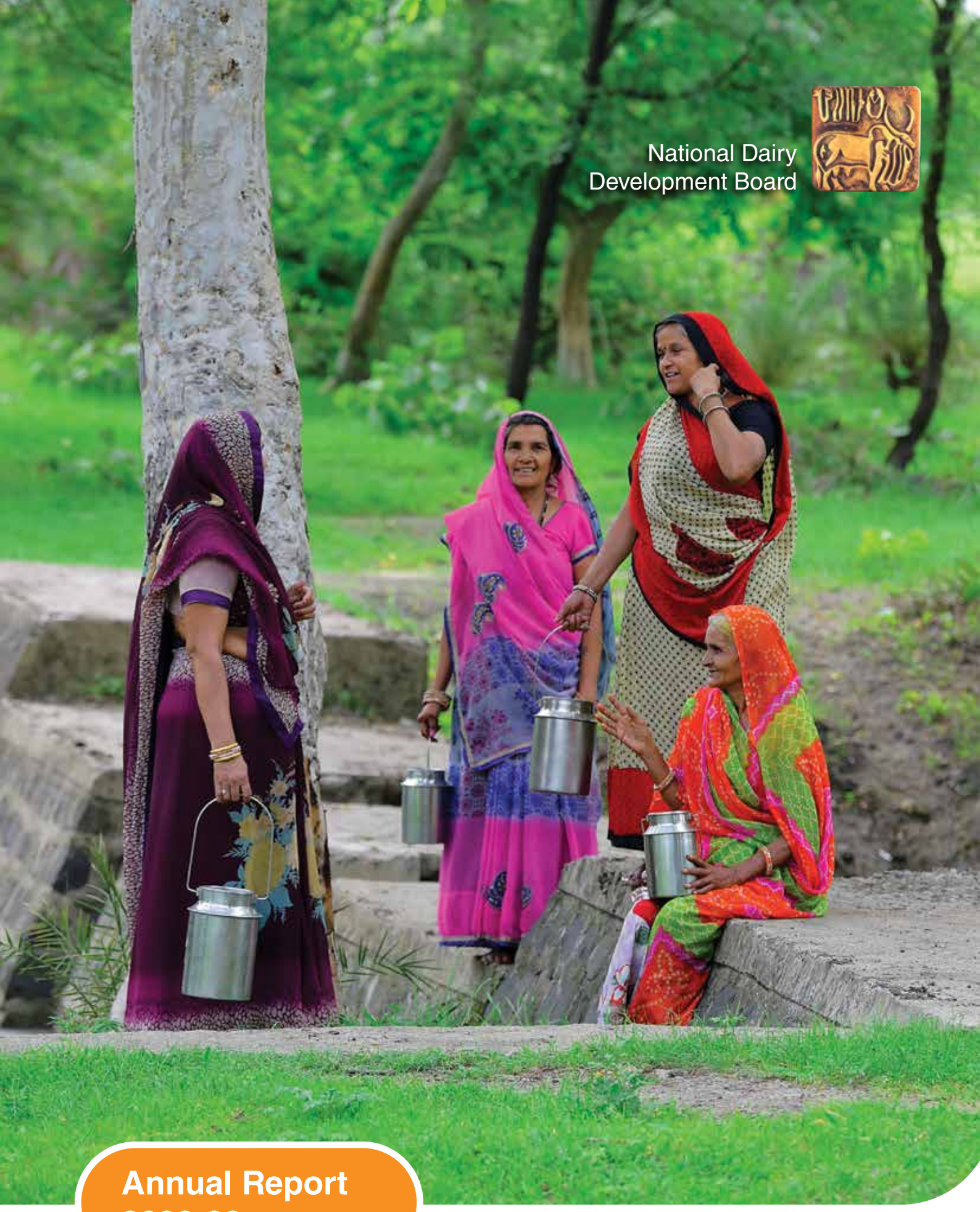

National Dairy
Development Board

Annual Report 2022-23

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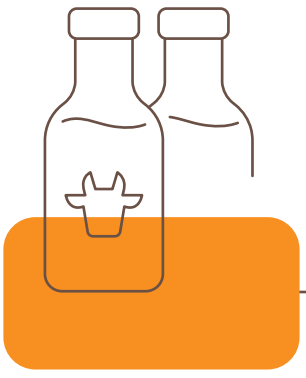


Members of the Board

Shri Meenesh C Shah[1]

Chairman & Managing Director
NDDB

Ms Varsha Joshi

Additional Secretary (Cattle & Dairy Development)
Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry & Dairying, Government of India

Dr N H Kelawala[2]

Vice Chancellor
Kamdhenu University
Gujarat

Shri Nihal Chand Sharma[3]

Chairman
Himachal Pradesh State Cooperative Milk Producers' Federation Limited
Himachal Pradesh

Shri Shamalbhai B Patel[4]

Chairman
Gujarat Cooperative Milk Marketing Federation Limited
Gujarat

[1] Additional Charge of Chairman, with effect from 1 June 2021
[2] With effect from 9 June 2022
[3] With effect from 9 June 2022
[4] With effect from 11 August 2021 till 10 August 2022 and from 28 February 2023

Chairman's Message

I am delighted to present to you our Annual Report for 2022-23.

In NDDB, dairy farmers come first and all our efforts are aimed at achieving the objective of making dairying an instrument of socio-economic change for millions of milk producers in the country.

Our projects, schemes and activities over the past decades bear clear testimony to this. Other income generating activities such as manure management, beekeeping, solar, oil, fodder development etc. have added another dimension to the sustainable livelihood of dairy farmers.

Last year was a challenging one for the dairy sector due to unfavourable climatic conditions such as intense heat spells and uneven rainfall, apart from incidences of Lumpy Skin Disease (LSD) in cattle. But the industry showed resilience and recorded a steady growth rate in milk production in line with the previous years.

The dairy cooperatives procured an average of 589 Lakh Kg of milk Per Day (LKgPD) and marketed an average 427 Lakh Litres Per Day (LLPD) during 2022-23.

NDDB continued to support dairy cooperatives with technical inputs, extension services and financial assistance. Our interventions, funded both internally and through funds vested with us by Government of India, focussed on revitalising dairy cooperatives, enhancing milch animal productivity, creating new dairy infrastructure, promoting digitisation, ensuring quality assurance and capacity building in the dairy sector.

The year witnessed several initiatives, expected to drive future growth in dairying and the rural economy.

In line with our conviction in the cooperative model for enhanced rural prosperity, NDDB is working closely with the newly formed Ministry of Cooperation on a number of initiatives.

NABARD, NDDB and NFDB were entrusted with the task of preparing national level action plans for strengthening of primary cooperative societies and establishing new multi-purpose Primary Agriculture Credit Societies (PACS) or primary Dairy / Fishery cooperative societies. Pilot projects, in this regard, are already underway in one district each of Haryana, Karnataka and Madhya Pradesh.

In January 2023, three new national level multi state cooperative societies were set up. These are National Cooperative Organics Limited (NCOL), Bharatiya Beej Sahakari Samiti Limited (BBSSL) and National Cooperative Exports Limited (NCEL). NDDB is the promoter of two of these societies. While NCOL aims to help India emerge as a global leader in organic products with a "Local to Global" vision, BBSSL will play a pivotal role in the seed sector, offering better prices to farmers, leading to "Sahkar se Samriddhi".

Our joint venture company North East Dairy and Foods Limited (NEDFL), registered on 17th January 2023, with equal equity contribution by Government of Assam and NDDB, is expected to boost our engagement in the north-eastern region. NEDFL will be implementing the Assam Dairy Development Plan (ADDP) over a period of seven years, moving the state towards self-sufficiency in milk production, procurement, processing and marketing.

To focus on manure as an additional income generating activity, NDDB established a wholly-owned subsidiary company "NDDB Mrida Limited" on 1 July 2022. NDDB Mrida is dedicated to executing manure value chain projects, biogas-based Bio-CNG generation, biogas-based energy generation for dairy plants and promoting the large-scale organised sale of dung-based organic fertiliser.

Last year, we proudly hosted the International Dairy Federation's World Dairy Summit-2022 (IDF WDS-2022), showcasing India's dairy sector journey from deficiency to self-sufficiency, with the theme "Dairy for Nutrition & Livelihood". The Summit was inaugurated by Shri Narendra Modi, Hon'ble Prime Minister of India in the presence of Shri Yogi Adityanath, Hon'ble Chief Minister of Uttar Pradesh. The event was graced by, among others, Shri Amit Shah, Hon'ble Union Minister of Home Affairs and Cooperation and Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying. The event brought together dairy leaders, experts and milk producers from 55 countries.

Our subsidiaries continue to contribute significantly to dairy development and I have complete faith in their ability to make a positive impact in the coming years.

NDDB received continued support and guidance from Ministry of Fisheries, Animal Husbandry and Dairying, Government of India in discharge of its responsibilities. NDDB also collaborated with other ministries of Government of India, such as Cooperation, Rural Development, Agriculture & Farmers Welfare and New & Renewable Energy for achieving variety of developmental outcomes in different projects. I extend my gratitude for their support.

I also thank the NDDB Board and all stakeholders for their unwavering trust in NDDB. We will continue to serve the dairy farmers and address their needs with utmost dedication.

Meenesh C Shah
Chairman, NDDB

Dairying Scenario at a Glance

Milk production in the country continued to increase by about six per cent per annum, while the per capita availability registered a growth of above 4.5 per cent during the past five years. In 2022-23, milk production in the country is likely to be 230 million tonnes and per capita availability of milk is expected to be 455 grams per day.

The year 2022-23 was marred with unfavourable climatic conditions such as long and intense heat spells, followed by unevenly distributed rainfall. Also, there were sporadic incidences of Lumpy Skin Disease (LSD) in cattle. The Government of India intervened to contain the disease through vaccination and provided financial & technical support to the affected states /Union Territories (UT).

Despite challenges, milk procurement by dairy cooperatives remained resilient, with an average of 589 LKgPD procured during 2022-23. Dairy cooperatives continued to support dairy farmers by providing technical inputs & extension services like veterinary services, Artificial Insemination (AI) services, vaccination, balanced cattle feed, fodder seed, mineral mixture etc. The milk procurement price increased by about 15 per cent during 2022-23.

Post-pandemic, dairy cooperatives proactively addressed the heightened demand for both liquid milk and value-added milk products. The average liquid milk sale reached 427 Lakh Litres per day (LLPD) during 2022-23, reflecting a nine per cent rise as compared to 2021-22. The domestic market prices of conserved dairy commodities such as Skimmed Milk Powder (SMP) and Butter remained largely stable throughout the year. SMP prices fluctuated between ₹ 280 to ₹ 320 per kg, while Butter traded in the range of ₹ 400 to ₹ 440 per kg. For most part of the financial year 2022-23, domestic SMP prices remained higher than international market rates. The white butter prices initially lagged behind international market rates but eventually aligned closely during the latter half of the fiscal year.

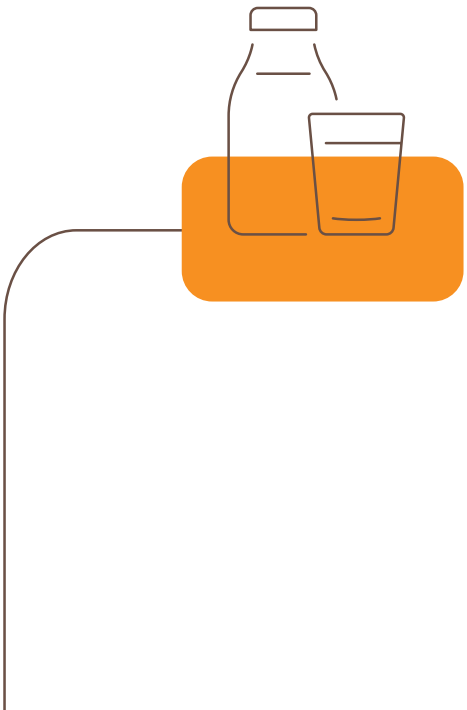
During 2022-23 India exported milk and milk products worth ₹ 3.36 thousand crores retaining its position as a net exporter of dairy commodities.

International Scenario

Globally, as per the Food and Agriculture Organisation of the United Nations (FAO) report, milk production witnessed a slight increase of 0.5 per cent, reaching to 936 million tonnes in 2022, compared to the previous year. Milk production in the Asian region is expected to increase by about two per cent, compensating for the decline in South America, Europe, Oceania and Africa.

World trade in milk products experienced a decline of about 4.5 per cent and is estimated at about 85 million tonnes (in milk equivalents) in 2022, compared to 2021. China, a major importer, witnessed a decline in imports due to sluggish demand on account of COVID-19 containment measures, domestic milk production growth and high inventories.

The impact of sluggish global trade was reflected in the international prices of dairy commodities. The prices of butter and SMP at the Global Dairy Trade (GDT) auction declined by 30 per cent and 42 per cent respectively during the period of April 2022 to March 2023. By the end of March 2023, butter was traded at USD 4,750 per Metric Tonne (MT), while SMP was quoted at USD 2,650 per MT.

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Producer Company

Representing Indian Dairy Sector Globally

NDDB organised various global and national events to showcase smallholder dairying, innovations and best practices in the sector.

IDF World Dairy Summit 2022

NDDB organised the International Dairy Federation's World Dairy Summit 2022 (IDF WDS 2022) at the India Expo Centre & Mart, Greater Noida during 12-15 September 2022. The theme of the Summit was "Dairy for Nutrition & Livelihood". The Summit was hosted in India after a gap of 48 years since the International Dairy Congress in 1974.

Shri Narendra Modi, Hon'ble Prime Minister of India, inaugurated the Summit, highlighting India's significance in the global dairy sector. The agenda of the Summit included technical sessions, poster competition, exhibition and social and technical tours. Notable attendees were Shri Amit Shah, Hon'ble Union Minister of Home Affairs and Cooperation, Shri Yogi Adityanath, Hon'ble Chief Minister of Uttar Pradesh, Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying, Dr Sanjeev Balyan,

Hon'ble Union Minister of State for Fisheries, Animal Husbandry and Dairying, Dr L Murugan, Hon'ble Union Minister of State for Fisheries, Animal Husbandry and Dairying, Shri Narendra Singh Tomar, Hon'ble Union Minister of Agriculture and Farmers Welfare, Dr Mansukh L Mandaviya, Hon'ble Union Minister of Health and Family Welfare, Chemical and Fertilizers, Shri Piyush Goyal, Hon'ble Union Minister of Commerce and Industry, Consumer Affairs, Food & Public Distribution and Shri Giriraj Singh, Hon'ble Union Minister of Rural Development and Panchayati Raj.

Around 1700 National and International dairy leaders, experts, farmers, processors and producers from 55 countries (including India) attended IDF WDS 2022.

During the Summit, 24 sessions were organised, centred around the theme “Dairy for Nutrition and Livelihood”.120 speakers and chairs, including 79 from other countries, deliberated upon diverse topics such as global dairy situation and trends, farming techniques and innovations, nutrition and health, as well as sustainability and climate action. The programme featured eminent speakers from global organisations such as FAO, Codex, World Organization for Animal Health (WOAH), Organization for Economic Cooperation and Development (OECD), United Nations Environment Programme (UNEP), World Bank and Global Children Nutrition Foundation. One hundred and fourteen organisations exhibited their products, innovations, technology and services covering a space of 6900 sq. mt.

The poster competition on the theme “Innovations across Dairy Value Chain - Aligning with UN SDGs” showcased work by 43 participants. NDDB was awarded for posters on "Ration Optimisation to reduce methane emission intensity and water foot print of milk under smallholder dairying" and "Rathi breed development and conservation project - an effort towards sustainable dairying under fragile agro economic conditions".

NDDB received awards in three categories at the IDF Dairy Innovation Awards: (i) Innovation in Research & Development – Collection & Processing, (ii) Innovation in Research & Development – Farming and (iii) Innovation in Sustainable Farming Practices – Environment. Additionally, NDDB bagged awards for Manure Value Chain model, e-GOPALA app, genomic selection system for buffaloes in India and NDDB Dairy ERP.

IDF WDS 2022 was declared as a carbon neutral event.

Shri Meenesh Shah, Member Secretary, INC-IDF expressing his views while accepting the IDF WDS 2022 key from South Africa

Shri Meenesh Shah, Member Secretary, INC-IDF handing over the IDF WDS 2023 key to The United States of America.

Spreading spirit of cooperation beyond India

Shri Meenesh Shah, Chairman, NDDB and Shri Shamalbhai Patel, Chairman, GCMMF met Mr. Ranil Wickremesinghe, Hon'ble President of Sri Lanka to discuss action plan for transformation of Sri Lanka's dairy sector

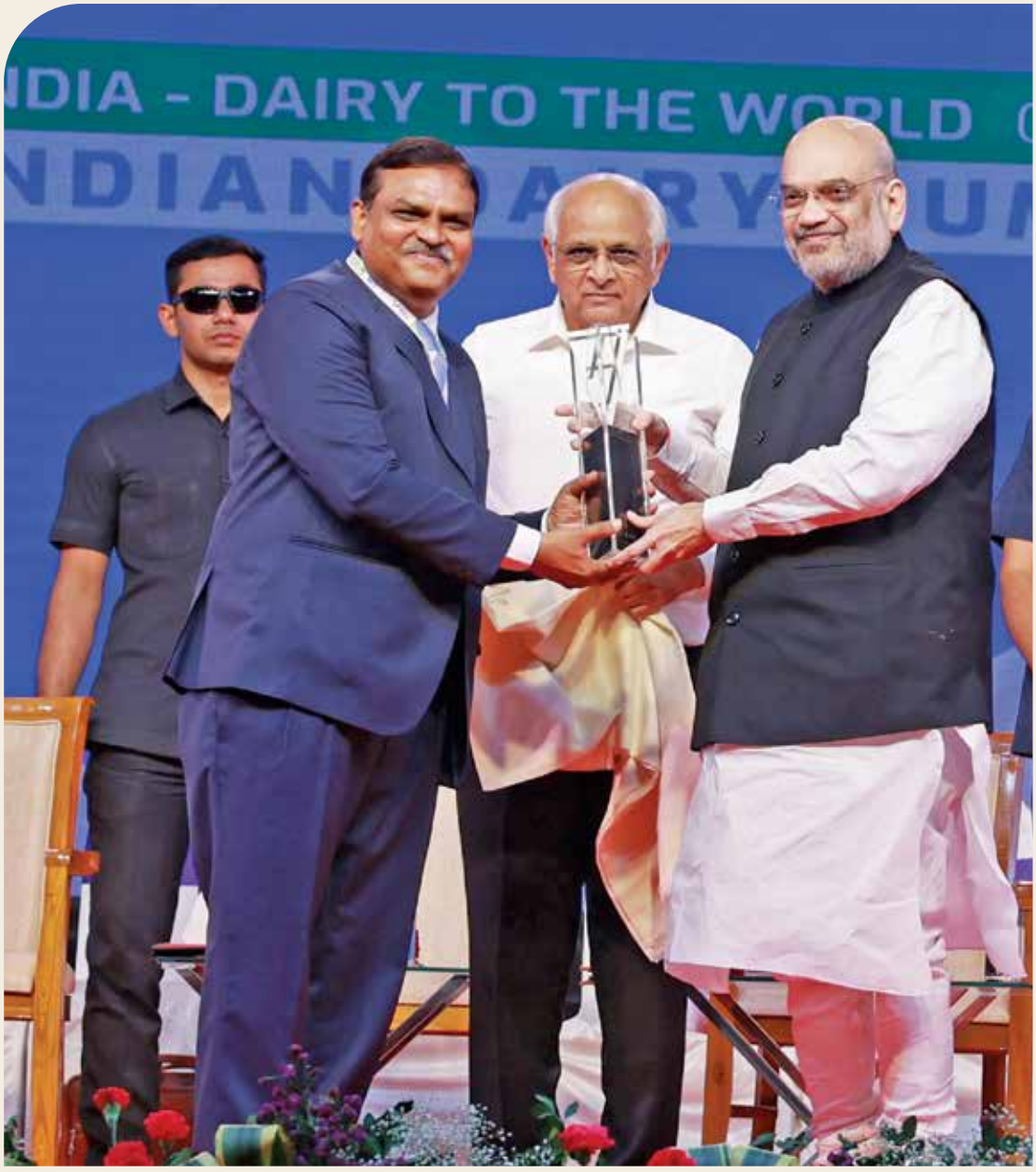
The neighbouring Asian and African countries have smallholder milk production systems like India. Shri Amit Shah, Hon'ble Union Minister of Home Affairs and Cooperation, expressed his desire at IDF WDS 2022 to support these countries and replicate India's successful smallholder system for holistic dairy development through cooperation.

Taking into consideration past collaboration with NDDB, the Government of Sri Lanka sought assistance from India to help Sri Lanka achieve its nutritional requirements and improve the livelihoods of smallholder dairy farmers across the country. By undertaking field visits and meetings with various stakeholders, NDDB along with Gujarat Cooperative Milk Marketing Federation is formulating a large scale dairy development plan for Transforming Sri Lankan Dairy Sector from deficiency and import dependency to self-sufficiency.

NDDB is assisting the Government of Kenya in strengthening their dairy sector through cooperatives by putting in place a long-term dairy development plan. On the sidelines of 49th Dairy Industry Conference and Expo, organised by the Indian Dairy Association at Gandhinagar, Shri Meenesh Shah, Chairman, NDDB, met H.E. the Kenyan High Commissioner, Mr Willy K Bett and Ms Margaret Kibogy, Managing Director, Kenya Dairy Board and had discussions in this regard.

Shri Meenesh Shah, Chairman, NDDB met H.E. Mr Gabriel Pandureni Sinimbo, High Commissioner of Namibia and assured support to Namibia across the dairy value chain.

Shri Meenesh Shah, Chairman, NDDB conferred with prestigious Dr Kurien Award



Shri Meenesh Shah, Chairman, NDDB received the prestigious 14th Dr Kurien Award 2023 at the 49th Dairy Industry Conference in Gandhinagar on 18 March 2023. The Award, instituted by the IDA, presented by Shri Amit Shah, Hon'ble Union Minister of Home Affairs and Cooperation recognises Shri Meenesh Shah's significant contribution towards the development and growth of the Indian dairy industry.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Strengthening Dairy Cooperatives

NDDB's core belief is in the effectiveness of cooperation as the preferred form of enterprise, providing producers with control through democratic self-governance. Based on this belief, NDDB offers support to existing dairy cooperatives and producer institutions which includes managerial, technical, marketing and financial assistance.

Revitalising Cooperatives

NDDB introduced 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.

Ernakulam Milk Union, Midnapore Milk Union, West Assam Milk Union and Varanasi Milk Union have benefited from this scheme. The project's total outlay is ₹ 28.47 crore including ₹ 11.96 crore as grant-in-aid from NDDB.

Marketing Support

NDDB provides support in development of marketing competencies and expanding the consumer base for dairy cooperatives through "Support to Strengthen Marketing Operations of POIs." In 2022-23, six more cooperatives have benefitted from this, bringing the total to 22. The total outlay for the projects under implementation is ₹20.75 crore with ₹ 9.55 crore as grant-in-aid from NDDB. Apart from infrastructure support, cooperatives also received guidance in sales and distribution.

Dugdh Utpadak Sahkari Sangh Ltd. Varanasi, Uttar Pradesh and Midnapore Cooperative Milk Producers Union Ltd., Midnapore, West Bengal relaunched their brands with assistance from NDDB.

In response to a request from Kerala Cooperative Milk Marketing Federation (KCMMF), NDDB conducted a market assessment study for their brand. Acting on the recommendations of the study, KCMMF relaunched its brand – 'Milma' with assistance from NDDB.

To enhance marketing capacity in various cooperatives across 24 states, NDDB organised training programmes and workshops for their marketing managers and officers.

SUCCESS STORY

RE-LAUNCH OF BRAND MILMA

A market study was conducted by NDDB and it was found that Milma had strong brand recall but lacked vibrancy for the changing times and demography. Further, standardisation of packaging, pricing, quality parameters and recipes were also needed.

Following the study's recommendations, KCMMF relaunched the 'Milma' brand with technical and financial assistance from NDDB.

The brand was re-launched in a function attended by Shri Pinarayi Vijayan, Hon'ble Chief Minister of Kerala and other dignitaries. The revitalisation added vibrancy to the brand and was well-received by consumers and other stakeholders. This initiative benefits the farmers of the state by improving the consumer perception of Milma.

Dairying through Cooperatives – Key to sustainable livelihood

NDDB is the implementing agency for the"Dairying through Cooperatives (DTC)" project which is the component B of the National Programme for Dairy Development (NPDD), an initiative of Government of India.

Various interventions under the project have been envisaged for setting-up milk procurement systems, milk processing, marketing & ICT infrastructure along with activities for productivity enhancement of milch animals with special focus on training & capacity building for the dairy farmers and staff of Producers' Owned Institutions (POIs).

The project has a total outlay of ₹ 1568.3 crore, which includes ₹ 924.6 crore as an Official Development Assistance (ODA) loan from Japan International Cooperation Agency (JICA), ₹ 475.5 crore as Government of India's grant and ₹ 168.2 crore as State/Participating Institution's (PI) contribution. PIs can access loans at an interest rate of 1.5 per cent per annum.

During 2022-23, 11 sub-project plans were approved under the scheme, with a total financial outlay of ₹ 251.7 crore, comprising a loan of ₹ 116 crore, a grant of ₹ 120.6 crore and PIs' contribution of ₹ 15.1 crore.

Dairy Processing and Infrastructure Development Fund

NDDB is one of the Implementing Agency for"Dairy Processing & Infrastructure Development Fund (DIDF)", a scheme of Government of India with implementation period from 2018-19 to 2022-23. The major components of the scheme are creation, modernisation and expansion of milk processing infrastructure, manufacturing facilities for value-added products, setting-up of chilling infrastructure and electronic milk testing equipment at village level. The scheme has a financial outlay of ₹ 11,184 crore, comprising ₹ 8,004 crore as loan, ₹ 2,001 crore as End Borrowers' contribution, ₹ 12 crore contributed by Implementing Agencies towards Project Management & Learning and interest subvention of ₹ 1,167 crore from the Government of India.

As of 31 March 2023, 36 projects with an outlay of ₹ 6730.2 crore including a loan of ₹ 4538.40 crore have been approved. During 2022-23, loans amounting to ₹ 1072.9 crore were disbursed to dairy cooperatives, with a cumulative disbursement of ₹ 2343.9 crore from 2018-19 to 2022-23 under the scheme. The approved projects will enhance the milk processing capacity by 1.5 crore litres per day.

As of March 2023, 11 projects have been completed, resulting in the expansion of milk processing capacity by 63.7 LLPD.

Interest Subvention to Producers Owned Institutions for working capital loans

During 2020-21, Government of India introduced "Supporting Dairy Cooperatives and Farmer Producer Organisations" (SDCFPO) scheme with a component - "Interest Subvention on working capital loans" having an outlay of ₹ 203 crore to aid dairy cooperatives that faced difficulties due to COVID-19 pandemic-related restrictions. The scheme was extended with an outlay of ₹ 500 crore for the period FY 2021-22 to FY 2025-26.

Under this scheme, eligible Participating Agencies (PA) can avail a 2 per cent per annum interest subvention on working capital loans from banks and financial institutions. An additional 2 per cent per annum interest subvention is provided for prompt and timely loan repayment. During 2022-23, a total of ₹ 173.4 crore was released as interest subvention to dairy cooperatives. The Government of India has released cumulative funds of ₹ 433 crore to NDDB from 2020-21 to 2022-23 and NDDB has further released interest subvention of ₹ 372.7 crore to the dairy cooperatives as of 31 March 2023. The scheme has enabled dairy cooperatives to make regular payments to dairy farmers by availing working capital loans with interest subvention.

Formation of Farmer Producer Organisation

NDDB is one of the implementing agencies for the Central Sector Scheme "Formation and Promotion of 10,000 Farmer Producer Organisations (FPOs)". As a part of this, NDDB has been assigned the responsibility for formation of 100 Fodder Plus FPOs and 26 Beekeepers' FPOs. 15 Beekeepers' FPOs and 4 fodder plus FPOs have been formed till March 2023. NDDB is working closely with dairy cooperatives, Producer Owned Institutions and other agencies for implementation of this scheme.

Promotion of Beekeeping

NDDB is one of the Implementing Agencies (IA) under National Beekeeping and Honey Mission (NBHM) scheme. The main objective of the scheme is to promote scientific beekeeping by giving thrust on capacity building, specific focus on women, input support and creation

SUCCESS STORY

WAYANAD GRAMA VIKAS FARMERS PRODUCER COMPANY LIMITED

NDDB designated HORTICORP (Kerala State Horticultural Products Development Corporation) as the Cluster Based Business Organisation (CBBO) for formation of Beekeeper's FPOs/ Honey Clusters in Wayanad and Thiruvananthapuram districts of Kerala under the Central Sector Scheme for Formation and Promotion of 10,000 FPOs. Under this, the Wayanad Grama Vikas Farmer Producer Company Limited (WGVFPCL) was registered in July 2022 which has over 210 shareholders as on March 2023. Within a period of six months, WGVFPCL organised nine batches of beekeeping and value addition training, under NBHM, for 206 farmer members out of which 25 members were women workers of Kambamala Tea Estate of Kerala Forest Development Cooperation and supplied 2,060 bee colonies. Moreover, the members of FPO were given the platform to display and sell their products in four state-level workshops wherein the products were well received. The FPO generated a combined turnover of ₹ 33.7 lakh through the sale of honey and its by-products. To promote the sales, WGVFPCL is under process to open a retail outlet in Wayanad, which will be ready for business operations soon.

The social and financial inclusion that the company has brought about through its activities will have wide-reaching benefits. This has provided the FPO members with additional income and has equipped them with finances for family nutrition, healthcare and education.

of necessary infrastructure facilities which will help in achieving the goal of "Sweet Revolution" (initiative to promote apiculture). NDDB organises capacity building and technology demonstration programmes to equip the farmers with the technical as well as practical skills and requisite knowledge for scientific beekeeping. NDDB has conducted 81 training programmes and awareness seminars on scientific beekeeping covering more than 3,800 farmers with the support of Dairy Cooperatives, Agriculture Universities and other such agencies. In these training programmes, farmers are trained for using the required tools and equipment needed for scientific beekeeping, so that their start-up risk is reduced. NDDB is also encouraging dairy cooperatives and other organisations to set up modern honey processing and honey testing facilities.

Expansion of Cooperative Footprint

NDDB has been working with the Ministry of Cooperation to expand the coverage of dairy cooperatives to more Gram Panchayats. An action plan has been prepared for this purpose and three pilot projects in one district each of Haryana, Karnataka and Madhya Pradesh are being implemented. These pilots will provide valuable insights and learnings that will contribute to the development of a comprehensive action plan by NDDB.

Formation of new Multi-State Cooperative Societies

In January 2023, three new national level multi-state cooperative societies were set up viz. National Cooperative Organics Limited (NCOL), Bharatiya Beej Sahakari Samiti Limited (BBSSL) and National Cooperative Exports Limited (NCEL). NDDB is a promoter for two of these societies aligning with the vision and mission of "Local to Global" contributing to the realisation of "Sahkar se Samriddhi".

National Cooperative Organics Limited

NCOL functions as an umbrella organisation, responsible for aggregating, certifying, testing, procuring, branding and marketing organic products produced by cooperatives and related entities. NCOL aims to support India in becoming a global leader in 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

NDDB and KOF partner with UAS-B and IIOR for production of hybrid sunflower seeds in presence of Sushri Shobha Karandlaje, Hon'ble Minister of State for Agriculture and Farmers Welfare, Government of India, Shri B C Patil, Hon'ble Minister of Agriculture, Government of Karnataka and Shri Meenesh Shah, Chairman, NDDB

Marketing Federation Ltd (GCMMF-AMUL) and National Agricultural Cooperative Marketing Federation of India Ltd (NAFED). NCOL was registered on 25th January 2023 and has an initial paid-up share capital of ₹ 100 crore and an authorised share capital of ₹ 500 crore.

Bharatiya 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 Limited (IFFCO), NAFED, NDDB and NCDC. BBSSL was registered on 25th January 2023 and has an initial paid-up share capital of ₹ 250 crore and an authorised share capital of ₹ 500 crore.

BBSSL's primary objective is to produce, process, store, market, brand, label, distribute and conduct research & development of high-quality seeds produced by cooperatives or other entities. It aims to offer better prices to farmers and stakeholders.

Promoting Edible Oil Cooperatives

NDDB is committed to leveraging the network of the dairy cooperatives to increase area and production of oilseeds in the country. NDDB has been working with the Government of India to increase the area under cultivation as well as productivity of sunflower crop. In order to produce high quality oilseeds, MOUs were signed by NDDB, Karnataka Cooperative Oilseeds Growers' Federation (KOF) and University of Agricultural Sciences– Bangalore (UAS-B) for commercialisation of KBSH series of Hybrid Sunflower Seeds. NDDB sanctioned a working capital loan of ₹ 10 crore at a concessional interest rate, to KOF, for sourcing oilseeds and edible oil at reasonable prices during the harvest season. This will help NDDB in formulating strategies to cover more oilseed crops with high yielding hybrid seeds and enter new geographies and states.

National Dairy Plan, Phase II

NDP-II is the second phase of the National Dairy Plan, designed to build on the success of NDP-I. NDP-I focused on enhancing milch animal productivity and improving market access in 18 major dairying States. This helped in sustaining an annual growth rate of six per cent in milk production.

NDP-II is in an advanced stage of approval by the Government of India and the World Bank. Essential documents like Project Operational Manual, Procurement and Financial Management Manuals, Integrated Sub Project Plans and awarding of important consultancy services like Environment & Social Assessment and External Monitoring and Evaluation have been completed.

NDP-II aims to enhance competitiveness,

inclusion and resilience in the milk value chain while reducing its carbon footprint and focusing on smallholder dairy farmers.

NDP-II is envisaged as a Central Sector Scheme with credit from International Bank for Reconstruction and Development (IBRD), matching contribution by Government of India, apart from beneficiary share from dairy cooperatives.

Investment under NDP-II aims to boost sale of milk and milk products through dairy cooperatives, enhancing competitiveness of milk value chain with improved product quality from dairy plants certified with quality assessment system. The project's focus includes strengthening dairy cooperatives' capacity, improving dairy business operations through ICT support and enhancing animal productivity with scientific feeding and fodder development.

Additionally, NDP-II emphasises climate-resilient dairying through adoption of climate-smart rearing practices, leading to reduced greenhouse gas emissions. The project promotes inclusivity by encouraging greater participation of women and small-scale dairy farmers in the milk value chain.

NDDB conducted state-level stakeholder consultations in six focused States to understand dairy development challenges, which formed the project design. The World Bank conducted several rounds of Mission Visits and field visits to appraise the project.

North East Dairy and Foods Limited

In the current year, a new joint venture company called North East Dairy and Foods Limited (NEDFL) was incorporated on 17 January 2023. The company is a collaboration between the Government of Assam and NDDB, with both contributing ₹ 5 crore each as equal equity. NEDFL's primary objective is to implement the ambitious and comprehensive Assam Dairy Development Plan (ADDP) over a seven-year period. The plan aims to make the state self-sufficient in milk production, procurement, processing and marketing. As the apex body, NEDFL will drive dairy development in the state through clusterbased cooperative milk unions.

Shri Meenesh Shah, Chairman, NDDB with Smt. Nandita Gorlosa, Hon'ble Minister of Cooperation, Government of Assam during the first board meeting of North East Dairy and Foods Limited

Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying, along with Dr Sanjeev Balyan and Dr L Murugan, Hon'ble Union Ministers of State for Fisheries, Animal Husbandry and Dairying inaugurating the Start-up Conclave

Start-up Conclave

NDDB, in collaboration with the Department of Animal Husbandry and Dairying, Start Up India, Confederation of Indian Industry (CII) and Animal Husbandry Department of Telangana, organised a Start-up Conclave on 28 February 2023. The Conclave aimed to promote livestock, dairy and animal husbandry start-ups by bringing together entrepreneurs, investors and industry experts. It featured a pitch fest, buyer seller meets, showcasing deserving start-ups and a workshop to train early-stage start-ups in the Animal Husbandry and Dairy Sector on pitching, building business pillars and creating impact stories.

Gopal Ratna Award 2021-22

The Department of Animal Husbandry and Dairying organised the Gopal Ratna Award 2021-22 to recognise individuals and organisations adopting innovative technology for productivity enhancement, indigenous breed conservation and effective dairy cooperative management. NDDB facilitated and coordinated the adjudication and promotion of the Awards. The felicitation ceremony took place on 26 November 2022 at Dr Babu Rajendra Prasad International Convention Centre, GKVK Campus, Bengaluru.

Dr Sanjeev Balyan, Hon'ble Union Minister of State for Fisheries, Animal Husbandry and Dairying presenting Gopal Ratna Award

Management Support to Milk Federations & Unions

The development of the dairy sector is not uniform across different regions of the country, leading to disparities in milk production, animal productivity, dairy infrastructure and market access. Establishing a transparent village-based milk procurement system and ensuring market linkages can augment household income and increase milk production. To address the gaps in less dairy-developed areas, including aspirational districts, NDDB provides management support to milk unions and federations, steering dairy development initiatives.

Jharkhand Milk Federation

During the year, Jharkhand State Cooperative Milk Producers' Federation Limited (JMF) made significant progress in various aspects. JMF achieved a daily average milk procurement of about 145.3 TKgPD from more than 30,000 members, covering about 3,000 villages, which is around 18 per cent increase from the previous year. The federation paid ₹ 180.3 crore towards milk bill to milk producers through direct benefits transfer. During the year, the state government paid an incentive of ₹ 2 per litre to milk producers associated with JMF. 665 Data Processor Milk Collection Units (DPMCU) & 108 Automatic Milk Collection Units (AMCU) have been installed in village MPPs to ensure transparent and efficient operations in milk collection process.

JMF marketed liquid milk averaging 156 Thousand Litres Per Day (TLPD), a 15 per cent increase from the previous year. A new dairy plant at Sahibganj with a capacity of 50 TLPD (expandable to 100 TLPD) was inaugurated by Hon'ble Chief Minister of Jharkhand during the year. JMF also launched a new product called Medha Khoa and initiated the Giftmilk project in Bokaro District under Corporate Social Responsibility (CSR) activity with NDDB Foundation for Nutrition (NFN). Under this project, approximately 5,000 children from 10 government schools are being provided 200 ml of flavoured milk on daily basis.

The Government of India, under the NPDD scheme, has approved the establishment of a State Central Laboratory for the JMF. This laboratory is equipped with modern testing facilities, including LCMS, GCMS, ICPMS, BacSomatic, MilkoScan-FT-1, etc. for analysis of milk and milk products contaminants (Pesticide Residue, Veterinary Drugs, Melamine), Heavy Metals, Bacterial Count and Somatic Cell Count.

JMF achieved the sale of approximately 6,000 MT of compound cattle feed to milk producers and distributed 9,235 Kgs of fodder crop seeds to the milk producers under its input programme during the fiscal year 2022-23.

To promote perennial fodder grasses, free Hybrid-Napier cuttings were provided to milk producers, with over 55,000 Napier cuttings distributed among Jharkhand's milk producers during the year.

Another milestone for JMF during the year was the implementation of the "IVF-Embryo Transfer Project" as part of the Accelerated Breed Improvement Programme. This project aims at breed improvement to enhance productivity and is subsidised under Rashtriya Gokul Mission (RGM) of the Government of India. During 2022-23, JMF selected 450 recipient animals and successfully established 14 pregnancies in these animals through this technology.

During the year, JMF took a technological step by integrating the Automatic Milk Collection System (AMCS) and Enterprise Resource Planning (ERP), using a hybrid approach for input materials sales (cattle feed products), through deduction of milk bill. This integration has not only improved the transparency of transactions between the milk producer and the cooperative but also provided the cooperative with a distinctive advantage by reducing processing time. JMF's contribution in developing NDERP was recognised with International Dairy Federation Innovation Award at World Dairy Summit in 2022.

In collaboration with Sustain Plus Energy Foundation (an affiliate of Tata Trusts), JMF has implemented a Manure Management Programme under NDDB's initiative to promote green energy. Through this, 100 Flexi BioGas units have been successfully installed at the premises of milk producers. This helps milk producers save on fuel cost of LPG and contributes to better environmental practices and sustainable agriculture. Further, a bio-slurry processing unit has been established at Changani, Tikratoli, in Bero block of Ranchi district to use the slurry from these biogas units. As a part of its Green Energy Initiative JMF did pilot testing of solar energy based instant milk chiller in a remote village of Gumla district.

During the year, 43 Dairy Cooperative Societies and one beekeepers FPO in Lapung block of Ranchi district were registered.

West Assam Milk Producers' Cooperative Union Limited

The NDDB-managed West Assam Milk Producers' Cooperative Union Limited (WAMUL) popularly known as Purabi Dairy, collaborates with over 28,000 dairy farmers through 562 functional dairy cooperative societies covering over 1,500 villages. Purabi reported an average milk procurement of 47,852 Kg Per Day (KgPD) during the year 2022-23.

Moreover, during the year, WAMUL expanded its bulk milk cooling capacity by 36,000 litres within its operational area, which played a crucial role in attracting more dairy farmers to the cooperative fold. As a result, WAMUL observed a significant 27 per cent increase in the number of dairy farmers associated with it in the fiscal year 2022-23.

WAMUL achieved sales of around 83,000 Litres Per Day (LPD) of packed liquid milk and milk products such as paneer, sweet curd, plain curd, lassi, cream and ghee under 'Purabi' brand, marking a growth of 20 per cent compared to the previous year. At present, WAMUL is fortifying all its variants of packed liquid milk with vitamins A & D. During 2022-23, NDDB sanctioned ₹ 500 lakh as interest free loan and ₹ 300 lakh as grant to WAMUL under its Revitalising Promising Producers' Owned Institutions Scheme. WAMUL recorded a sales turnover of around ₹ 200 crore during the year which is 33 per cent higher than the previous year.

WAMUL, as the end implementing agency of the formal dairy value chain component of the World Bank-financed Assam Agribusiness and Rural Transformation Project (APART), continued to offer various input services to its dairy farmers. These services included doorstep Artificial Insemination (AI) facility, distribution of cattle feed and feed supplements at affordable rates and organising field demonstrations, training and capacity-building programmes.

During the year, WAMUL reported 8,45,794 AIs in 3,240 villages through a network of 454 mobile AI technicians (MAITs) in the districts covered under APART. The project, during the same period, reported the birth of 3,14,099 calves, of which 162,116 were female calves.

WAMUL distributed over 3,500 tonnes of cattle feed, 24 tonnes of mineral mixture, 10 tonnes of bypass protein meal and 5.36 lakh Hybrid-

Napier slips to its dairy farmers. It continued with the demonstrations of urea-treated paddy straws & green fodder silages, development of nurseries & demonstration plots of fodder crops and medicinal plants under Pashu Ayurveda activities. It introduced programmes such as calf nutrition popularisation programme and Ration Balancing Programme (RBP) to improve feed management for both young and adult milch animals. Additionally, vaccination and health camps, including Ethno-Veterinary camps were organised.

In line with its commitment to green energy initiatives, WAMUL deployed solar-powered automated milk collection systems and instant milk chilling units to strengthen its village-based milk procurement activities. During the year, the cooperative commissioned 100 gobar gas units, each having 2 cubic meter capacity, at the individual households of women beneficiaries in Maloibari revenue village in Khetri sub-division of Kamrup (Metropolitan) district. The initiative was funded by NDDB and Sustain Plus Energy Foundation (an affiliate of Tata Trusts). Further, necessary steps were taken to register a Gobar cooperative society "Sakhi Jaibik Khar Samabai Samittee Ltd." comprising 100 women dairy farmers as members.

The registration of "Naba Milon Beekeepers and Producer's Cooperative Society Limited" was facilitated by WAMUL in Hajo area of Kamrup district under Central Sector Scheme for Formation and Promotion of 10,000 FPOs and has reached a membership of 85 members. WAMUL collected 250 kg of raw honey from the newly registered cooperative society, processed, packed and marketed under "Purabi" brand.

East Assam Milk Union Limited

A tripartite agreement has been inked between the Government of Assam, NDDB and The East Assam Milk Producers Cooperative Union Ltd. (EAMUL) on 11 January 2023 to augment dairy development in East Assam through dairy cooperatives. It is envisaged to initiate 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 Cooperative Societies (DCS) at village level.

The management of EAMUL has been delegated to NDDB. 23 DCSs have been formed and milk procurement has been initiated in Darrang and Sonitpur districts as of March 2023.

Shri Meenesh Shah, Chairman, NDDB inaugurating the Chilling Centre at Chakia, Chandauli, Varanasi

Assessment of milk production and milk surplus in the districts of Upper Assam
At the request of Government of Assam, a sample survey was conducted during May-June 2022 to estimate milk production and milk surplus at the sub-district level in 7 districts of Upper Assam (Dhemaji, Dibrugarh, Golaghat, Jorhat, Lakhimpur, Sivasagar and Tinsukia) which was funded through APART project. Subsequently, Sonitpur district was also taken up for the survey.

A primary survey was initiated in March 2023 to explore the potential of dairying and animal husbandry in Dima Hasao district of Assam.

Varanasi Milk Union

NDDB continues to manage Varanasi Milk Union since December 2021. During 2022-23, around 8000 dairy farmers benefited through 327 Dairy Cooperative Societies with an average milk procurement of 21.9 TKGPD.

A greater degree of transparency was ensured in the village-level milk collection process by installing and operationalising 150 DPMCUs. Installation of 16 BMC at strategic locations along the milk collection routes has greatly improved the quality of milk. Besides ensuring quality of milk procured at farm level, Varanasi Milk Union has also strengthened its Quality Assurance Laboratory, to make available adulterant free and pure milk to its consumers.

To be resilient and agile, modern business software system NDDB Dairy ERP (NDERP) has been implemented by milk union. NDERP has integrated major business processes of the milk union.

During the year Varanasi Milk Union obtained approval for an interest-free loan of ₹ 394.2 Lakh and Grant of ₹ 300 Lakh under the "Revitalising Promising Producers' Owned Institutions Scheme" of NDDB. The approved outlay will be utilised for strengthening milk procurement operations, processing and ICT infrastructure. Varanasi Milk Union continued to provide various input services such as the distribution of cattle feed, area specific mineral mixture and feed supplements at affordable rates. The Union also arranged training and capacity-building programmes for its dairy farmers.

During 2022-23, Varanasi Milk Union sold around 12,536 litres of packed liquid milk every day under the brand 'Parag' besides selling paneer, curd and ghee. The Varanasi Milk Union achieved a growth of around 47.4 per cent over the previous year by registering a sales turnover of ₹ 28.21 crore as against ₹ 19.13 crore registered in the previous year.

The Varanasi Milk Union also gained the distinction of having setup the country's first dung based biogas plant to meet the steam and electricity requirement of its dairy plant. The biogas plant, while creating an additional source of income for dairy farmers through sale of dung is also helping the union to contribute towards reducing carbon footprint by replacing traditional fuels.

Vidarbha Marathwada Dairy Development Project

Vidarbha Marathwada Dairy Development Project (VMDDP) is being jointly implemented by NDDB through its subsidiary Mother Dairy Fruit and Vegetable Pvt. Ltd and Government of Maharashtra. VMDDP was conceived to alleviate farmer distress in the drought prone and suicide prone Vidarbha and Marathwada regions of Maharashtra. The project has benefited 30,000 dairy farmers in more than 3,000 villages. With Mother Dairy's intervention in the region, farmers started receiving remunerative prices for both cow and buffalo milk. Mother Dairy is also facilitating the supply of good quality cattle feed, silage and mineral mixture to the dairy farmers. Three Micro-Training Centres (MTC) were set up by NDDB in Vidarbha region for continual training of farmers in good farm management practices as well as to introduce farmers to Household Biogas Units, which can significantly augment farm income. Nearly 1,350 dairy farmers have been trained at the MTCs in 2022-23.

Owing to the fact that the average milk yield per animal is lower in this region, doorstep AI services were introduced for upgrading the genetic potential of progeny through the usage of good quality semen.

During this year, peak milk procurement crossed the 3.00 LLPD mark and average milk procurement increased to 2.40 LLPD from 2.06 LKgPD in the previous year.

At the Nagpur milk processing plant, 2 lakh litres of milk and 20,000 kg of milk products such as curd, buttermilk and Mishti Doi are processed every day. These products along with other products such as Ice Creams, Paneer, Lassi, Milk Shakes, Sweets and Ghee are being marketed in prominent cities and towns of Vidarbha region by Mother Dairy through a network of 145 booths.

Efforts are underway to expand the milk procurement footprint of the Vidarbha Marathwada Dairy Development project to cover more villages so as to impart a boost to dairying in these regions, augment dairy farmer incomes and improve the sustainability of dairying.

NDDB has initiated milk route optimisation exercise for the milk procurement of VMDDP. Under this exercise, milk collection routes for two milk chilling centres viz. Butibori and Malkapur have been optimised. For Butibori Chilling Centre, the route length has been reduced by 88 km per shift without reduction in number of transport vehicles.

Similarly, for Malkapur Chilling Centre, the route length has been reduced by 179 kilometres per day per shift including withdrawal of two vehicles.

MoU signing ceremony for management of Ladakh UT Dairy Cooperative Federation

Ladakh UT Dairy Cooperative Federation

NDDB entered into a tripatate MoU with the Union Territory of Ladakh and the Ladakh Autonomous Hill Development Council (LAHDC) on 17 August 2022. Under the agreement, NDDB will provide managerial and technical support to Ladakh UT Dairy Cooperative Federation for a period of 5 years.

The focus is on increasing market access and ensuring sustainability and economic viability of the overall operations of the Federation.

The signing ceremony took place in the presence of distinguished individuals, including Shri Radha Krishna Mathur, Hon'ble Lt. Governor of UT Ladakh and Shri Jamyang Tsering Namgyal, Hon'ble Member of Parliament for Ladakh. The MoU was signed by Shri Meenesh Shah, Chairman, NDDB, Shri Tashi Gyalson, Chief Executive Councillor of LAHDC, Leh and Shri Ravinder Kumar, Secretary, Animal Husbandry and Cooperative Department, UT Ladakh.

Enhancing Animal Productivity

Breed Improvement Programmes

NDDB is actively working to enhance the productivity of bovines in the country. This focus on productivity has several advantages including increase in farmers' income, reduced adverse impact on the climate and enhanced nutritional security. Various technological interventions such as Frozen Semen Production, Sexed Semen Production, Artificial Insemination (AI), Ovum pick-up & *In-Vitro* Embryo Production and Embryo Transfer (OPU-IVEP-ET) complimented by scientific nutrition and diligent animal health & disease surveillance collectively aim to optimise the genetic potential of the dairy cattle and buffaloes.

Scientific Breeding Practices

During the year, NDDB continued its efforts to produce and distribute high genetic merit bulls while promoting advanced reproductive technologies among dairy farmers. Additionally, this year saw initiation of new endeavours, such as the Accelerated Breed Improvement Programme (ABIP) using embryo transfer & sexed semen and field embryo transfer involving milk unions.

Expanding reference population for Genomic Selection

In the fiscal year 2022-23, NDDB collaborated with partners, including Gujarat Biotechnology Research Centre (GBRC), GCMMF and Anand Agricultural University (AAU), to strengthen the reference population for genomic selection. As a part of this collaborative effort, 7,638 milk-recorded cattle and buffaloes were genotyped. Additionally, 1,632 samples of animals were genotyped in collaboration with BAIF at NDDB's genomic laboratory. To enable farmers to benefit from genomic selection in choosing animals, genotyping services were provided through NDDB CALF laboratory. Throughout the year 2022–23, a total of 3,181 such samples were genotyped.

To make genotype data generated by various organisations compatible with each other, reduce genotyping costs and increase the reliability of genomic breeding value estimates by using a single reference population, steps towards developing a common genotyping chip for the country have been taken by combining the data from various organisations, i.e., NDDB, BAIF, ICAR-NBAGR and NIAB. As a first step, genotyping chips "INDUSCHIP" and "BUFFCHIP" were upgraded in collaboration with the BAIF Development Research Foundation. Subsequently, genotyping data obtained from ICAR-NBAGR was incorporated into the design of the common genotyping chip for cattle and buffaloes.

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

OPU-IVEP-ET technology can accelerate the genetic improvement of the cattle and buffaloes by multiplying superior germplasm within a short interval. NDDB's state-of-the-art OPU-IVEP-ET facility continued its efforts towards improving the efficiency of the technique used for cattle and buffalo along with the training of manpower. The implementation of the "Hub and Spoke" model for the OPU-IVEP laboratory gained momentum, with progressive milk unions like Banas Dairy, Amul Dairy, Sabar Dairy, Dudhsagar Dairy and Sumul Dairy acting as spokes to NDDB's OPU-IVEP-ET facility laboratory. Throughout the year, a total of 1,213 viable embryos were produced, leading to 813 embryo transfers and establishing 74 pregnancies with 27 superior calves born. In support to these efforts, eight veterinarians from various organisations received training at the laboratory to use this technology effectively. The OPU-IVEP-ET facility of NDDB was represented at the 49th Annual Conference of the International Embryo Technology Society (IETS) in Lima, Peru and was awarded the Early Career Achievement Award in the field of embryo transfer.

NDDB is also monitoring the implementation and strengthening of ETT/IVF centre at SAG, Bidaj under the Government of India's Rashtriya Gokul Mission (RGM) scheme. During the year, the project produced 928 embryos, leading to 237 embryo transfers, resulting in 32 pregnancies. The project also recorded birth of 37 superior calves.

Rashtriya Gokul Mission projects implemented by NDDB

Rashtriya Gokul Mission (RGM), a Central Sector Scheme, is being implemented for development and conservation of indigenous bovine breeds. The scheme is important in enhancing milk production and productivity of bovines to meet growing demand of milk and making dairying more remunerative to the rural farmers of the country. NDDB is implementing various projects like Progeny Testing (PT) and Pedigree Selection (PS) Projects, National Bovine Genomics Centre for indigenous breed, import of Bovine Germplasm, strengthening of ETT/IVF facility, Accelerated Breed Improvement Programme, Breed Multiplication Farms, Strengthening Semen Stations and establishment of AI training Institute and Monitoring of AI Network in NER States etc.

Progeny Testing and Pedigree Selection programmes

Progeny Testing programmes are scientifically-designed field-based programmes implemented for the genetic improvement of cattle and buffaloes. This involves the selection of superior sires and dams and production of High Genetic Merit (HGM) bulls through planned breeding. Under RGM, PT projects for various cattle breeds like Gir, Sahiwal, Jersey, Crossbred Holstein Friesian (CBHF) and Crossbred Jersey (CBJY), as well as buffalo breeds like Murrah and Mehsana, are being implemented in nine states. Throughout the year, PT projects consistently produced HGM bulls, expanding their database of performance records by efficiently tracking breeding activities and milk recording using GPS coordinates for enhanced accuracy of data. In 2022-23, the PT projects collectively tested 268 bulls, performed 4.72 lakh test AIs and put 73,163 animals under milk recording. The projects procured 994 HGM bulls to be distributed to semen stations for the production of high quality disease-free frozen semen doses for inseminations across the country.

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	Crossbred Jersey
2	Gujarat	SAG	Murrah
3	Gujarat	SAG	Crossbred Holstein Friesian
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	Crossbred Holstein Friesian
10	Punjab	PLDB	Murrah
11	Punjab	PLDB	Sahiwal
12	Rajasthan	Sri Ganganagar Milk Union	Sahiwal
13	Tamil Nadu	TCMPF	Crossbred Jersey
14	Uttar Pradesh	ABRO	Murrah

Pedigree Selection (PS) programmes are implemented in the breeding tracts of bovine breeds to support field-based development and conservation efforts. The main objective is to select superior animals within the population

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

HGM bulls procured under PT & PS projects were distributed to various semen stations using Bull Distribution Software (BDS).

Shri Rajesh Kumar Singh, Secretary and Dr Abhijit Mitra, Animal Husbandry Commissioner of Department of Animal Husbandry and Dairying during their visit to NDDB, Anand were apprised of the activities and new initiatives of NDDB & its Subsidiaries and the progress of the schemes of Government of India being implemented by NDDB. They also visited the state of the art OPU-IVEP-ET laboratory and the Genomic laboratory of NDDB along with field visits to a village Dairy Cooperative Society, manure management project, slurry processing unit, CALF Laboratory and IDMC Ltd.

and then disseminate their genetics to the larger population of the breed by establishing infrastructure for AI delivery. Additionally, the PS projects attempt to raise awareness among the participating farmers about the significance of genetic improvement programmes. Under RGM, NDDB is implementing 9 PS projects to develop various indigenous cattle breeds such as Gaolao, Hariana, Kankrej, Tharparkar and Rathi along with buffalo breeds such as Banni, Jaffarabadi, Nili-Ravi and Pandharpuri. These projects are implemented through 8 EIAs in 5 states. During the year, the PS projects collectively performed 72,453 AIs, inducted 6,636 animals under milk recording and procured 79 HGM bulls.

Genomic selection of young bulls

NDDB continued to promote genomic selection under RGM in association with SAG, Bidaj under the National Bovine Genomic Centre for Indigenous Breeds (NBGC-IB). Genomic Selection facilitates early selection of bulls thereby reducing generation interval and thus increasing genetic gain. Currently, Genomic Selection is used to select bulls in breeds like Murrah, Mehsana, HF crossbred (CBHF), Jersey crossbred (CBJY) and Gir. A total of 11,429 samples were genotyped during the year, comprising 1,028 samples from young bull calves, 3,199 samples from existing breeding bulls from semen stations across the country and 7,202 samples of recorded females.

Genomic Selection Services for farmers

Progressive farmers can use Genomic Selection technology to select genetically superior female calves for herd replacement in their farm. Interested farmers can also identify purebred animals by availing the facility of genotyping. Local veterinarians can collect & send the blood/tissue samples to NDDB CALF Ltd for testing.

Accelerated Breed Improvement Programme using IVF embryo produced using sexed semen for getting assured pregnancy

Under RGM, this project focuses on making IVF technology acceptable and affordable to farmers. The objective is to enhance productivity by propagating high-yielding animals and creating additional income sources for farmers through the use of high-yielding animals as donors. The project is aimed to achieve two lakh confirmed pregnancies over a period of three years. During the year, the project performed a total 1,189 ETs and established 147 pregnancies.

Accelerated Breed Improvement Programme using sex-sorted semen for getting assured pregnancy

Under RGM, this project aims to promote the use of sexed semen for the production of female calves with 90 per cent accuracy. The project targets to establish 51.63 lakh assured pregnancies in 5 years. A total of 6.11 lakh sexed semen doses were supplied against the purchase order of 8.77 lakh doses and inseminations with sexed semen were initiated in the field.

In-vitro embryo production for increased genetic gain

Indigenous Semen Sexing Technology

Female calves offer significant financial benefits to dairy farmers due to their higher economic value compared to male calves. However, existing technologies for producing sexed semen to produce female calves, with high accuracy are limited to a few multinational companies, making them cost-prohibitive for majority of dairy farmers. In order to make it economically viable for Indian dairy farmers, an indigenous bovine semen sexing technology has been developed. This home-grown innovation enables the provision of affordable sexed semen doses to Indian farmers. A project aimed at establishing semen sexing facility at the Central Frozen Semen Production and Training Institute (CFSPTI) using the indigenous sexing technology was approved under RGM. The deployment of the first machine at CFSPTI has shown promising results.

Infrastructure Development for Breeding Activities

Breed Multiplication Farms: NDDB initiated the implementation of the Breed Multiplication Farm (BMF) project under RGM with an objective to develop entrepreneurs for establishing BMFs to produce disease-free, high-yielding elite heifers, pregnant heifers or cows of indigenous breeds of cattle and buffalo using scientific breeding methods, including sexed semen and IVF technology. These animals would then be made available to farmers on cost basis. In the fiscal year 2022-23, a total of 71 BMF proposals were approved.

Support to semen production: Strengthening of Semen Stations Project was sanctioned under RGM to support existing semen stations in the country. The project aims to ensure the availability of quality frozen semen doses for AI and develop infrastructure for semen production. NDDB assists the semen stations in formulating the project documents. By March 2023, NDDB had completed the assessment of 36 project proposals, out of which 34 proposals were approved by DAHD.

Establishment of AI Training Institute and Monitoring of AI Network in NER States: To support the north-eastern states (NER) in creating infrastructure for training AI technicians, NDDB, upon request of the Assam Livestock Development Agency (ALDA), initiated the establishment of an AI training institute at Khanapara, Guwahati. During the year 2022-23, the NER AI network project carried out a total of 8.04 lakh AIs, deployed 1,292 Multi-Purpose AI Technicians in Rural India (MAITRIs) in the field and trained 699 participants on INAPH through 31 Training of Trainers (ToT) programmes.

New Projects for Productivity Enhancement

To enhance milk production in various milksheds of the country, NDDB implemented projects like productivity enhancement activities in Bapudham Milk Producer Organisation Limited, Project Gir Varanasi and Vidarbha Marathwada through NDDB Dairy Services (NDS), a wholly-owned subsidiary of NDDB.

Furthermore, several other projects, like Establishment of AI network in Sheopur Madhya Pradesh, Harit Pradesh Milk Producer Organisation Limited Uttar Pradesh, Mayurbhanj District, Yavatmal & Washim districts in Maharashtra, Ryalseema District Andhra Pradesh and Establishment of Cow sanctuary in Muzaffarnagar UP, were approved by DAHD. Subsequently, the field activities were initiated for these projects.

Collaborations for genetics improvement

NDDB continued 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, Uruli Kanchan, Pune), National Research Centre on Meat (NRC-Meat, Hyderabad), AAU, Anand and Kamdhenu University, Gandhinagar to improve genetics of animals.

A joint collaborative training on Genome Wise Association Studies (GWAS) was conducted in association with the GBRC. Besides this, NDDB officers continue to be members of the working groups on DNA and Dairy Cattle Milk Recording of the ICAR.

Feed Management

Feeding balanced ration for better productivity

NDDB is facilitating various interventions related to animal feeding to harness the full genetic potential of animals for improved productivity.

Ration Balancing Programme

NDDB's Ration Balancing Programme (RBP) promotes scientific feeding of dairy animals through doorstep delivery of ration advisory services to farmers.

NDDB continued to provide technical support to various agencies, including dairy cooperatives, for implementation of RBP with an aim to improve productivity of dairy animals in an economically sustainable manner.

During 2022-23, Aga Khan Foundation (AKF), a not-for-profit organisation, initiated the implementation of RBP in Junagadh, Devbhoomi Dwarka, Surendranagar districts of Gujarat and Bahraich district of Uttar Pradesh, with technical assistance from NDDB. AKF provided ration advisories for 1,062 animals of 851 farmers in Gujarat and 1,806 animals of 1,635 farmers in Uttar Pradesh. The adoption of scientific feeding recommendations resulted in an increase of milk yield by 0.2 litres per day per animal with an improvement in fat and SNF content. Moreover, feeding a balanced ration led to a reduction of enteric methane emission (g/kg milk) by 10.5 per cent in cattle and 14.5 per cent in buffalo.

To expand the reach of RBP, 247 officers of State Animal Husbandry Department received training on ration balancing software under A-HELP (Accredited Agent for Health and Extension of Livestock Production).

‘Ready-to-eat’ Total Mixed Ration

The feeding management of dairy animals has undergone significant transformation in India. Many farmers choose the convenient option of ‘ready-to-eat’ feed for their animals, seeking a nutritionally balanced solution that could also reduce labour and operational costs. In response to this trend, NDDB developed silage/green fodder based ‘ready-to-eat’ packed Total Mixed Ration (TMR) that is environment-friendly, meets the nutritional requirement of the dairy animals and is cost-effective for dairy farmers.

An experiment was conducted at Barauni milk union in Bihar to assess the keeping quality of packaged TMR. The TMR was found to be of good quality at different time intervals, with no trace of mould development. Further, to ascertain the acceptability of ‘ready-to-eat’ TMR among dairy farmers and its impact on productivity & dairy farm economics, a field study was carried out in collaboration with Kaira District Co-operative Milk Producers' Union Ltd. Feeding TMR resulted in a 12 per cent improvement in milk yield (11.94 vs. 10.71 LPD) and 11 per cent in fat content (4.24 vs. 3.81 per cent), leading to a net daily income increase of ₹ 38.0 per animal for the farmers.

Encouraged by the positive results, NDDB initiated promotion of green fodder/silage based ‘ready-to-eat’ TMR with the financial support of National Livestock Mission (NLM). Kaira District Cooperative Milk Producers' Union Ltd. is taking a significant step by establishing a ‘ready-to-eat’ TMR plant in Gujarat under the NLM scheme.

Feed supplements to improve milk quality and reduce heat stress during summer season

NDDB continued to provide technical support to dairy cooperatives for production and promotion of different feed supplements that help improve milk yield, milk quality and reduce environmental stress.

During 2022-23, four milk federations/milk unions/ Milk Producer Organisations (MPOs) signed agreement with NDDB for production of “Samvriddhi”, a feed supplement designed to improve fat and SNF content in the milk. About 62 MT Samvriddhi feed supplement was produced and supplied to dairy farmers in 2022-23. Additionally, five milk federations/milk unions/ MPOs produced and sold around 2.8 MT “Pashu Sheetvardhak”, another feed supplement for mitigating heat stress and minimising production losses in dairy animals during the summer season.

Nutritional management for fertility in dairy animals

Nutritional infertility in dairy animals is a major cause of concern among milk producers, as it leads to reduced conception rate, longer intervals from calving to conception, higher inter-calving interval and substantial economic losses for farmers. The deficiency of critical trace minerals and vitamins, along with imbalances in energy and protein, often results in increased occurrences of reproductive disorders, such as repeat breeding (more than three consecutive failed services) and true anoestrous in dairy animals. As 50-60 per

Packing of 'Ready-to-eat' Total Mixed Ration bales

cent of these disorders in the field are estimated to occur because of nutrition imbalance, addressing these deficiencies by supplying critical nutrients in the right proportions can substantially reduce the incidence of reproductive disorders in dairy animals.

With a focus on improving animal fertility, NDDB developed a specialised 'Fertility Feed' to provide specific nutrients necessary for optimum reproduction. A large-scale pilot study was conducted in the Kolhapur Milk Union of Maharashtra, where regularly cyclic lactating crossbred cows (n=47) and buffaloes (n=90) with a history of 4 to 6 failed AIs were identified. Per-rectal examinations were performed to exclude cases of infertility associated with uterine infections, hormonal imbalances and anatomical defects. Only those animals with history of repeat breeding due to nutritional etiology were selected for the study. Preliminary findings indicate that feeding Fertility Feed to these repeat breeder animals resulted in confirmed conception rates of 50 to 81 per cent in cows and 41 to 45 per cent in buffaloes. The AI per conception was found to be 1.2 to 1.5 in cows and 1.8 to 1.9 in buffaloes.

Increasing Fodder Production

Quality fodder in adequate quantity is crucial in exploiting genetic potential of dairy animals and optimising cost of milk production. NDDB is promoting the use of certified or truthfully labelled seeds for green fodder production, scientific fodder conservation technologies and crop residue management to improve availability of fodder resources in the country.

Development of seed multiplication chain

During the year, NDDB made available 12.9 MT of breeder seed (3.2 MT in Kharif and 9.7 MT in Rabi season) from Indian Council of Agricultural Research (ICAR) and other agriculture universities to 15 dairy cooperatives. In this programme, newly notified fodder varieties were brought into the seed multiplication chain, such as Krishna (Lucerne), OL-1861 (Oat), MFC 09-1 (Cowpea), TSFB 15-8, TSFB 15-4 (Bajra) and TSFM 15-5 (Maize). High biomass maize hybrids like DHM-117, DHM-121 and DMRH 1308 were introduced in the seed chain for fodder & silage purpose. Breeder seed of these improved varieties are used by dairy cooperatives' seed processing plants for seed multiplication purpose to produce foundation and certified seed, which helped farmers to improve fodder yields.

Assistance for quality fodder seed production under National Livestock Mission

Under the Central Sector Scheme, NDDB facilitates various dairy cooperatives to take up the quality fodder seed production programme as an implementing agency. During the Rabi season (2021-22), 9 dairy cooperatives in 7 states produced 12,112 quintals of fodder seed worth ₹ 896 lakh. In the Kharif season (2022-23), 8 dairy cooperatives in 4 states participated in fodder seed production and produced about 12,650 quintals of fodder seeds worth ₹ 1,160 lakh. For the Rabi 2022-23 season, projects worth ₹ 4,986 lakh were sanctioned for 10 dairy cooperatives, covering 7 states to produce 59,225 quintals of certified seeds. The quality fodder seeds thus produced are supplied to milk producers of various milk federations/milk unions/Milk Producer Organisations.

To provide exposure to participants on new seed production practices, visits to farmer's seed production plots were organised and the use of drones for nutrients/pesticides spray were demonstrated. Field visits to a modern seed processing plant was also organised to orient participants about the latest technologies used for seed drying, processing, packaging and storage.

Awareness on forage production technologies

To raise awareness among farmers, demonstration on new varieties of various fodder crops (annual and perennial), such as fodder bajra variety (GFB-4) and oats varieties (HFO 806, HFO 707, HFO 611 & HFO 607), were conducted at the fodder demonstration unit (FDU) Anand. Knowledge on cultivating maize and sorghum hybrids for silage production, berseem & oats varieties for green fodder, silage-making from Hybrid-Napier grass and conservation of green paddy crop stubbles as silage were shared with farmers.

To popularise year-round green fodder production system, around 2.77 lakh stem cuttings of Bajra Hybrid-Napier fodder crop were supplied to farmers. Moreover, 600 cladodes of thorn-less cactus were provided to RCDF, Jaipur for cultivation in dry areas of Rajasthan.

Green fodder - an economic source of nutrients

'Fodder Plus' Farmer Producer Organisations

Ministry of Agriculture & Farmers Welfare designated NDDB as the Implementing Agency for formation and promotion of 100 'Fodder Plus' FPOs across the country under the scheme "Formation and Promotion of 10,000 FPOs".

The major objective of establishing Fodder Plus FPOs is to address fodder scarcity by creating an organised supply chain of green fodder, silage, hay, dry fodder and other related products, linking fodder growers with small and marginal dairy farmers. These Fodder Plus FPOs will be registered either under the 'Cooperative Societies Act' of the respective state or under the Companies Act.

NDDB initiated FPO allocation process and empanelled 62 agencies as CBBOs to form 95 FPOs, covering 19 states across the country. Farmer mobilisation, identification of promoters and registration process for these FPOs were initiated. Four FPOs registered under the scheme during 2022-23 have begun developing their business plans to take up various fodder and animal husbandry activities.

Empty Pea Pod silage production and field demonstration

As per the estimate, about 1.81 million tonnes of fruit and vegetable waste is produced annually in the organised sector of India. Empty pea pods (EPP), an agro-industrial waste from pea processing industry, can be an excellent source of nutrients for livestock, if conserved properly through silage-making technology. This approach would help in augmenting fodder resources in the country.

NDDB standardised a method for conserving these high moisture materials into silage by incorporating suitable proportion of crop residue, additives, silage inoculant etc.

A large-scale field demonstration on feeding empty pea pod silage was conducted through a pilot project in collaboration with Mother Dairy Fruit & Vegetable Pvt. Ltd. and JMF, Ranchi. About 40 tonnes of empty pea pod silage was produced in bales and supplied to the selected producer members of JMF to demonstrate its inclusion in the diet of dairy animals.

Improving Animal Health

Animal health plays an important role in harnessing the expected productivity performance of dairy animals. NDDB continued to prioritise the overall health of cattle and enhance the income of small and marginal farmers.

Brucellosis Control

With the Government of India's National Animal Disease Control Programme (NADCP) carrying out vaccination of female bovine calves to control brucellosis, NDDB's brucellosis control model now focuses on the One Health (OH) approach, recognising the significance of zoonosis in humans, which often goes underdiagnosed and hampers productivity. Collaborating with Shree Krishna Hospital, Karamsad, the model aims to understand the link between disease in animals and humans. So far, 3,226 farmers and animal health workers have been tested and all the 131 patients with brucellosis symptoms who received treatment have recovered.

In the project areas, alongside vaccination under NADCP, equal importance is given to other essential control elements, including proper disposal of placenta, awareness creation, disinfection of infected premises, animal isolation, etc. These measures are crucial in preventing disease spread.

Disease Control through Alternate Methods

Holistic disease control models, with a focus on OH, play a crucial role in reducing Antimicrobial Usage (AMU) and mitigating the emergence of Antimicrobial Resistance (AMR), which is considered a silent pandemic affecting both humans and animals. The focus of Disease Control through Alternate Methods (DCAM) has been on OH approach by rationalising the use of antibiotics to reduce AMU and AMR through use of Ethnoveterinary Medicine (EVM).

The DCAM project continued in 16 milk unions/ producer organisations across 8 States (Kerala, Karnataka, Maharashtra, Gujarat, Punjab, Assam, Andhra Pradesh and Uttar Pradesh).

As of March 2023, more than 8.3 lakh cases of EVM interventions were documented from the project regions. The overall cure rate recorded was 80 per cent. Farmers increasingly opted for EVM to treat common ailments on their own, a testimony to the success of knowledge transfer. Surveillance of mastitis pathogens with zoonotic importance is being carried out in animals and humans in the project regions to study its implication.

NDDB is providing grants of up to 30 per cent of the total project cost to support the establishment of EVM manufacturing facilities. This initiative aims to encourage milk unions to strengthen their supply chain for EVM, ensuring that farmers have access to good quality preparations at affordable prices. For this, NDDB allocated ₹ 5 crore for a three-year period beginning in 2021-22. Through this programme, the Sabarkantha and Kaira Milk Unions have established their EVM manufacturing plants. The milk unions that extensively adopted EVM in the field, substantially reduced their medicine purchases, particularly antibiotics.

Biosecurity measures at bull production areas

To ensure the production of disease-free semen, NDDB provides regular consultation on biosecurity and disease control to bull production locations and semen stations. Animal health evaluations are also carried out regularly for semen stations, as part of the ongoing efforts to strengthen them under RGM.

Pashumitra Call Centre

From guiding the farmers to providing crucial information for enhancing animal productivity, NDDB's Pashumitra Call Centre is a true companion of farmers. This exclusive call centre's aim is to further strengthen dairy farming and help farmers emerge as an empowered community. During 2022-23, the call centre facilitated awareness creation on scientific dairying to farmers from 25 States.

Research & Development

Identification and antibiotic susceptibility profiling of bacteria isolated from Mastitic milk samples

The Research and Development activities of NDDB are focused on developing technologies and products that are need based, innovative and affordable.

The R&D Laboratory of NDDB focused on bovine diseases, their epidemiology, diagnosis and applications to enhance animal health & productivity. In the fiscal year 2022-23, emphasis was laid on economically important bovine diseases, including mastitis, brucellosis and IBR. Alternative systems for clinical specimen sampling and transport were evaluated as an effort to offer cost-effective solutions suited to the Indian context. The One Health approach was applied in the research on emerging public health concerns like brucellosis and AMR.

An international twinning project on IBR was initiated between the laboratory and Animal and Plant Health Agency (APHA), one of WOAH's international reference laboratories for IBR located in the United Kingdom. The twinning programme will bolster expertise in IBR diagnosis and epidemiology, thereby aiding disease control efforts in the region.

The laboratory has been maintaining cutting-edge systems and competencies for prompt and accurate disease screening tests. It has provided disease monitoring and surveillance support to the agencies engaged in frozen semen production for bovine breeding and breed enhancement programmes.

Characterisation of mastitis bacteria and antimicrobial resistance

As a part of DCAM project, the participating Milk Unions (MUs) and Producer Organisations submitted 114 milk samples from subclinical/ clinical mastitis cases. Bacteria (n=181) were isolated, identified and their antibiotic susceptibility profiles were determined. Staphylococcus spp. was the most common agent causing mastitis. Advisories with antibiogram were communicated to the

respective Milk Unions/Producer Organisations to aid in informed antibiotic choices for treatment. The multi-locus sequence typing technique (MLST) was standardised to study and determine the risk of Methicillin-resistant *Staphylococcus aureus* (MRSA) transmission between dairy animals and humans as MRSA is a growing global public health concern. *S. aureus* isolates (n=32) belonged to 20 sequence types (STs) which were further clustered in 5 clonal complexes (CC1, CC5, CC8, CC15 and CC97). Members of these clonal complexes have been reported to cause infection in both animals and humans, highlighting its OH significance. A collaborative research programme was initiated with Shri Krishna Medical College to gain insights into the circulation of S. aureus in the dairy farm environment (animals, animal handlers and veterinarians) and determine the OH risks. Bacteria were isolated from the 44 nasal swabs collected from human participants (veterinarians and animal handlers). Isolation and identification of S. aureus and determination of their AMR profile are currently underway.

Initiation of WOAH Twinning programme on IBR

The WOAH Twinning programmes envisage collaboration between the reference laboratories and the suitable candidate laboratories for broad-based cutting-edge diagnostic tools, techniques and research protocols across the world. The twinning project on IBR between the laboratory and the WOAH reference laboratory for IBR-APHA, UK was approved by WOAH. The two-year twinning programme, which commenced in January 2023, will strengthen the technical competencies of the laboratory on IBR research and enrich research credentials for establishing a reference laboratory for IBR diagnosis and epidemiology. The outcomes are expected to bolster WOAH's aim of broad-based expertise for meeting the needs of diagnosis, epidemiology and control of IBR in India and neighbouring countries.

Molecular epidemiology of *Brucella* species

Bovine brucellosis, an important concern from OH perspective, is primarily caused by *Brucella abortus*. Molecular epidemiological studies conducted by the laboratory in 2 cattle herds also revealed *B. melitensis* (n=5) infections in cattle. Multi-locus variable tandem repeat analysis (MLVA) of Indian isolates showed that *B. abortus* (n=40) belonged to 3 genotypes of type-C lineage while the *B. melitensis* (n=5) belonged to the East Mediterranean lineage in India.

Molecular characterisation of lumpy skin disease virus

Seven viruses isolated from some of the LSD outbreaks were molecularly characterised. Phylogenetic analyses based on the 2 epidemiologically important Lumpy Skin Disease Virus (LSDV) genes, *RPO30* and *GPCR* genes of all the LSDV sequences from India available in public domain, including the virus isolated by the laboratory (07 nos.), revealed that the Indian strains belonged to sub-group-I (cluster 1.2), distinct from the vaccine strains available worldwide (sub-group-II, cluster 1.1). The analysis revealed that the virus circulating in India is the same as those reported from the outbreaks in Bangladesh, Nepal and Myanmar. Unlike the outbreaks in China and other South Asian countries, no recombinant LSDV strains were found in India.

Investigation of reproductive diseases in dairy farms

Four dairy herds facing productivity problems were investigated through a multi-pronged approach that included diagnostic assays based on serology (antibody), microbiology (cultural isolation) and molecular analyses (Polymerized Chain Reaction (PCR), real-time PCR and sequencing) for the determination of exposure and circulating infectious agents. The investigations revealed the involvement of multiple infectious agents, majorly *Brucella, Coxiella, Bovine Alphaherpesvirus*-1, *Trichomonas and Chlamydia*.

Prevalence of hemo-parasitic diseases

Early detection of disease, prevalence and determination of carrier animals are crucial for timely and effective control measures of tick-borne hemo-parasitic diseases that inflicts significant losses to the dairy industry. In a cross-sectional study in six farms 30.45 per cent (95 per cent CI: 26.84 per cent -34.32 per cent) of the 578 apparently healthy animals (499 cattle; 79 buffaloes) were detected with hemo-parasites by the PCR assay. While the rate of prevalence varied widely among farms (5.77 per cent to 100 per cent), it was significantly higher in cattle (32.87 per cent) than buffaloes (15.19 per cent). Among the parasites, *Anaplasma marginale* was the most prevalent (23.70 per cent) followed by *Theileria annulata* (13.67 per cent), *Babesia* spp. (1.90 per cent) and *Trypanosoma* spp. (1.56 per cent). Co-infection was found in 60 out of 176 animals.

Prevalence of IBR in India - a retrospective analysis of serological data

Although IBR is endemic to India, the actual extent of prevalence has not been determined. The serological data of the samples received for IBR screening from across the country between 2016-2022 were analysed to determine the prevalence of the disease. The retrospective analysis involved the results of 29,614 individual cattle and buffaloes from 13 states. The overall prevalence of IBR was estimated at 33.41 per cent, with a significantly higher rate of seropositivity in buffaloes (40.5 per cent) than cattle (28.4 per cent) ($p<0.001$). The prevalence was more in adults than calves ($p<0.001$) and in indigenous cattle breeds (38.9 per cent) than crossbred (20.5 per cent) or exotic cattle (20 per cent).

Evaluation of effectiveness of cold chain shipment of frozen semen doses as an alternative to liquid nitrogen shipment for detection of IBR

The guideline manual of Minimum Standards Protocol (MSP) for frozen semen dose (FSD) production by DAHD advocates screening FSDs produced from IBR seropositive bulls for BoHV-1. Only the FSDs negative for BoHV-1 are then recommended for Artificial Insemination (AI). Semen stations currently transport FSDs for screening in liquid nitrogen (LN2) which is laborious, costly and poses biohazard risk during handling and transport. The laboratory therefore, evaluated the feasibility of shipping FSDs under cold-chain conditions (2-8°C in Styrofoam boxes with gel packs). The study involved a simulated, controlled experiment of real-time PCR screening of FSD samples stored at 4-25°C and then a field-trial on FSDs from 6 different semen stations which were shipped under cold chain. The results of 167 samples that were shipped under LN2 and under cold-chain were comparable when received at the laboratory within 6 days and, the temperature inside the Styro-foam boxes were maintained ≤ 15°C.

Sexed semen testing

This year, a robust test was standardised, optimised and rolled out for verification of sexed (male sperm killed) and sex-sorted (male sperm removed) frozen semen doses (FSDs) intended for breeding under the Accelerated Breed Improvement Programme through sexed and sex-sorted semen (ABIP-SS). The technique is based on the novel digital PCR platform and the laboratory has screened nearly 350 FSD batches for verifying the indicated ratios of male and female sperms in the sexed and sex-sorted FSDs of the enlisted manufacturers in 2022-23.

A researcher performing ELISA for serological screening of bovine diseases

Bovine disease monitoring tests undertaken

S. no.	Disease	Test	No. of samples tested	Type of sample	Species
1.	Brucellosis	Antibody ELISA	19941	Serum	Cattle and buffalo
2	IBR	Antibody ELISA (gB ELISA)	17826	Serum	Cattle and buffalo
3		IBR-DIVA (gE ELISA)	271	Serum	Cattle and buffalo
4		Real-time PCR	18161	Frozen semen	IBR seropositive bulls
5	BVD	Antigen ELISA	7900	Serum	Cattle and buffalo
		RT-PCR	117	Serum	Calves <6 months of age
6	JD	ELISA	103	Serum	Cattle and buffalo
7	Enzootic bovine leucosis	ELISA	436	Serum	Cattle and buffalo
8	BGC	*In-vitro* culture	896	Preputial wash	Cattle and buffalo
9	Trichomonosis	*In-vitro* culture	896	Preputial wash	Cattle and buffalo

Bovine disease monitoring

The laboratory screened a total of 66,547 samples from 61 agencies across 15 states during the fiscal year 2022-23 for the diseases listed in the MSP for FSD production.

Evaluation of filter papers as an alternative mode of serum sample shipment for diagnosis of infectious diseases

Filter-paper (FP) based matrices - Nobuto filter paper (Nobuto FP) and Whatmann Grade III filter paper (Whatmann FP) - were evaluated for the collection of bovine sera and shipment at ambient temperatures. The protocols for spotting serum samples and retrieving serum from the dried serum spots were optimised. Enzyme Linked ImmonoSorbent Assay (ELISA) results of 314 samples of known status spotted on Nobuto FP and Whatmann FP were in good agreement with corresponding ELISA results performed with normal liquid sera. Also, the integrity of sera in the FPs was maintained for 30 days at 37°C.

Quality Management System and Proficiency Testing (PT)

The laboratory maintains quality management systems of international standards for bovine disease diagnostic tests (ISO 9001:2015 and ISO/IEC 17025:2017). The accreditation agencies of the ISO 9001 (TUV Nord) and ISO 17025 (NABL) conducted their annual surveillance of the quality management systems and reported full conformity of the systems to the respective standards. The competency and proficiency of disease testing methods were evaluated periodically through the international PT programme from the international PT provider for animal disease diagnosis, the Vetqas, APHA, UK. The laboratory enrolled in PT programmes for IBR (antibody detection), Johne's disease (antibody detection) and BVD (antigen detection). PT results are in 100 per cent agreement with the results of the PT provider.

Artificial Intelligence and Machine Learning based cow monitoring system

Sensor based cow monitoring systems have been in use in dairy developed countries, which played an important role in automation in managing large farms. Such systems are relevant to smallholder dairying in India as they help in accurate identification of estrus and sickness of cattle even before appearance of clinical signs. These systems play very significant role in improving success rate of AI and identification of subclinical cases. However, systems remained out of reach for smallholder dairying in India primarily due to big farm specific design and high cost. As these systems are developed on exotic cattle, they do not show similar accuracy in indigenous cattle. Looking at the usefulness of such system, NDDB initiated developing an affordable system for Indigenous cattle based on an

Artificial Intelligence and Machine Learning (AI-ML) platform. The system consists of sensor mounted collars and a gateway, an application with algorithms developed on indigenous cattle behaviour. The system provides coverage of up to 5 km radius and can connect up to 1000 collars with a single geteway.

An initial trial provided estrus detection efficiency of ≥90 per cent for indigenous and exotic crossbred cows. The indigenously developed system is a low-cost solution compared to commercially available technologies, making them affordable to Indian dairy farmers. The system sends alert on farmer's mobile. Further trials are in progress to provide a promising solution for smart dairying in India.

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

Since media constitutes around 60 per cent cost for production of IVF embryos, NDDB continued its effort for developing indigenous media for IVEP to overcome dependency on import of media and thereby reducing the cost of production of IVF embryos. During the year NDDB successfully produced ovum pick-up, *In-vitro* maturation, *In-vitro* culture and embryo holding media and successfully completed the first round of trial with encouraging results. Further trials are in progress to replace imported *In-vitro* fertilization, embryo freezing and embryo vitrification media.

Bentonite as a cost-effective toxin binder for reducing aflatoxin M1 in milk

In a quest to design a cost-effective toxin binder to supplement the ration of dairy animals, NDDB carried out a series of experiments (*In-vitro* and *In-vivo*) on the use of bentonite as toxin binder for reducing Aflatoxin M1 contamination in milk. *In-vitro* studies revealed that net binding

Elite female milch animals can be multiplied manifold using ovum pick-up

efficacy of bentonite was more than 90 per cent. To validate the effect of feeding commercially available bentonite on Aflatoxin M1 in milk, a field study was carried out in Banaskantha milk union covering 30 crossbred cattle and buffaloes. Study results revealed that feeding 100 g bentonite as top feed reduced the level of aflatoxin M1 significantly (>60 per cent).

Forage research trials on evaluation of new varieties/entries

In collaboration with ICAR-IGFRI, Jhansi & ICAR-IIMR, Ludhiana, research trials were conducted on maize and berseem fodder crops in 2022-23. During Kharif season, a trial was undertaken with 5 fodder maize varieties which were harvested at 3 cutting stages (Milk, Dough & Dent). In this trial, the maize variety African Tall harvested at dent stage produced the highest green fodder yield (29.11 t/ha) and dry matter yield (8.15 t/ha). The green fodder yield, dry matter yield and dry matter content in 5 maize varieties ranged between 23.98-21.86 t/ha, 5.75-6.19 t/ha and 24.17-28.11 per cent, respectively, from milk to dent stages. The silage pH recorded at dent stage was 4.33-4.43. On the basis of dry matter percentage, dry matter yield & pH, dent stage was found more suitable for ensiling in fodder type maize varieties.

During Kharif trial, ICAR-IIMR provided about 76 new maize hybrids for the evaluation of green fodder yield and silage pH. From this trial, 9 maize hybrids were identified that recorded green fodder yield > 25 t/ha, DMY >6 t/ha and silage pH below 4.2 for further evaluation in next season. In the Rabi 2022-23 season, a trial was conducted to evaluate 28 new entries of maize hybrids for fodder yield & silage in collaboration with ICAR-IIMR. In the same Rabi season, in another trial, previously identified 14 maize hybrids entries were sown to record fodder yield and silage data, in order to select best leafy type maize hybrids. In collaboration with IGFRI, AICRP on forage crop project, AVTB-1 & AVTB-2 trials were started with 7 & 6 new entries of berseem varieties, respectively for estimating green fodder yield & growth parameters.

Development of unique Slurry Tanker cum Applicator

As a part of the Manure Management initiative, NDDB also took up development of a dedicated slurry tanker cum applicator designed to serve the dual purpose of transportation and application of slurry directly to the soil.

With the dedicated slurry tanker cum applicator, it has now become easy to transport slurry from the cluster of small biogas plants in the villages. It has also improved the efficacy of slurry as it helps to feed slurry directly to soil reducing nutrient loss and improving nutrient uptake by the plants.

Establishing testing methodology of dung and biogas slurry for efficient manure management

NDDB is extensively promoting Manure Management initiative across the country, ensuring quality of dung and slurry. This will ensure standardisation and production of good quality Biogas and organic fertilisers. Hence, NDDB initiated development of quality parameters for dung and slurry. Field parameters were formed for easy testing of dung and slurry at field level. Further scientific experiments were conducted to establish relationship between field parameters and intrinsic nutrients content/lab parameters of dung and biogas slurry.

Based on these experiments, field testing parameters and quality linked unique pricing mechanism were developed for dung and biogas slurry procurement for smallholder dairy farming system. Standard Operating Procedures (SOP) for procurement of dung and biogas slurry have also been developed to facilitate ease in replication in the field condition.

Slurry tanker cum applicator

Developing state of the art Dairy Infrastructure

To process the milk procured by the dairy cooperatives, NDDB provided support in designing, planning, executing and commissioning new processing infrastructure and expanding existing facilities.

NDDB implemented several projects and innovations aimed to boost efficiency, sustainability and overall excellence across various sectors, reflecting NDDB's commitment to stay at the forefront of technology and best practices in the dairy sector.

- **Laboratory Advancements**: NDDB established a State Central Laboratory at Hotwar Dairy, adhering to rigorous Good Laboratory Practice (GLP) standards and conceptualized a state-of-the-art BSL4 laboratory at GBRC, Gandhinagar.
- **Water Conservation and Innovative Technologies**: New water conservation strategies included an automatic TDS control system for evaporative condensers and the adoption of falling film chiller technology. This system found successful implementation at several projects, including Mega Dairy in Hyderabad, Sabar Cheese and Sabar Rohtak. Simultaneously, to combat high fluctuations in water temperature, the falling film chiller technology was introduced in refrigeration plants. It was successfully implemented in projects located in Jalandhar, WAMUL and Hyderabad.
- **Advanced Structure Protection**: To safeguard plant buildings, an advanced structure lighting protection system and earthing solution were introduced at Sabar Cheese & Whey Drying Plant, offering multiple benefits.
- **Enhanced Drying Efficiency:** In Varanasi biogas plant use of UV polyethene sheets (Polyhouse) is made to hasten the drying of digested slurry produced, outperforming traditional sun drying methods of the slurry.
- **Phosphate Rich Organic Manure Plant with Extruder Technology:** A 30 MTPD PROM plant setup in Varanasi utilised extruder technology to process digested slurry to produce Phosphate Rich Organic Manure (PROM) sustainably.

In addition, NDDB contributed to the establishment of cattle feed plants, Bio-Safety Labs (BSL), Animal Vaccine Production Facilities and Frozen Semen Stations.

In the year 2022-23, a total of 11 engineering projects were completed at various locations across the country, including 6 dairy projects, 2 cattle feed plants, 1 Testing Laboratory, 1 Effluent Treatment Plant (ETP) and 1 Biogas Plant, incorporating energy-efficient and state-of-the-art technologies and designs.

Mega Dairy Hyderabad

NDDB is providing design, technical and project management consultancy services to Telangana State Dairy Development Co-operative Federation Ltd (TSDDCFL) for the establishment of a 5 LLPD (expandable to 8 LLPD) new green field Automated Mega Dairy Plant in the outskirts of Hyderabad. The total project outlay is ₹ 246 crore, partially funded under DIDF (₹ 144.5 crore) and balance by TSDDCFL & the State Government of Telangana.

Automated Fermented Product Plant, Jalandhar, Punjab

The Automated Fermented Product Plant, with a capacity of 1.25 LLPD, was inaugurated by the Hon'ble Chief Minister of Punjab in March 2023. The plant implemented Supervisory Control & Data Acquisition (SCADA) based automated operations in process and utilities that ensure food safety, consistent product quality, improved production economy and traceability. These advancements were expected to lead to increased sales volume and better realisation value to dairy farmers.

Liquid Milk & Butter Manufacturing Plant at Ludhiana, Punjab

A fully automated Liquid Milk Processing (LMP) and Butter Manufacturing Plant was established in Punjab with a liquid milk processing capacity of 9 LLPD and butter production capacity of 10 Metric Tonnes Per Day (MTPD). Plant automation was designed using advanced dairy library to enhance plant performance with regard to energy consumption and recoveries. The plant was formally inaugurated by Hon'ble Chief Minister of Punjab in October 2022.

Shri Narendra Modi, Hon'ble Prime Minister, laying the foundation stone for Bio-gas based power generation project

Automated Dairy Plant, Bhilwara, Rajasthan

The commercial production of the automated LMP of capacity 5 LLPD had started in Rajasthan from April 2022. Various heat recovery features are in-built in the design of this facility ensuring minimised utility consumption as well as improved regeneration efficiency. With the commencement of this project, the dairy infrastructure in the state has been strengthened, making the operations economical along with improved product quality.

Expansion Project in Madhya Pradesh & Dairy Plant in Jharkhand

The existing 1 LLPD automated dairy plant in Sagar, Madhya Pradesh, underwent expansion in 2022-23, which included the incorporation of fly-ash bricks, rainwater harvesting and other notable features.

In Palamu, Jharkhand, the expansion of a dairy plant with a capacity of 50 TLPD was undertaken. The design of the expansion allows for potential future processing capacity expansion up to 100 TLPD The skid-based automation design benefits the plant with process automation and makes it cost-effective.

Ice-Cream Plant at Madurai, Tamil Nadu

NDDB had established a green field Ice-Cream Plant of capacity 10,000 Litres per shift at Madurai, Tamil Nadu on May 2022. The facility uses modern process technologies and energy-efficient equipment, capable of producing ice-creams in cups, cones, kulfi, bulk packs etc.

Biogas Plant - Varanasi

To fulfil the steam and electrical energy requirements of Varanasi Milk Union, a first-of-its-kind 4,000 cubic metre biogas plant was setup at Varanasi. The foundation stone of the plant was laid by Hon'ble Prime Minister Shri Narendra Modi on 23rd December 2021. 100 MT per day of dung would be utilised in the biogas plant. The biogas generated would primarily be used in the boiler of the plant to generate steam. The surplus gas would be utilised to generate electricity through generators. To efficiently utilise the slurry produced from the biogas, a 30 MT per day capacity of Phosphate Rich Organic Manure (PROM) manufacturing plant has also been setup.

Cattle Feed Plants in Assam & Punjab

During 2022-23, NDDB continued its efforts to support & strengthen dairy-allied services. As a part of these efforts, the commissioning of a 50 MTPD bypass protein cattle feed plant and a 12 MTPD mineral mixture plant took place at Changsari, Assam. Additionally, a 50 MTPD Bypass Protein Plant was commissioned at Ghania-Ke-Banger in Punjab. These plants are expected to cater to the requirements of various cattle feed plants in their respective states and neighbouring regions.

Dairy Waste Management Project - Effluent Treatment Plant in Gujarat

In the year 2022-2023, a state-of-the-art Effluent Treatment Plant (ETP) with a capacity of 20 LLPD was established in Himmatnagar, Gujarat. The plant utilised Anaerobic treatment with Continuous Stirred Tank Reactor (CSTR) technology, making it the largest capacity plant with CSTR technology in the co-operative dairy industry in India. The commissioning of the plant took place in November 2022.

Ongoing Projects

Project	Capacity	Location
Northern Region		
Strengthening and expansion of existing ETP	Expansion up to 20 LLPD	Rohtak, Haryana
Western Region		
Cheese & Whey Drying Plant	20 MTPD Cheddar, 10 MTPD Mozzarella, 16 MTPD Processed cheese & 45 MTPD Whey drying	Himmatnagar, 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. 1,600 MTPD	Himmatnagar, Gujarat
New Dairy Plant	50 TLPD Exp. 100 TLPD	Rajsamand, Rajasthan
Establishment of Bull Rearing Centre	180 Animals	Malarpura, Kheda, Gujarat
Infrastructure Project at Sabarmati Ashram Gaushala	–	Bidaj, Gujarat
Infrastructure Project for NCDFI	–	Anand, Gujarat
Tertiary treatment plant for Dairy Plant Effluent	800 TLPD	Jaipur, Rajasthan
Southern Region		
New Automated Dairy Plant, Aseptic Packed Milk & Ice Cream Plant	500 TLPD Exp. 800 TLPD LMP, 100 TLPD UHT & 5 TLPD Ice-cream	Hyderabad, Telangana
GMP Warehouse	(Additional Works) – PH II	IVPM, Ranipet, Tamil Nadu
Eastern Region		
Fermented Milk Products & Indigenous Sweet Plant	207 TLPD	Barauni, Bihar
Strengthening of Plant Utility Services	–	Barauni, Bihar
Expansion of Liquid Milk Plant	60 TLPD to 150 TLPD	Guwahati, Assam
AI Training Centre	–	Guwahati, Assam
Additional work at 5 LLPD Automated Dairy Plant	–	Arilo-Govindpur, Odisha

Technical Consultancy Services

Project	Capacity	Location
Cattle Feed Plant (Mechanical)	800 MTPD Exp.1,600 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

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


High Efficiency Source
NDDB
CALF - Anand

Ensuring Quality Across Dairy Value Chain

NDDB continues to sustain its commitment towards ensuring food-safety and quality across the dairy value chain. One of the initiatives in this direction is the adoption of the "Quality Mark". The logo on milk and milk product packages conveys that the unit has adopted and implemented all the processes required as per food safety and quality management system. So far, 56 out of 117 dairies have been awarded the Quality Mark.

NDDB supported Bureau of Indian Standards (BIS) to integrate Quality Mark into its product certification and to create the "Conformity Assessment Scheme for Milk & Milk Products" (CAS MMP). The logo of CAS MMP comprising Product-FSMS-Process certification features the earlier respective logos BIS-ISI mark, NDDB-Quality Mark and Kamdhenu Cow. Major state milk federations and dairy cooperatives had been approached to embark on CAS MMP. Out of 12 applications for CAS MMP from the dairy cooperatives, 3 dairy plants have been awarded with CAS MMP certificate, 4 dairy plants have undergone stage-I & stage-II audits and 5 dairy plants have undergone stage-I audits. Further, 16 dairy cooperatives of Tamil Nadu were facilitated to submit application for CAS MMP.

NDDB imparted training for improvement in handling of milk & milk products while also ensuring food safety. The key areas of focus of training programmes were Clean Milk Production, Quality & Food Safety Management System, Food Regulations and Cold-chain for Milk and Milk products. NDDB also worked closely with BIS in providing technical support for updating the Indian Standards for Milk and Milk Products.

Technology-induced modernisation of dairy cooperatives, including advanced and rapid testing equipment, have been introduced in QC Laboratories to improve accuracy and food safety.

NDDB extends support to various regulatory, scientific and advisory bodies such as DAHD-GoI, FSSAI, Codex Alimentarius Commission (CAC), FAO-TCP, etc. NDDB coordinates the activities of the Secretariat of the Indian National Committee (INC) of the International Dairy Federation (IDF).

Ensuring quality in testing

NDDB provides state-of-the-art quality testing through its multidisciplinary analytical facility at CALF laboratory. CALF offers testing services in the field of dairy products, fats and oils, honey, fruits and vegetables, animal feed, mineral mixes and vitamin premixes. The lab is also working towards disease diagnosis and genetic analysis of cattle as per national and international regulations. It serves dairy cooperatives, state dairy federations, government institutions, regulatory agencies, academic and agriculture universities, NDDB subsidiaries, as well as private feed, food and milk product manufacturers across the country, for product compliance, quality decisions and research & development activities.

In order to ensure operational integrity and confidentiality, CALF follows the quality management system based on ISO 17025:2017. The lab is accredited by NABL, recognised by the Export Inspection Council and APEDA for testing of milk, honey, fruits & vegetables as per various Residue Monitoring Plans (RMPs) for export and by BIS for testing of various dairy products, feed ingredients and infant formulas.

CALF follows a robust quality control programme in order to ensure accuracy of results. During the year, CALF had successfully undergone NABL integrated assessment for scope extension and surveillance and

NABL audit for Proficiency testing facility and successfully renewed accreditation with extension of scope.

During 2022-23, CALF tested and reported about 41,000 samples for chemical, microbiology and genetics analysis. The lab participated in 66 Proficiency Testing / Inter Laboratory Comparison (ILC) Programmes of national and international agencies for 255 parameters. The performance was found satisfactory in more than 97 per cent of the participated tests, indicating high level of professional standards being followed at the laboratory.

CALF conducted 9 Proficiency Testing rounds as per ISO 17043, covering different parameters of food and feed products in chemical and biological discipline. A total of 121 laboratories from across India, including cooperatives, participated in these PT rounds. CALF had successfully completed PT scope expansion audit in January 2023 and enhanced PTP scope from 149 parameters to 598 parameters.

CALF completed 4 equipment verification projects of the industry. Training programmes were conducted for government institutions, dairy federations and milk unions i.e. ARIAS Society (Govt. of Assam), Navsari Agriculture University, Karnataka Milk Federation, Rajasthan Cooperative Dairy Federation and Rajarambapu Patil Sahkari Dudh Sangh Ltd. During the month of November 2022, the lab also successfully conducted the practical examination of 8th Food Analyst Examination for FSSAI, New Delhi.

CALF bagged the Silver Award in the prestigious Prof. S.K. Joshi Laboratory Excellence award ceremony, under the category of testing laboratory. It is the country's first-of-its-kind Laboratory Excellence Award from Quality Council of India (QCI). CALF is the first food testing laboratory in the country to receive this award.

Upgrading products and processes

In addition to ensuring quality, NDDB uses various interventions including development of mechanised production lines, process upgradation and value addition to support cooperatives dairies. This year, a traditional

Honey Analysis on EA-IRMS

Targeting right rheology

fermented dairy product, lassi was modified by adding tulsi seeds. The modified beverage offers goodness of fermented milk and health benefits attributed to tulsi seeds such as prevention of type-2 diabetes, cardio-protection, antioxidant, anti-inflammatory, antimicrobial effects etc. The product has a shelf-life of seven days when stored under refrigeration at 4°C. The recipe and technology for manufacturing the product has been made available for commercialisation.

NDDB has advanced its research efforts in the area of ready-to-use culture (RUC). Six formulations incorporating multiple strains were developed this year. Trials were taken at two commercial dairies and necessary interventions were made in these formulations to obtain desired attributes. Additionally, freeze drying step of RUC manufacturing process was adjusted to accommodate processing of cultures with diverse technological attributes, thereby facilitating smooth adoption of RUC manufacturing processes at commercial scale.

In continuation of technical support to allied dairying activities, an RUC formulation of lactic acid bacteria was used successfully to produce silage in field conditions at two different locations.

The process of organic manure development was further refined by making suitable interventions to improve its handling and use in field applications.

Transforming Indian Dairy Sector Digitally

In alignment with the government's vision of Digital India, NDDB has been driving various initiatives to upgrade the digital ecosystem of dairy sector. These include livestock management, disease monitoring and building a national database using digital technology solutions.

INAPH Infrastructure to NDLM Bharat Pashudhan

To effectively implement and evaluate animal productivity enhancement and health management programmes in the country, NDDB established Information Network for Animal Productivity and Health (INAPH), a digital ecosystem for recording the essential details of animals. It is now declared as a national database. It generates 'Pashu Aadhaar' or unique animal identification which is allotted to the animals through ear-tagging.

INAPH system stores records of 258 million animals that belong to 82 million farmers across 5.59 lakh villages of 724 districts and helps in the implementation of productivity enhancement programmes as well as disease control viz. NADCP and Livestock Health & Disease Control (LH&DC), Nationwide Artificial Insemination Programme (NAIP) and other schemes pertaining to RGM. It serves as a base for implementing 354 extensive animal husbandry projects. In the year 2022-23, 42 new projects and four semen stations joined INAPH from various locations. The application also captures data on vaccination against Lumpy Skin disease, Foot and Mouth disease (FMD) and Brucellosis for species such as Yak and Mithun. Recently, an agreement was signed between NDDB and NRCM (National Research Centre on Meat), Hyderabad to use INAPH database for establishing, maintaining and confirming the livestock traceability data in the country.

NDDB is facilitating Kolhapur Milk Union in digitally capturing data related to animal health through INAPH-health module. The Kolhapur Milk Union has been using the INAPH module for the past five years, which helped them to optimise their veterinary service delivery system. The system has documented 2.9 lakh cases during the year. As per the data recorded, incidences of udder-related ailments are over 30 per cent, followed by digestive problems at 26 per cent and, reproductive problems at 10 per cent.

On the foundation of the existing INAPH application which marked its success across the sector, NDDB and DAHD is jointly (with equal contribution) working on the National Digital Livestock Mission (NDLM) to strengthen the livestock database and to extend this database to various sectors resulting in an end-to-end farmer-centric Livestock eco-system, BHARAT PASHUDHAN.

NDLM software development project commenced in October 2021. It is divided in three phases and presently, phase-I is being implemented. In this phase, the development, UAT (User Acceptance Testing) of Animal Management, Animal Health, Animal Breeding and Administration Modules are in progress. The platform will be a cloud-based, national ecosystem that will allow FLWs (Front Line Workers) to enter data using a mobile interface as well as farmers to digitally access their animal records and seek services for their animals through national call centres.

Development of Sero-surveillance and Sero-monitoring Application

Along with productivity enhancement, early warning of disease is an essential pre-requisite for the effective containment and control of epidemic animal diseases. Therefore, under the mission, SS&SM (Sero-surveillance and Sero-monitoring) application, a disease monitoring system that facilitates monitoring and reviewing the status of any notifiable disease, has been developed during 2022-23. The application can conduct SS&SM of FMD. It has two distinct modules, which automatically calculates the test results when user uploads a sample file and an OD value file using this application. A central administrator can access all the test results from various laboratories and develop a strategic plan to combat the disease. Presently, all the 34 government FMD laboratories across India are using the SS&SM Application.

From this application, it is possible to monitor the effectiveness of vaccination program in particular areas and predict the disease outbreak. Furthermore, SS&SM application can be explored for other disease viz., *Brucellosis, PPR, LSD, CSF* etc.

e-GOPALA

The e-GOPALA platform includes buying and selling of disease-free germplasm in all forms (semen, embryos, etc.), informs about availability of quality breeding services (AI, veterinary first aid, vaccination, treatment etc.) and guides farmers on animal nutrition, treatment of animals using EVM etc. The application notifies the users about due date for vaccination, pregnancy diagnosis, calving as well as on various government schemes.

e-GOPALA helps farmers to formulate balanced ration for their animals which decreases the feeding cost. Breeding services module facilitates farmers' access to semen doses of high genetic merit bulls, sex-sorted semen, IVF embryos etc. which would help improve milk productivity of future progenies, thus increasing the milk yield by maintaining less animals. This will help to mitigate the carbon footprint of dairy sector in the country.

NDDB Dairy ERP

NDDB has developed 'NDERP' (NDDB Dairy ERP) by customising an open source ERP based on the requirements of the dairy industry. It is a cost-effective integrated solution to the producers-owned organisations which can't afford to implement proprietary ERPs in terms of cost and recurring licensing fees.

It is integrated with AMCS software and has all standard modules like Finance & Accounts, Purchase, Inventory, Sales, Manufacturing and HR & Payroll.

It has been further extended to distributor level with an Android App (mNDERP) and a Portal (iNDERP) integrated with it.

NDERP has been developed and implemented in Jharkhand Milk Federation, Jharkhand; West Assam Milk Union Ltd., Assam; Varanasi Milk Union, Uttar Pradesh; Karnataka Oil Federation, Karnataka; and NDDB MRIDA Ltd, Gujarat.

AMCS: Improving Process Efficiency at DCS Level

Keeping in view the role of digital innovation in strengthening the dairy cooperative business, NDDB has developed Automatic Milk Collection System (AMCS) a robust, integrated, multi-platform, multi-lingual software solution for complete operations including financial inclusion at the Dairy Cooperative Society level. The solution is integrated at Union/Federation/National level to enable transparency and key informatics. The solution is completely based on Open Source technology stack.

This solution has brought transparency to operations and improved process efficiency. The application automates the complete milk collection process and enables single-click milk collection operations. The automation avoids manual intervention, integrates with milk testing equipment and thereby improves milk quality.

The application will equip farmers and other stakeholders with relevant information in real-time to enforce accountability at every step and improve processes. Farmers gets instant SMSs for every transaction ensuring complete transparency and avoiding data manipulation. Farmers also have access to all past transactions with the AMCS Android application. The entire village DCS level data is also made available at the milk union portal enabling better planning and execution controls.

AMCS is currently being used in 7 states covering more than 7500 DCSs/MPPs and 3,37,000 milk pourers.

Internet-based Dairy Information System

NDDB has been implementing the "Internet based Dairy Information System" (i-DIS), a web-enabled system with the objective of providing a common platform to the dairy cooperatives for organising data in a coherent manner for easy access and analysis.

Now, over 250 milk unions, cattle-feed plants and milk federations are using this internet-based system. NDDB continued to track the performance of dairy cooperatives and provided technical and end-to-end support for using i-DIS. NDDB has been conducting refresher workshops for MIS officials of various MUs to appraise and train the officers on various aspects of the i-DIS.

Milk Route Optimisation

Building efficient supply chain is one of the most critical aspect of any business. Milk transportation forms an integral part of the dairy supply chain, both for the procurement of milk from villages and distribution of milk & milk products to the consumers.

It becomes imperative to reduce costs of per litre of procurement, processing and distribution of milk to make the supply chains more efficient. This has gained greater importance in recent times in light of the inflationary pressures especially on energy, fuel & transport and packaging. Thus, milk transportation provides us with an excellent opportunity to reduce costs. This can be achieved by mainly two ways viz. fleet optimization and route optimization.

NDDB has initiated milk route optimisation exercise for the milk procurement of Vidarbha Marathwada Dairy Development Project. Under this exercise, milk collection routes for two milk chilling centres have been optimised with substantial transportation cost saving and four more routes are under process of optimisation.

Similar exercise has also been initiated in Jharkhand Milk Federation and Varanasi Milk Union. The results of the milk route optimisation exercise have been promising and unfolds a huge potential for saving substantial transportation cost in dairy operations.

Enhancing efficiency by integrating IT & digital technology in dairy operations

Investing in Sustainable Tomorrow

NDDB has been proactive in making the dairy sector sustainable for people, planet and prosperity. NDDB continued to support dairy farmers for installing farm-level anaerobic digestors to convert manure into biogas and bio-fertilisers and the installation of solar panels at the dairy cooperatives along with promotion of clean energy projects. NDDB has strengthened the global and regional partnerships to strive for its commitment towards a sustainable dairy sector.

Manure Management Initiatives

Continuing the efforts in the manure management domain, NDDB undertook various initiatives for the promotion of the project and develop various Manure Value Chain models resulting in the production of clean energy and propagation of sustainable development.

Implementation of NDDB-Sustain Plus Manure Management Programme

Continuing the collaboration with Sustain Plus Energy Foundation, NDDB implemented nine Manure Management Projects across seven states namely Assam, Jharkhand, Maharashtra, Rajasthan, Sikkim, Uttar Pradesh and West Bengal. While the installation of all 1,040 biogas plants was completed during the year, slurry-based organic fertiliser facilities were also commissioned at Kolhapur and Dungarpur.

NDDB and Sustain Plus engaged EKI Energy Services Ltd to generate carbon credits against the carbon emission reduction achieved under the programme through the installation of biogas plants. The programme aims to incentivise beneficiary households by not only reducing their reliance on traditional cooking fuels, but also providing an additional source of income through the sale of these carbon credits.

Implementation of CSR-funded Manure Management Programme

Apart from the earlier projects at Barauni and Cuttack taken up with CSR support, one more project has been initiated at Ooty by NFN with the CSR support of Indian Immunologicals Ltd.

Implementation of "NDDB Biogas Programme"

NDDB initiated its own NDDB Biogas programme in 2021-22 to continue supporting the dairy cooperatives with biogas promotion as the Ministry of New and Renewable Energy (MNRE), Government of India discontinued its biogas programme. During the year, NDDB concluded the implementation of the NDDB Biogas programme with installation of 444 biogas plants in nine locations once MNRE reintroduced its biogas programme.

Implementation of Cluster Gobar Gas Model under GobarDhan scheme

NDDB's cluster level manure management initiative known as "Zakariyapura Model" is adopted as one of the models of implementation under the GOBARDhan scheme. The Government of Gujarat had designated NDDB as "Main Implementing Agency" under the GOBARDhan scheme in 25 districts of Gujarat. Under the scheme, a total of 4,100 biogas plants were installed during the year in 25 districts in cluster model

Additionally, extensive training programmes were conducted at NDDB for the prospective beneficiaries under the scheme from 21 districts of Gujarat were oriented on the basics of biogas plants, benefits of installing the plant and application of biogas slurry in agriculture.

On the request of the Swachh Bharat Mission-Grameen (SBM-G) team of Madhya Pradesh, NDDB organised a dedicated training programme for the SBM-G team from 51 districts of Madhya Pradesh wherein ~150 participants were oriented on the design and implementation of the GobarDhan scheme in Madhya Pradesh.

Biogas Generation Plant in Uttar Pradesh

In addition to the promotion of household level biogas plants and cluster level manure management model, NDDB also ventured into setting up a large capacity dung-based biogas plants. A first of its kind 4000 cubic meter

Recently established state-of-the-art biogas plant at Varanasi

capacity biogas plant requiring 100 MT of dung per day was setup in Varanasi. The plant is setup with a unique objective of satisfying the energy needs of a dairy plant through dung, establishing unique model of sustainability.

The dung would be aggregated from farmers and Gaushalas in the vicinity i.e. 10-15 Km of the dairy plant. The gas produced from the plant would primarily be utilised to produce steam and rest electricity. The slurry produced from the plant would be separated in to solid and liquid portion. The liquid portion would be primarily reused in the biogas as input along with dung.

The solid portion of the slurry would be processed further to produce enriched fertilisers termed as Phosphate Rich Organic Manure (PROM). About 30 tonnes of PROM is expected to be produced on a daily basis which in turn reduces dependency on chemical fertilisers and improves soil health in the region.

This unique model contributes to increasing dairy farmers' income through sale of dung, while helping reduce carbon footprint of the dairy plant by replacing traditional fuel. The initiative would also contribute towards the idea of Swacch Bharat by efficient use of dung. The localised production of gas and fertiliser would also contribute to reduce import dependence of traditional fuels and chemical fertilisers.

Promotion of Solar Energy

Energy is crucial for processing milk products. As milk production grows, it strains conventional resources, intensifying energy use. Increasing fossil fuel prices further burden the dairy sector's expenses. To tackle these issues, solar energy is a promising alternative.

Concentrated Solar Thermal

NDDB has been keen to have an inbuilt component of Concentrated Solar Thermal (CST) system in engineering projects to generate hot water from solar radiation. This hot water is utilised in various dairy plant operations.

This year, a CST project at Sagar, Madhya Pradesh of capacity 5 Lakh Kcal/day has been commissioned and another project of 10 Lakh Kcal/day is under progress, at Guwahati, Assam for WAMUL.

Solar Photovoltaic

The terraces and shadow-free vacant area in dairy plant premises are excellent places for solar PV installation. One of capacity 300 KWp at Barauni, Bihar and another one of 250 KWp capacity at SAG, Bidaj, Gujarat are under progress.

Strengthening partnerships for sustainability

NDDB continued to foster partnerships with organisations at national and international levels to make dairying sustainable which encompasses efforts to improve the genetics of animals, promote solar energy and estimate carbon footprint from the dairy sector.

Solar Energy Solutions for Dairy Development - Pilot Project

NDDB has collaborated with Kreditanstalt für Wiederaufbau (KfW) Bank, Germany to support the dairy cooperatives in adoption of various types of solar energy solutions by availing financial assistance (loan and grant) from KfW. NDDB will also provide grant assistance and loan at a lower interest rate to the dairy cooperatives for this project. The project will not only help in reducing operational costs but also promote usage of renewable energy, reduce carbon footprint and at the same time help in improving the operational efficiency and increasing quality of milk by timely chilling.

NDDB prepared a pilot project on "Solar Energy Solutions for Dairy Development" which has been submitted to DAHD, Government of India.

Global Carbon Footprint Standard by IDF

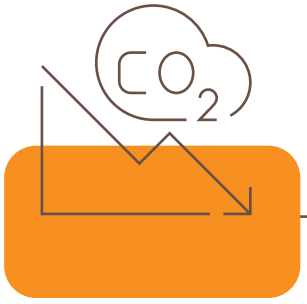
The IDF methodology for lifecycle assessment (LCA) of dairy production and processing was first published in 2010 by the IDF Standing Committee on Environment (SCENV) with the active participation of the FAO and the Sustainable Agriculture Initiative Platform (SAI Platform). The aim of this methodology is to assist the dairy industry with its journey to reduce GHG emissions across the value chain. Since 2010, the methodology has undergone two revisions (first in 2015 and second in 2022) by incorporating latest developments in both science and application techniques of LCA. To identify limitations in the first revision and review scientific advancements for incorporating in second revision, the IDF constituted an LCA Action Team (AT) comprising of 54 experts (academia, policy makers, dairy company specialists, consultants and tool developers) from 17 different geographies across the world. From India, NDDB represented LCA AT and actively contributed in updating the IDF Global Carbon Footprint Standard. Some of the key updates with respect to the Indian dairy sector includes application of LCA methodology to buffalo milk production, guidance on estimation of carbon footprint of mixed milk, treating manure as a 'co-product' in LCA and a comprehensive list of farm level mitigation options. The updated version of the IDF guide was launched during the World Dairy Summit, 2022.

Mitigating adverse impacts of climate change on Animal Husbandry and Dairying

NDDB and National Council for Climate Change Sustainable Development and Public Leadership - India (NCCSD) jointly organised a seminar on Mitigating the adverse impacts of climate change on Animal Husbandry and Dairying. The event was inaugurated by Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying.

Dairy Sustainability Framework

The Dairy Sustainability Framework (DSF) is a global dairy sector's initiative for monitoring and reporting sustainability progress of the sector in collaborative and pre-competitive manner. The DSF also acts as the reporting arm of the 'Pathways to Dairy Net Zero initiative' of Global Dairy Platform, which is already being supported by NDDB. To encourage participation of emerging dairy economies in the DSF reporting process, a Working Group was formed to revise DSF's exiting reporting methodology. NDDB actively contributed to this Working Group and ensured that the revised methodology fits to and rightly captures the positive contribution of smallholder dairy production system in improving sustainability of the sector. NDDB will also actively participate in piloting the revised DSF methodology at 'Stage 1 membership level' with selected cooperative milk unions in India. During the year Chairman and Managing Director, NDDB has been nominated as Governor on the board of DSF through Dairy Asia. Collaborating with the DSF would help NDDB to showcase sustainability initiatives undertaken by the Indian dairy sector.




SMALL INTESTINE
ESOPHAGUS
RETICULUM
OMASUM

Training and Capacity Building of Human Resources

As technology rapidly transforms the functionalities of the sector and the job roles are constantly evolving, NDDB believes that continuous trainings are necessary to equip the dairy stakeholders with upgraded skillset.

Supporting Dairy Entrepreneurs

Engaging youth in the dairy sector has been one of the prime focus areas. Training on dairy entrepreneurship enables rural youth to take up dairying as a profitable source of income. About 120 rural youth were trained on Animal Rearing under Dairy Entrepreneurship Programme. The training programme has been attracting participation on an individual basis, as well as from various organisations.

Training of Dairy Professionals and Youth

About 1,000 executives and technicians from various milk unions were trained under Quality Assurance and Dairy Plant Management at MIT, Mehsana & Bengaluru.

Trainings on ICT-based applications like NDDB ERP, AMCS and SSMS were conducted for participants from various End Implementing Agencies (EIAs). Responding to the emerging trend, programmes on sales and distribution strategies for milk and milk products were also organised for different milk unions.

Training-cum-workshop on CAS MMP - Process certification and product certification was attended by more than 500 participants.

About 800 young people were trained for basic or refresher AI programme, adding to the trained workforce at the village level. More than 3,000 dairy farmers attended training on Dairy Animal Management at NDDB RDTCs and 200 DCS secretaries attended the Refresher DCS Secretaries training.

Allied sector trainings

NDDB also organised trainings related to allied sector to fulfil the objective of enhancing farmers' income. Approximately, 800 farmers were oriented on scientific beekeeping under NBHM and 400 participants participated in Farmer Orientation Programmes for PIAs on Manure Value Chain under the NDDB-Sustain plus manure management project. More than 1,000 dairy farmers from 25 districts of Gujarat were oriented on manure management along with visits to slurry processing centre and flexi-biogas units.

In order to strengthen the Oil Cooperatives, a training programme on Strategic Business Management was organised for CEOs and Sr. Managers of various Regional Oilseeds Growers' Co-operative Societies Union Ltd. from Karnataka.

Accredited Agent for Health and Extension of Livestock Production

NDDBs' efforts are focused towards capacity building by taking scientific animal husbandry practices & dairying to farmer's doorstep, by involving local resource personnel, particularly women.

In line with this objective, an MOU was inked between DAHD and DoRD, Government of India with NDDB as the nodal agency to utilise the services of women members of SHGs/

Training women members as livestock resource persons under A-HELP

Pashusakhis/MAITRIs/AI workers as livestock resource persons and primary service providers through a new accredited model, 'A-HELP' (Accredited Agent for Health and Extension of Livestock Production).

It is envisaged that the A-HELP will hold the responsibility of a primary service provider and extension agent for animal health & management services at the village level. In addition, the A-HELP will also act as a connecting link between the stakeholders and the Department of Animal Husbandry. The training programme for accreditation of 2,000 A-HELP persons is being piloted in seven states - Bihar, Jharkhand, Madhya Pradesh, Uttarakhand, Maharashtra, Jammu & Kashmir and Karnataka.

NDDB conducted six days programme for Training of Trainers (TOT) - Master Trainers for the identified trainers of the respective states. More than 200 Master Trainers have been trained during 2022-23. Further, A-HELP undergoes 16 days of residential training & exposure to acquire the necessary knowledge and skills at the respective states' training facility. The third-party evaluation and accreditation as A-HELP is conducted by National Academy of RUDSETI (NAR) with support of NDDB. About 500 A-HELP were trained during 2022-23.

NDDB Samvad

Digital sessions under NDDB Samvad on various subjects related to livelihood enhancement through dairying and other innovations benefited about 14,000 participants. Dedicated digital interactive series titled 'Power of Cooperation: Role of Women in Dairying' was organised with over 1,000 viewers.

With the objective of extending the learnings which emerged during World Dairy Summit in 2022, a series of episodes on learnings from IDF WDS 2022 was organised with over 2,000 viewers.

Training of NDDB employees

NDDB employees were trained in the areas of Leadership Development, Strategic Management, Requirements of the Standard ISO 17025:2017, First Aid, Organic and Biodynamic Farming, Communication Skills, Effective Delegation, Decision-Making & People Management Skills, MS Office and Execution Excellence. Customised training programmes for staff on Influencing for Success and for workers on The Power of Self Expression were organised as well. A total of 534 employees attended various trainings during the year. An induction programme for 27 recruits was organised to orient them to the philosophy, values and activities of the organisation.

Training programmes conducted during 2022-23

Sr No	Subject area	No. of programmes	No. of participants
1	Cooperative Services	116	4,216
2	Dairy development / Business Management in Dairy and Oil Cooperatives	89	3,244
3	Dairy Entrepreneurship programme on Animal Rearing	9	127
4	Milk Marketing	10	199
5	Productivity Enhancement	138	4,052
6	Quality Assurance & Dairy Plant Management	71	1,663
7	Training on NDDB ERP/AMCS/SSMS/Dairy Surveyor/iDIS	33	680
8	Other training programmes for milk union personnel	45	771
9	Trainings conducted on Digital Platform	117	4,247
10	Training of NDDB Employees	49	534
11	Training of officers from PSUs/PSBs	12	260
	Grand Total	**689**	**19,993**

Training women members on scientific beekeeping

Employee engagement activities

During the year, Employee Engagement activities, namely, talk on contemporary and self-development themes, Inspirational Video Sessions and Book Reviews were organised regularly to facilitate the exchange of ideas and continuous learning.

An initiative, HR Week Celebrations, was undertaken this year, wherein many programmes/ activities were organised. These included sessions by industry professionals and academicians on selected themes, visits of employees to various institutions for orientation and learning, sessions on NDDB values, presentations on initiatives of NDDB Groups, experience sharing by employees, gratitude and Thanksgiving Day, fun games and talent day. To increase the employability of students, NDDB also facilitated internships for 50 students from various institutions during the year.

Sponsorship of Officers for Post Graduate Diploma in Rural Management

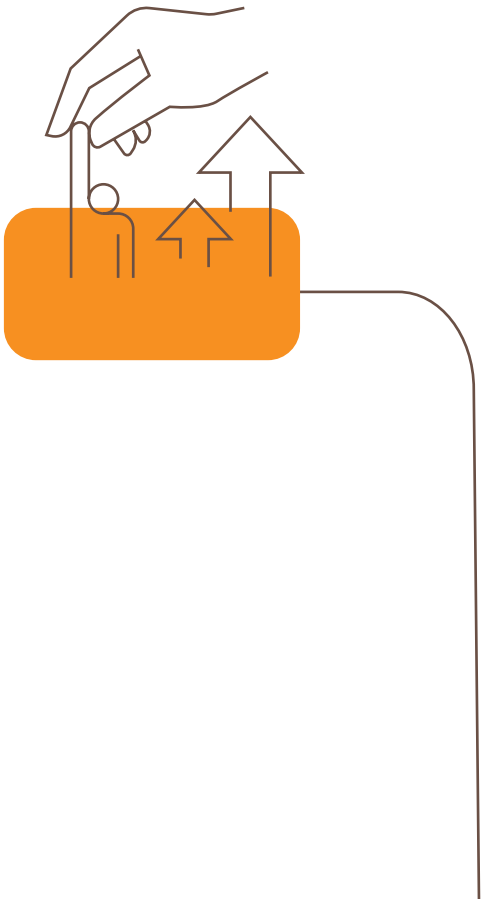
Officers from Dairy Cooperatives, Producer Owned Institutions and other designated organisations are being sponsored for the 15 months Executive Post Graduate Diploma in Rural Management at the Institute of Rural Management, Anand for their professional development. This year, 30 officers were sponsored by NDDB for the above programme.

Training of induction stage and mid-career officers from Public Sector Undertakings and Public Sector Banks

As a part of the initiative taken by the Central Vigilance Commission, NDDB conducted five training programmes for mid-career officers from Public Sector Undertakings (PSUs) and Public Sector Banks (PSBs) on the theme "Leading Organisational Change", three training programmes for induction stage officers from PSUs/PSBs on the theme "Developing Future Leaders and Managers" covering a total of 179 officers. Officers from Mazagon Dock Shipbuilders Limited, Goa Shipyard Limited, Bank of Baroda, Union Bank of India and Hindustan Petroleum Corporation Limited attended the above programmes. The programme included field visits to the village, interaction with farmers and understanding the working of various village-level institutions. The classroom training included interactive sessions on leadership, values/ethics, organisation culture, the importance of a positive attitude, self-development and management. Orientation programmes were also conducted for 36 middle/senior management officers from Delhi Metro Rail Corporation in 2 batches for 45 officers from the Institute of Secretariat Management and Training (ISTM), New Delhi.

Welfare of SC/ST Employees

Welfare measures for SC/ST employees continued during the year, including recognition of meritorious children of SC/ST employees for their academic achievements through cash prizes and certificates. To encourage academic orientation, NDDB continued to reimburse expenses incurred by SC/ST employees on education. Training in technical, functional and general management areas was facilitated for SC/ST employees during the year. SC/ ST officers under the Future Leadership Development Programme of NDDB attended a training programme on Strategic Management and Leadership Development. In all, 69 training nominations for SC/ST employees were processed. All offices of NDDB celebrated *Ambedkar Jayanti*.



Progressive use of Rajbhasha

Hindi Diwas Celebration

NDDB received the Rajbhasha Kirti Puraskar - Second Prize

During the year, efforts were made for promoting the use of Rajbhasha i.e. Hindi for the day-to-day office correspondence. Various initiatives are introduced in NDDB to align with the target set by the Ministry of Home Affairs, Department of Official Language in their Annual Programme for 2022-23.

NDDB, Anand was bestowed with the Rajbhasha Kirti Puraskar – 2021-22 (Second Prize) during Akhil Bhartiya Rajbhasha Sammelan at Surat on 14 September 2022. The award was presented by Shri Nisith Pramanik, Hon'ble Minister of State for Home Affairs, Government of India.

To encourage employees for progressive use of Hindi in their official work, the following initiatives were undertaken:

- Organising Hindi training programmes, "Sahitya-Samvad" on quarterly basis. During the year, four sessions under Sahitya-Samvad were conducted.
- Hindi review meetings were conducted for every group and training sessions on the use of Microsoft Quick parts, custom office templates, Hindi proofreading and voice typing tools were organised for the employees. Additionally, quarterly workshops in Official Language were conducted. Hindi Fortnight was also organised in all NDDB offices during 14-28 September 2022.
- Occasions such Independence Day, Republic Day, Ambedkar Jayanti, etc., were organised during the year. On the occasion of Hindi Diwas, the employees of NDDB pledged in Hindi to follow the guidelines of Department of Official Language, Ministry of Home Affairs.
- Additionally, Hindi competitions such as essay writing, poetry recitation and translation competition witnessed active participation by the employees of NDDB who showcased their Hindi literature skills.
- A software has been installed in all computer systems for Hindi email tracking and report generation to measure the use of Hindi in office correspondence.
- Implementation of Hindi Quarterly Progress Report (QPR) and consolidated QPR form to get real-time consolidated data from various NDDB groups.

To encourage additional participation, NDDB has implemented various incentive schemes for the promotion of Hindi language in the office correspondence. One of the schemes is Hindi Noting and Drafting Incentive Scheme. More than 30 employees participated and bagged the cash incentive during the year 2022-23. Employees whose children scored 75 per cent and more marks in Hindi subject in Class 10th and 12th examinations, were awarded with a cash prize.

NDDB Foundation for Nutrition

Flavoured milk distributed to school children under Giftmilk programme

During the year NFN entered into agreement with various units of Steel Authority of India Limited (SAIL) - Rourkela Steel Plant (Odisha), Durgapur Steel Plant (West Bengal), IISCO Steel Plant, Burnpur (West Bengal) and Bhilai Steel Plant (Chhattisgarh) for implementation of Giftmilk Programme in the operational areas of respective Steel Plants.

NFN also implemented its committed Giftmilk projects in aspirational districts of Gadchiroli (Maharashtra) under CSR of NBCC (India) Limited, The Shipping Corporation of India Limited (SCI) & Mazagon Dock Shipbuilders (MDL), Malkangiri (Odisha) under CSR of IRCON, Jayshankar Bhupalpally (Telangana) under CSR of Electronics Corporation of India Limited (ECIL), Guna (Madhya Pradesh) under CSR of National Fertilisers Limited (NFL) and Bokaro (Jharkhand) under CSR assistance of Bokaro Power Supply Company (P) Limited (BPSCL).

NFN continued its Giftmilk Programme under CSR of NDDB Subsidiaries – Mother Dairy Fruit & Vegetable Ltd, IIL & IDMC Ltd.

During the year 2022-23, NFN distributed 7.6 Lakh litres of Milk (38 Lakh Child Milk Days) covering 50,000 children in about 310 schools in nine states. NFN also completed installation of 120 bio-gas units under Go-green Manure Management Programme under CSR of IIL in the Nilgiris District of Tamil Nadu.

NFN celebrated Poshan Maah & World School Milk Day during 26-30 September 2022 by organising - walkathon, lecture, painting & essay competition and fancy dress on theme - “Importance of milk and milk products for healthy growth of children”.

Subsidiaries

IDMC Limited

Plastic Slitting Machine

Indian Dairy Machinery Company was established in 1978. It is incorporated as IDMC Limited under the Companies Act, 1956 with the primary objective of manufacturing dairy equipment & components and moderating their prices. Over the years, the company has experienced significant growth in its manufacturing base, largely due to the Make in India initiative. Today, IDMC is recognised as a leading provider of processing and packaging solutions across various business lines under its Metals and Plastics segments.In 2022-23, IDMC reported revenue of ₹ 754.21 crore.

IDMC offers a comprehensive range of food processing equipment to the dairy and allied industries. Its product offerings include milk silos, CIP systems, heaters, chillers, pasteurisers, Ultra Heat Treated (UHT) sterilisers, continuous butter-making machines (CBMM), butter tub filling machines, continuous khoa-making machines (CKMM), ice cream freezers, fruit feeders, rotary & linear cup filling machines, stainless steel sanitary fittings, sanitary pumps, pneumatic valves and other flow components. IDMC's bulk milk coolers and indigenously developed milking machines continue to be well-received by customers.

Metal segment

IDMC accomplished several automated dairy plants for its customers. These plants encompassed a range of milk processing capacities, from 50 TLPD to 5 LLPD and included manufacturing facilities for various milk products such as butter, cheese, paneer, ice cream and fermented products. Furthermore, IDMC successfully commissioned an ultrafiltration plant with a capacity of 10 thousand litres per hour (KLPH) for whey processing and a 70 KLPD Ice cream plant.

Notably, the company secured a significant order for the design and supply of a 5 LLPD milk processing plant that encompasses fresh milk products, ice cream and sweets. Moreover, IDMC secured multiple orders for milk and milk product plants, including UHT processing plants and mozzarella cheese plants. The company also supplied and demonstrated the performance of an indigenously developed online auto milk standardising unit, with two such units currently operational. Additionally, IDMC provided a one ton per hour (TPH) capacity Khoa plant for the first time, with installation work currently in progress.

Thermal Management Segment

IDMC has achieved successful commissioning of fully automated ammonia refrigeration systems, featuring a diverse range of capacities spanning from 40 tonnes of refrigeration (TR) to an impressive 1,735 TR. Additionally, the company has secured a substantial order for a large refrigeration plant from a private dairy, with a total installed capacity of 4,000 TR. This project is currently under commissioning.

IDMC has completed the installation and commissioning of numerous stainless-steel ice silos, designed to optimise energy usage. The company has five ice silos currently in the manufacturing process, which are high-quality and sustainable thermal management solutions.

Pharmaceutical Segment

IDMC is presently executing a large fermentation project in southern India, involving the fermenters of 55 KL. Additionally, the company has an order under manufacturing for 100 KL fermenters and process vessels. Notably, IDMC secured an export order for the supply of 4 x 200 KL capacity fermenters, marking a significant achievement.

Research and Development Centre

The research and development department of IDMC has developed various new products such as linear cup filling machine, smaller bulk milk cooler modules, self-priming pumps, flow regulating and modulating valves, higher capacity automatic milk sampling systems, improved designs for continuous khoa-making machines, upgraded versions of sanitary pumps, pneumatic valves and new plate heat exchanger models.

Plastic Segment

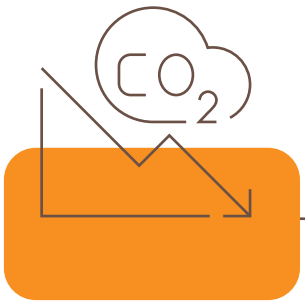
The various packaging solutions offered by IDMC include packaging films for liquid milk and milk products like ghee, curd and buttermilk; high-barrier laminates for milk powder and other food products; and multilayer films for packaging edible oil. Moreover, IDMC exports barrier films specifically designed for packaging Ultra Heat Treated milk.

IDMC in association with NFN

IDMC has partnered with NDDB's Foundation for Nutrition for its 'Gift Milk' initiative. As part of its CSR, the company supports this cause by supplying fortified flavoured pasturised milk, measuring 200 ml per day, to approximately 6,700 students across 22 government schools in Anand District, Gujarat. Additionally, IDMC continues to promote healthcare, sanitation and the development of healthcare infrastructure.

Regarding energy conservation, the company has successfully installed a total of 220 kilowatts rooftop solar PV systems at two of its manufacturing facilities, with a 100 KW rooftop solar PV system currently under implementation at another facility.

Currently, IDMC is manufacturing Aseptic tank and its process module domestically for the first time. Moreover, the company has received an order for a 15,000 litres per hour capacity multi-product UHT steriliser, a product that has predominantly been imported until now. With a robust order book for the fiscal year 2022-23 and favourable market conditions, stable commodity prices and increasing demand for its products and turnkey project solutions, IDMC anticipates significant benefits. The company is actively seeking alliances to explore export opportunities for its products. With a strong reputation for delivering high-quality products and executing projects efficiently, IDMC is well-positioned to capitalise on growth opportunities in the dairy and allied sectors.



Indian Immunologicals Limited

Shri Narendra Modi, Hon'ble Prime Minister of India visiting IIL stall during the exhibition at IDF WDS 2023

Indian Immunologicals Limited (IIL) was established in 1982 by NDDB and corporatised in 1999. IIL is a market leader in veterinary and human biologics in India and over the past two decades, IIL emerged as the largest supplier of vaccines for FMD and Human anti-rabies. Apart from the above, IIL's spectrum includes vaccines for PPR, Haemorrhagic Septicaemia, Blue Tongue, Brucella, Sheep Pox, Goat Pox, Theileriosis, Canine Parvovirus, Canine Distemper Virus, Porcine Cysticercosis, Classical Swine Fever etc., for the animal world. For Human Health, IIL produces Pentavalent, DPT and Hepatitis – B vaccines. IIL is one of the largest suppliers of vaccines under the Universal Immunization Programme of the Government of India.

IIL has invested in a wholly-owned subsidiary, Pristine Biologicals NZ Limited (PBNL), located at Dargaville, near Auckland, New Zealand, which supplies Adult Bovine Serum (ABS), an essential ingredient of Foot and Mouth Disease vaccine manufacturing.

In 2022-23, IIL recorded its highest-ever sales revenue of ₹ 918 crore marking a growth of 15 per cent compared to FY2021-22. The domestic market accounted for 85 per cent of the total turnover, while exports to over 60 countries contributed the remaining 15 per cent. The Animal Health segment contributed 50 per cent of the revenues and the Human Health segment accounting for the rest.

Events of significance in 2022-23

- Dr. Sanjeev Balyan, Hon'ble Union Minister of State for Fisheries, Animal Husbandry and Dairying and Ms Varsha Joshi, Additional Secretary, (Cattle & Dairy Development), Department of Animal Husbandry & Dairying Ministry of Fisheries, Animal Husbandry & Dairying visited IIL.
- Dr L Murugan, Hon'ble Union Minister of State for Animal Husbandry & Dairying visited IIL's rabies vaccine manufacturing facility.
- At a time of National need, IIL produced millions of doses of vaccines to contain Lumpy Skin Disease outbreaks.
- IIL obtained a commercial licence for the Measles-Rubella vaccine and licence for TD vaccine for Hepatitis A is expected shortly.

Dr Sanjeev Balyan, Hon'ble Union Minister of State for Fisheries, Animal Husbandry and Dairying visiting vaccine manufacturing facility at IIL, Hyderabad

- IIL has entered into the aqua health segment through technical collaborations with the ICAR.
- IIL is the first company in the world to deliver animal vaccines using a drone in collaboration with DADF, the Government of India and the Government of Arunachal Pradesh.
- IIL launched digital medical representatives (eMOz) in the human health segment. This initiative is aimed at virtual interactions by bots as representatives promoting IIL's products.

Corporate Social Responsibility

IIL's Corporate Social Responsibility is centred around Animal Welfare, Education, Health & Malnourishment, Disease Eradication and Community Development.

Several initiatives are taken to improve the school infrastructure around the areas of IIL's operations e.g., supporting the mid-day meals programme by supplementing nutrition through eggs and bananas, providing bags, uniforms and stationery to students, maintenance of school premises, supply of fortified milk as part of "Gift Milk" initiative of NDDB through NFN etc.

Through "Operation Gouraksha" project, more than a lakh of cattle in goushalas and panjrapoles across the country were provided health coverage through vaccination and de-worming support.

Apart from the above regular CSR programmes, IIL has undertaken special-purpose projects such as the installation of 120 biogas plants with the support of NFN to convert farm wastage into cooking gas and the conversion of biogas units' residue into organic manure. Through this project, dependence on fossil fuels was reduced and additional income through organic manure sales was generated.

IIL engaged in disease eradication by funding Government of Kerala and Compassion for Animals Welfare Association (CAWA) to work towards eradicating Rabies. As part of community development initiative, IIL has supported the installation of CC TV monitors at strategically important locations in the

Telangana region and rural street lighting by erecting high mast lights in the district of Muzaffarnagar, Uttar Pradesh. The average CSR expenditure of IIL is approximately ₹ 3.5 crore per annum.

Outlook

ONE HEALTH has become the principal objective of IIL over the past several years. Apart from Livestock, Canine and Human Health, IIL is looking forward to pursuing the manufacturing of Aqua, Poultry and ethno-veterinary medical/vaccine preparations.

Besides building manufacturing capacities, IIL is also keen on acquiring vaccine manufacturing facilities for ethno-veterinary and poultry drug products. Alongside, IIL has a strong pipeline of vaccine products in development phase e.g., gE deleted Infectious Bovine Rhinotracheitis, Mastitis, Canine 10-in-1, Veterinary TT, Foot Rot, Dengue, Chikungunya, Typhoid, Inactivated Polio, Zika, Bi-valent anti-rabies mAb etc., Similarly, on the Aqua side, there are vaccines under development for Columnaris Disease, Edwardsiellosis, Haemorrhagic Septicaemia, Necrosis, Vibriosis, etc.

With a current net worth of over ₹ 1,000 crore, IIL has a very good standing to invest for the betterment of life.

Filling line of a vaccine batch

Mother Dairy Fruit & Vegetable Private Limited

Shri Narendra Modi, Hon'ble Prime Minister of India visiting Mother Dairy's stall setup during the exhibition at IDF WDS 2023

Mother Dairy Fruit & Vegetable Pvt. Ltd., which was set up in 1974 as Mother Dairy, Delhi, on behalf of the Government of India to meet the liquid milk demand of Delhi, was corporatised in the year 2000. Mother Dairy is focused on its vision to "Provide quality food and beverages to consumers at affordable prices while ensuring fair return to the producers".

During the year, the company achieved a turnover of ₹ 14,573 crore, registering an overall growth of 16 per cent. Following two quiet seasons, last fiscal year witnessed a significant surge in consumer demand for varied product categories, driven by lifting of pandemic-infused restrictions in restaurants, offices, educational institutions, etc. Festivals, weddings and tourism also made a comeback leading to revival of the HoReCa segment.

Amidst evolving industry-related challenges, including firming up of ingredient costs and amendments in policy & regulatory frameworks, the business adapted swiftly. An outgrowing consumption trend during the year led to higher usage of commodities, resulting in a demand-supply gap. This coupled with high feed and fodder prices led to an increase in the procurement prices of milk. Mother Dairy continued to support the milk producers by maximising its procurement from Milk Producers Organisations, own area network and the cooperatives.

Milk Business experienced a volume growth of 11 per cent over the last fiscal year as it catered to the rising consumer demand. To improve accessibility, exclusive retail outlets, namely, Mother Dairy Points and Kiosks were established in retail market & residential societies across all regions. A whole new-age Kiosk design – Kiosk 2.0 – was introduced in the fiscal year, paving for an enriched consumer experience.

Recognising convenience and safety concerns that came up post-pandemic, the milk SBU has focussed on e-commerce and modern retail formats to better serve consumers while acquiring new ones. Mother Dairy has established a strong presence on all the major platforms – Big Basket Daily, Milk Basket, Zepto, etc. across most markets. Likewise, in Modern Retail Outlets such as Dmart, Big Bazaar, Reliance, Spencer's, etc., where consumer footfalls have been increasing over the last few years. Milk SBU consistently undertook visibility strengthening initiatives and focused on generating new trials.

The Value-Added Dairy Products (VADP) portfolio achieved a growth of 39 per cent over the last fiscal year. The fiscal year 2022-23 was a comeback year, particularly for the ice creams category. In the fresh dairy segment, Chaach and Lassi gained immense traction, whereas, amongst the curd segment, all types of curd – set Curd, Mishti Doi and Yoghurts exceeded the industry growth rates.

Owing to increased awareness of safe and hygienically packed products coupled with the increased preference for health and wellness products, the Nutrifit range garnered acceptance amongst a larger set of audience. Long shelf-life products supplemented the overall portfolio growth with categories like UHT Cream, UHT dairy-based beverages (milkshakes, chaach and lassi).

The business successfully leveraged new-age distribution channels to penetrate newer markets and reinforce its presence in existing ones. Amongst channels, business across modern retail outlets grew by 64 per cent while e-commerce/quick-commerce platforms grew by 41 per cent. The ice creams television campaign was run during the key consumption season. In addition, a celebrity-led media campaign of Mishti Doi and distribution expansion helped in resurrecting the business, further strengthening the brand's leadership position in the East. Focused consumer franchise via media campaigns and consumer promotions resulted in a significant contribution to the overall VADP portfolio performance.

Mother Dairy's Edible Oil business, under the Dhara brand, has been consistently witnessing a healthy CAGR over the last five years, clocking value and volume growth of 21 per cent and 8 per cent respectively.

Multiple marketing campaigns under a brand-new communication narrative titled **'Khaane Pe Kehna**' were rolled out in FY 2022-23, thereby deepening the brand's connect with the consumers.

Safal brand – the **Horticulture** arm of Mother Dairy, grew by 10 per cent over the last fiscal year. During the year, all key performance parameters like fruits & vegetables volume,

Dr L Murugan, Hon'ble Union Minister of State for Animal Husbandry & Dairying visiting Mother Dairy's Patparganj Plant

Shri Meenesh Shah, Chairman, NDDB briefing about the functioning of bulk vending machine to Dr Mansukh L Mandaviya, Hon'ble Union Minister of Health and Family Welfare, Chemical and Fertilizers

footfall into booths, average bill volume and retail margins, etc. underwent significant positive changes.

The procurement network was further strengthened by developing new linkages, including connecting its supply chain with GUJCOOP to provide market linkage and post-harvest support.

Despite weather-related crop aberrations impacting mango production by almost 30 per cent, the pulps & concentrates business performed exceptionally well, achieving a growth of 11 per cent over the previous year.

On **Information Technology** front, work started on several strategic projects, while continuing to focus on information security. Mother Dairy initiated the implementation of Sales Force automation using mobile app-based technology solution to streamline the sales processes for field sales teams. Phase-I started in Delhi NCR for Milk, Ice cream and Dhara Sales teams with market activity tracking, beat visits, attendance in field and sales performance. Mother Dairy also started implementation of Point of Sales solution at Milk shops in a phased manner.

Research and Development team developed a pipeline of products to meet the emerging needs of consumers. In FY 2022-23, Mother Dairy launched a range of impulse ice creams and take-home packs along Kaju Katli, in a packaged format. Under the Safal brand, new range of ready-to-cook frozen snacks like Veggie Sticks, Veggie Pops, Cheese Pops and Pizza Pockets were also launched.

In its commitment towards a cleaner environment, the company pledged towards becoming a 'Plastic Waste Neutral Company'. As on March 2023, the company has been instrumental in collecting and recycling/co-processing over 19,000 MT of post-consumer used plastic waste plastic. Under the Extended Producer Responsibility programme, the company is working in 27 states of India.

Awards and Recognition

Conferred with the **Silver Award** by Shri Rajnath Singh, Hon'ble Minister of Defence, Government of India at Armed Forces Flag Day CSR Conclave 2022 for its contribution towards the employment of ex-servicemen.

Won the prestigious award of **Innovative Dairy Company of the Year** at 6th Annual India Food Safety Summit & Awards 2022 organised by Synnex Group.

Won the **"Packaging Excellence India Star Award"** organised by Indian Institute of Packaging Research and Development team won the excellence award for four packaging innovations.

BWPeople.in and Happy+ accorded the **Happiest Workplaces Award 2022** during the Happiest Workplaces Awards and Summit.

Bestowed at the 10th National CSR Summit 2022 for its exemplary contribution towards sustainability. The summit was organised by Shikhar Organisation for Social Development, in association with UN-Global Compact Network India.

NDDB Dairy Services

Farmer meeting at Milk Producer Organisation

NDDB Dairy Services (NDS) is a wholly-owned subsidiary of NDDB which was incorporated in October 2009 as a not-for-profit company under Section 8 of the Companies Act. It aimed to promote Milk Producer Organisations (MPOs) and Productivity Enhancement Services.

During the year, NDS facilitated the incorporation of Shri Baba Gorakhnath Kripaa MPO in Gorakhpur, Uttar Pradesh; Srijanee MPO in Bareilly, Uttar Pradesh and Dudhshree MPO in Hooghly, West Bengal. These MPOs have been set up with the financial support of Uttar Pradesh State Rural Livelihood Mission; National Rural Livelihood Mission and West Bengal State Rural Livelihood Missions (SRLM) respectively. The total count of MPOs facilitated by NDS stands at 22. Among them, seven are supported under Deendayal Antyodaya Yojna National Rural Livelihoods Mission; three under the Uttar Pradesh Government's sector scheme 'Mahila Samarthya Yojana' through Uttar Pradesh SRLM and remaining MPOs under the National Dairy Plan and Tata Trusts. Out of 22 MPOs, 15 have an all-women membership and all the Producer Directors on their respective boards are women dairy farmers.

Collectively, these MPOs have 8.7 lakh dairy farmers as producer members spread across 22,277 villages. Women represent 71 per cent of these producers and 65 per cent are smallholder milk producers. The members of these producer organisations raised ₹ 200.6 crore towards share capital, poured 36.8 LKgPD of milk and achieved a cumulative gross turnover of ₹ 7,446.94 crore.

In order to develop the skillset and knowledge base of the Board of Directors of the MPOs, NDS facilitated refresher training, orientation and skill-building programmes. Leadership development programmes for the members, orientation programmes for new recruits and refresher training programmes for the existing field teams of the MPOs were also carried out. NDS also assisted these MPOs in the areas of information technology, marketing of products, etc.

The Milk Producer Organisations launched a slew of products at the IDF WDS 2022 and established themselves as promising rural start-ups.

The MPOs provide various input goods (Cattle feed, Area specific mineral mixture, Fodder seeds, etc.) and services (AI, Dairy Extension) in their operational areas, to improve milch animal productivity. During the year, the MPOs supplied 1.06 lakh MT of cattle feed and 500 MT of the mineral mixture and carried out 11.6 lakh AIs in the operational areas. To promote antibiotic-free milk, the usage of ethno-veterinary practices was propagated by the MPOs.

The four semen stations owned and managed by NDS together sold 5.26 crore frozen semen doses. With an objective to promote the indigenous breeds in the country, about 1.14 crore semen doses from 18 different indigenous breeds of cattle and about 1.60 crore semen doses from eight different buffalo breeds were sold during the year.

NDS is one of the service providers involved in the implementation of the Accelerated Breed Improvement Programme through Embryo Transfer (ABIP IVF-ET) aimed at increasing milk production and productivity under DAHD's RGM. The Embryo Transfer activities were carried out in selected recipients of the farmers at their doorsteps in the states of Maharashtra, Gujarat, Punjab, Rajasthan, Uttar Pradesh, Madhya Pradesh and Jharkhand, resulting in the production of high genetic merit calves. During the year, a total of about 1,158 embryos were produced at the IVF laboratory in SAG Bidaj, out of which around 943 were of indigenous breeds.

NDS facilitated the induction of 4,100 high genetic merit animals of various indigenous breeds for various projects implemented by NDDB under the RGM, Government of India.

NDS is implementing NDDB's cow sanctuary project at Muzaffarnagar, Uttar Pradesh under RGM, which is first of its kind in India. This project aims to house 5,000 cows and will be equipped with modern facilities for biogas and cow dung-based fertilisers production.

Rahuri Semen Station, Maharashtra

Parameters	Total of 22 MPCs
No. of Districts	130
No. of Villages Covered	22,277
No. of Members	8,72,956
Women Membership (%)	71
Smallholders (% of Members)	65
Paid-up Share Capital (₹ in Million)	2,006.00
Average Milk Procurement FYTD (TKgPD)	3,685
Gross Turnover FYTD (₹ in Million)	74,469.4

NDDB Mrida Limited

Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying, along with Dr Sanjeev Balyan and Dr L Murugan, Hon'ble Union Ministers of State for Fisheries, Animal Husbandry and Dairying during the launch of NDDB Mrida Limited

NDDB Mrida Limited is a wholly-owned subsidiary of NDDB incorporated on 1 July 2022 as a public limited company to take forward the manure management initiatives in a focused manner across the country. The objectives of NDDB Mrida Limited include execution of biogas & dung-related projects such as manure value chain projects, biogas-based Bio-CNG generation, biogas-based energy generation for dairy plants and promoting the large-scale organised sale of dung-based organic fertiliser.

The efforts of NDDB Mrida Limited has the potential to create a direct and long-lasting impact on the lives of farmers. The company plans to carry out research and development to develop cost-effective technologies for efficient dung management and provide a platform for collaboration with like-minded agencies, universities, start-ups, etc. for innovative dung-based research.

During the year, NDDB Mrida Limited provided technical support for implementation of NDDB-Sustain Plus Manure Management Programme and the GOBARDhan scheme in Gujarat.

NDDB Mrida Limited also took over the management of 4000 cubic Meter capacity biogas plant at Varanasi. For the sales and distribution of Phosphate Rich Organic Manure (PROM) produced in the Varanasi plant NDDB Mrida Limited tied up with Gujarat State Fertilisers and Chemicals Ltd. (GSFC). The PROM shall be sold under the brand name of "Sardar Sudhan"

NDDB Mrida Limited also introduced, an urban kit branded as "SuDhan Garden Nutrikit" to cater to the growing needs of urban consumers for organic fertiliser. The Nutrikit is a package of solid and liquid slurry based organic products which are specifically formulated to satisfy the nutrients need of kitchen gardens/ backyard gardens/ small nurseries/ ornamental plants of urban consumers. The use of these organic products enhances plant growth and increases flowers / fruits production as well as quality besides maintaining soil health.

"Gobar Se Samriddhi" Biogas Programme

To propagate household level biogas plants at a large scale, NDDB Mrida Limited in collaboration with "Sistema.bio", a manufacturer of biogas plants, introduced "Gobar se Samriddhi" Biogas Programme during the year. This unique carbon finance-based biogas programme reduces the upfront investment required for the biogas plants.

The programme involves large-scale installations of domestic biogas plants in clusters, through dairy cooperatives and farmer-focussed institutions. As a result, the beneficiary farmers can avail two cubic meter capacity domestic biogas plants at approx. ₹ 5,000.

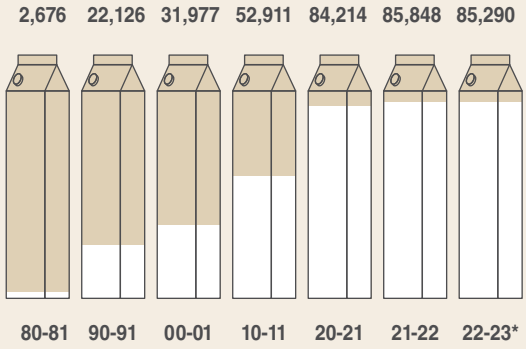
Progress of Dairy Cooperatives

Dairy Cooperative Societies

North

(March 2023)^

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Haryana	505	3,229	3,318	7,019	7,837	7,964	7,909
Himachal Pradesh		210	288	740	1,084	1,067	1,097
Jammu & Kashmir		105	**	**	896	910	970
Punjab	490	5,726	6,823	7,069	8,539	8,666	9,104
Rajasthan	1,433	4,976	5,900	16,290	21,300	23,274	25,408
Uttar Pradesh	248	7,880	15,648	21,793	40,353	39,855	36,414
Uttarakhand					4,205	4,112	4,388
Regional Total	**2,676**	**22,126**	**31,977**	**52,911**	**84,214**	**85,848**	**85,290**

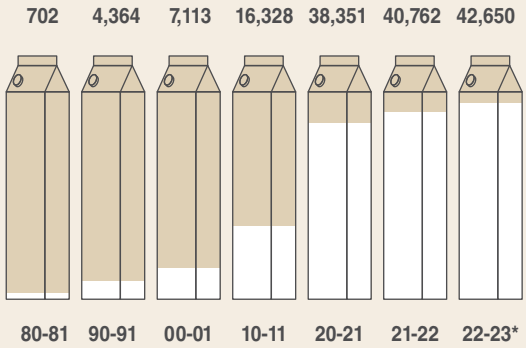


Region-wise dairy cooperative societies

East

(March 2023)^

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Assam		117	125	155	522	485	672
Bihar	118	2,060	3,525	9,425	26,275	27,897	29,570
Jharkhand				53	769	879	1,046
Manipur						233	233
Meghalaya					30	20	21
Mizoram					42	55	36
Nagaland		21	74	49	52	52	52
Odisha		736	1,412	3,256	6,151	6,651	6,378
Sikkim		134	174	287	587	648	675
Tripura		73	84	84	119	133	143
West Bengal	584	1,223	1,719	3,019	3,804	3,709	3,824
Regional Total	**702**	**4,364**	**7,113**	**16,328**	**38,351**	**40,762**	**42,650**

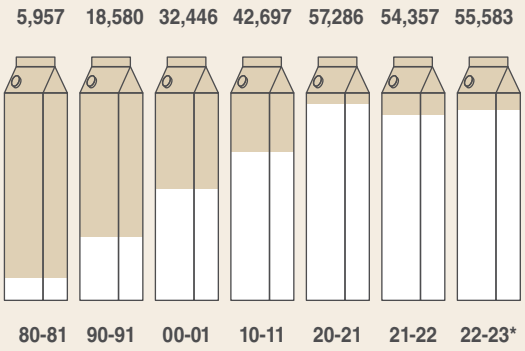


Region-wise dairy cooperative societies

West

(March 2023)^

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Chhattisgarh				757	1,110	1,098	949
Goa		124	166	178	183	183	183
Gujarat	4,798	10,056	10,679	14,347	22,341	22,384	22,402
Madhya Pradesh	441	3,865	4,877	6,216	10,757	11,176	11,646
Maharashtra	718	4,535	16,724	21,199	22,895	19,516	20,403
Regional Total	**5,957**	**18,580**	**32,446**	**42,697**	**57,286**	**54,357**	**55,583**

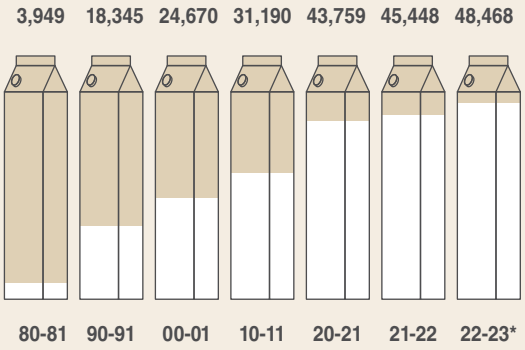


Region-wise dairy cooperative societies

South

(March 2023)^

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Andhra Pradesh	298	4,766	4,912	4,971	6,458	7,225	9,550
Karnataka	1,267	5,621	8,516	12,372	16,721	17,043	17,586
Kerala		1,016	2,781	3,666	3,337	3,378	3,399
Tamil Nadu	2,384	6,871	8,369	10,079	10,555	10,859	10,982
Telangana					6,581	6,835	6,843
Puducherry		71	92	102	107	108	108
Regional Total	**3,949**	**18,345**	**24,670**	**31,190**	**43,759**	**45,448**	**48,468**



Region-wise dairy cooperative societies

Grand Total

80-81	90-91	00-01	10-11	20-21	21-22	22-23*
13,284	**63,415**	**96,206**	**1,43,126**	**2,23,610**	**2,26,415**	**2,31,991**

^ For Dairy Cooperatives it is Organised (cumulative), includes conventional societies and Taluka unions formed earlier. 2020-21 onwards data includes MPPs of MPOs & MPIs of MDFVPL

* Provisional

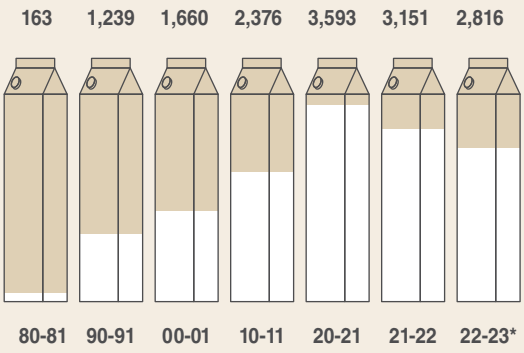
** Not reported

Source: Milk Unions & Federations, NDDB DS & MDFVPL

North

(in thousands)

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Haryana	39	184	185	313	326	325	329
Himachal Pradesh		17	20	32	46	46	47
Jammu & Kashmir		2	**	**	30	40	41
Punjab	26	304	370	385	419	417	427
Rajasthan	80	340	436	669	1,044	1,063	1,095
Uttar Pradesh	18	392	649	977	1,568	1,103	712
Uttarakhand					159	157	165
Regional Total	**163**	**1,239**	**1,660**	**2,376**	**3,593**	**3,151**	**2,816**

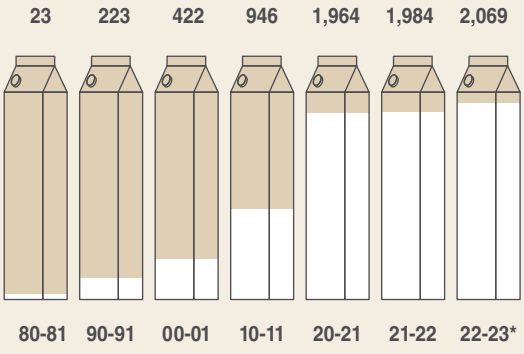


Region-wise producer members

East

(in thousands)

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Assam	-	2	1	4	34	40	48
Bihar	3	100	184	523	1,308	1,358	1,408
Jharkhand	-	-	-	1	23	26	29
Manipur	-	-	-	-	-	6	6
Meghalaya	-	-	-	-	1	1	0.8
Mizoram	-	-	-	-	1	1	1
Nagaland	-	1	3	2	2	2	2
Odisha	-	46	111	187	325	293	325
Sikkim	-	4	5	10	15	16	17
Tripura	-	4	4	6	8	6	6
West Bengal	20	66	114	213	247	236	226
Regional Total	**23**	**223**	**422**	**946**	**1,964**	**1,984**	**2,069**

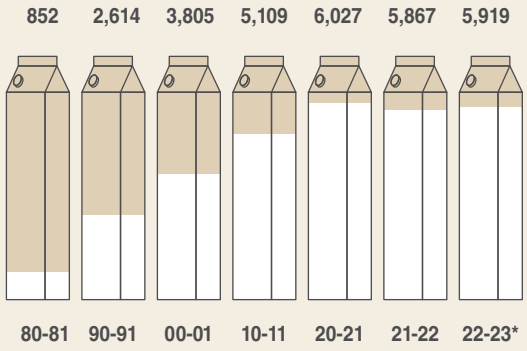


Region-wise producer members

West

(in thousands)

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Chhattisgarh				31	43	42	37
Goa		12	18	19	19	19	19
Gujarat	741	1,612	2,147	2,970	3,740	3,762	3,776
Madhya Pradesh	24	150	242	271	372	385	401
Maharashtra	87	840	1,398	1,818	1,853	1,659	1,687
Regional Total	**852**	**2,614**	**3,805**	**5,109**	**6,027**	**5,867**	**5,919**

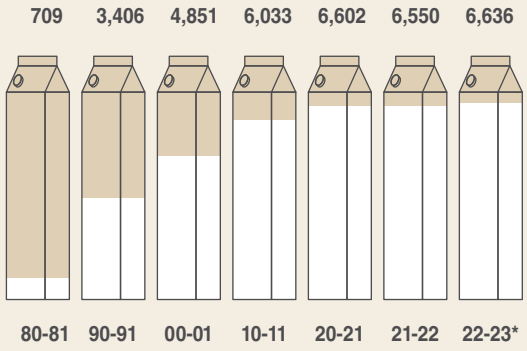


Region-wise producer members

South

(in thousands)

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Andhra Pradesh	33	561	702	846	661	660	666
Karnataka	195	1,013	1,528	2,124	2,633	2,589	2,644
Kerala		225	637	851	1,025	1,042	1,063
Tamil Nadu	481	1,590	1,957	2,176	1,983	1,977	1,927
Telangana					258	239	293
Puducherry		17	27	36	42	42	42
Regional Total	**709**	**3,406**	**4,851**	**6,033**	**6,602**	**6,550**	**6,636**



Region-wise producer members

Grand Total

80-81	90-91	00-01	10-11	20-21	21-22	22-23*
1,747	**7,482**	**10,738**	**14,464**	**18,185**	**17,552**	**17,441**

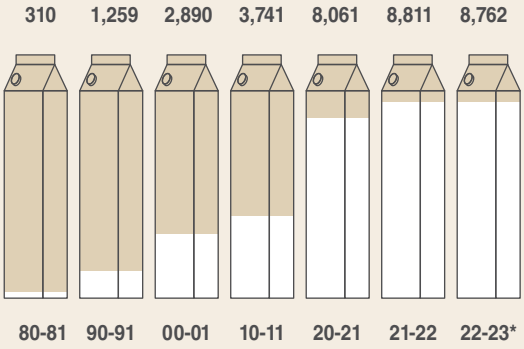
* Provisional
** Not reported
2020-21 onwards data includes members of MPOs & MPGs of MDFVPL

Source: Milk Unions & Federations, NDDB DS & MDFVPL

North

(in thousand kilograms per day)#

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Haryana	33	94	276	511	590	544	481
Himachal Pradesh		14	24	60	92	107	109
Jammu & Kashmir		11	**	**	92	122	116
Punjab	75	394	912	1,037	2,155	2,224	2,150
Rajasthan	138	364	887	1,629	3,613	3,984	4,284
Uttar Pradesh	64	382	791	504	1,330	1,630	1,437
Uttarakhand					189	201	187
Regional Total	**310**	**1,259**	**2,890**	**3,741**	**8,061**	**8,811**	**8,762**

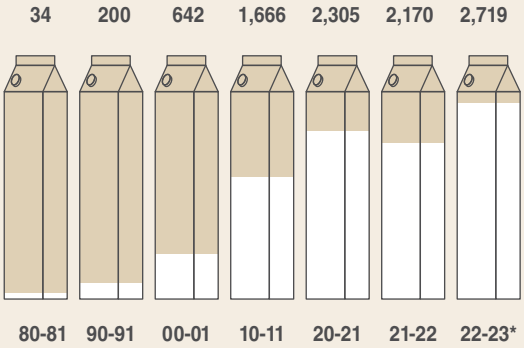


Region-wise milk procurement

East

(in thousand kilograms per day)#

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Assam		4	3	5	29	43	48
Bihar	3	95	330	1,091	1,505	1,295	1,764
Jharkhand				5	134	154	185
Manipur						3	4
Meghalaya					14	14	13
Mizoram					5	4	3
Nagaland		1	3	2	3	3	3
Odisha		41	94	276	366	416	410
Sikkim		4	7	12	40	53	52
Tripura		3	1	2	7	5	5
West Bengal	31	52	204	273	203	180	231
Regional Total	**34**	**200**	**642**	**1,666**	**2,305**	**2,170**	**2,719**

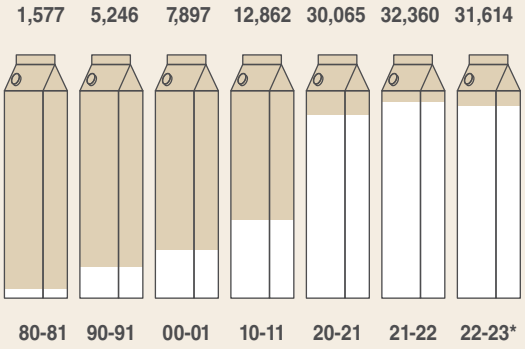


Region-wise milk procurement

West

(in thousand kilograms per day)#

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Chhattisgarh				25	68	66	58
Goa		16	32	38	55	55	49
Gujarat	1,344	3,102	4,567	9,158	25,237	27,393	26,975
Madhya Pradesh	68	256	319	588	954	981	926
Maharashtra	165	1,872	2,979	3,053	3,751	3,865	3,607
Regional Total	**1,577**	**5,246**	**7,897**	**12,862**	**30,065**	**32,360**	**31,614**

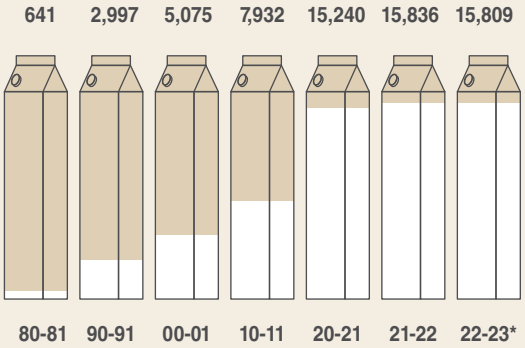


Region-wise milk procurement

South

(in thousand kilograms per day)#

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Andhra Pradesh	79	763	879	1,371	1,742	1,986	2,243
Karnataka	261	917	1,887	3,742	7,879	8,158	8,030
Kerala		185	646	688	1,388	1,565	1,438
Tamil Nadu	301	1,106	1,618	2,097	3,709	3,600	3,541
Telangana					461	460	490
Puducherry		26	45	35	60	68	68
Regional Total	**641**	**2,997**	**5,075**	**7,932**	**15,240**	**15,836**	**15,809**



Region-wise milk procurement

Grand Total

80-81	90-91	00-01	10-11	20-21	21-22	22-23*
2,562	**9,702**	**16,504**	**26,202**	**55,672**	**59,178**	**58,904**

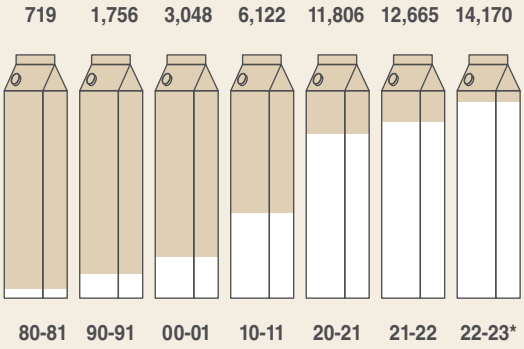
Includes outside State operations
* Provisional
** Not reported
Gujarat's total milk procurement in 2022-23 includes 4,871 TKgPD from outside the State and in 2021-22, the corresponding figure was 4,240 TKgPD.
2020-21 onwards data includes procurement of MPOs & MPGs of MDFVPL

Source: Milk Unions & Federations, NDDB DS & MDFVPL

North

(in thousand litres per day)#

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Haryana	2	80	108	362	289	307	331
Himachal Pradesh		15	20	23	25	25	28
Jammu & Kashmir		9	**	**	99	98	121
Punjab	7	139	420	802	1,013	1,111	1,213
Rajasthan	12	136	540	1,505	2,129	2,333	2,885
Uttar Pradesh	1	326	436	380	1,444	1,675	1,903
Uttarakhand					161	164	163
Delhi	697	1,051	1,524	3,050	6,647	6,952	7,526
Regional Total	**719**	**1,756**	**3,048**	**6,122**	**11,806**	**12,665**	**14,170**

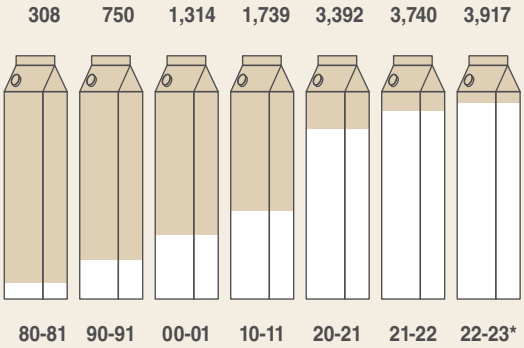


Region-wise liquid milk marketing

East

(in thousand litres per day)#

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Assam		10	7	22	59	64	74
Bihar	8	111	324	454	1,269	1,464	1,547
Jharkhand				253	374	418	447
Manipur						5	4
Meghalaya					13	12	13
Mizoram					4	4	3
Nagaland		1	4	3	6	5	5
Odisha		65	98	290	324	326	350
Sikkim		5	7	17	44	47	46
Tripura		6	7	15	9	7	7
West Bengal	17	26	27	41	83	93	108
Kolkata	283	526	840	644	1,207	1,295	1,315
Regional Total	**308**	**750**	**1,314**	**1,739**	**3,392**	**3,740**	**3,917**

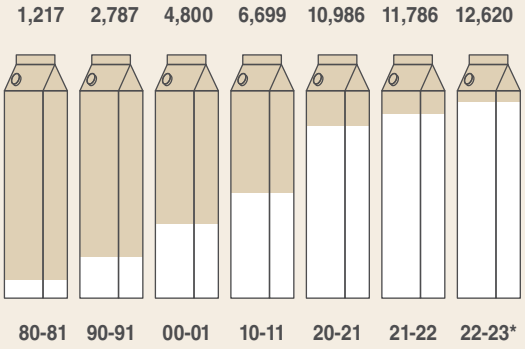


Region-wise liquid milk marketing

West

(in thousand litres per day)#

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Chhattisgarh				34	176	199	242
Goa		36	83	69	57	58	50
Gujarat	210	1,052	1,905	3,237	5,663	6,044	6,419
Madhya Pradesh	39	279	244	495	800	854	952
Maharashtra	18	363	1,178	2,023	1,641	1,783	1,929
Mumbai	950	1,057	1,390	841	2,650	2,849	3,028
Regional Total	**1,217**	**2,787**	**4,800**	**6,699**	**10,986**	**11,786**	**12,620**

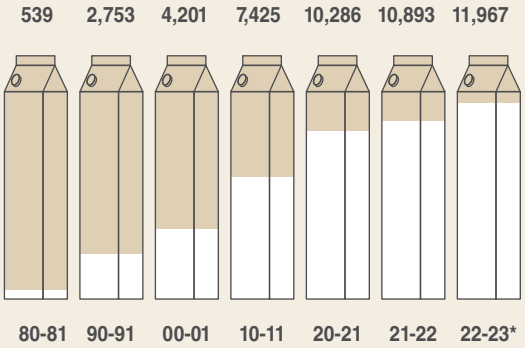


Region-wise liquid milk marketing

South

(in thousand litres per day)#

Region/State	80-81	90-91	00-01	10-11	20-21	21-22	22-23*
Andhra Pradesh	19	552	733	1,565	1,346	1,352	1,397
Karnataka	166	889	1,501	2,661	4,261	4,472	5,041
Kerala		223	640	1,092	1,315	1,429	1,590
Tamil Nadu	109	405	559	989	1,175	1,306	1,500
Telangana					878	934	966
Puducherry		22	43	93	92	93	92
Chennai	245	662	725	1,025	1,220	1,308	1,381
Regional Total	**539**	**2,753**	**4,201**	**7,425**	**10,286**	**10,893**	**11,967**



Region-wise liquid milk marketing

Grand Total

80-81	90-91	00-01	10-11	20-21	21-22	22-23*
2,783	8,046	13,363	21,985	36,470	39,085	42,673

Includes Metro Dairies and outside State operations

* Provisional ** Not reported

Gujarat's total milk marketing in 2022-23 including outside the State stands at 15,827 TLPD and in 2021-22, the corresponding figure was 14,437 TLPD.

In 2010-11, break-up of sale volume by Maharashtra Milk Unions in Mumbai not available

2020-21 onwards data includes sale of MPOs & MDFVPL

Source: Milk Unions & Federations, NDDB DS & MDFVPL

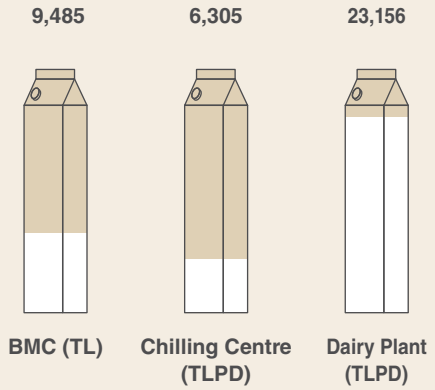
Dairy Infrastructure in the Country

Dairy Cooperatives' Cold Chain Infrastructure (capacity)*

North

(March 2023)^

Region/State	BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)
Delhi	-	-	1,500
Haryana	494	454	7,525
Himachal Pradesh	136	80	150
Jammu & Kashmir	212	200	150
Punjab	2,278	1,095	3,085
Rajasthan	4,471	2,349	5,120
Uttar Pradesh	1,817	2,067	5,370
Uttarakhand	77	60	256
Regional Total	**9,485**	**6,305**	**23,156**

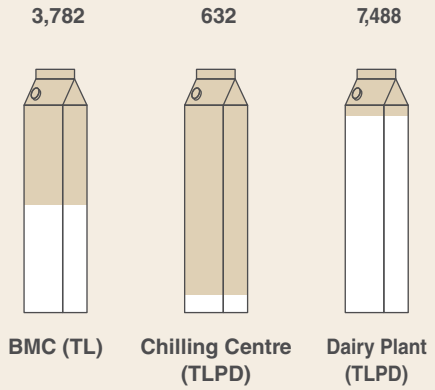


Region-wise cold chain capacity

East

(March 2023)^

Region/State	BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)
Assam	88	-	60
Bihar	2,229	414	3,920
Jharkhand	252	-	790
Manipur	13	-	20
Meghalaya	6	-	50
Mizoram	11	-	35
Nagaland	2	-	10
Odisha	909	95	1,200
Sikkim	48	-	105
Tripura	19	-	24
West Bengal	205	123	1,274
Regional Total	**3,782**	**632**	**7,488**

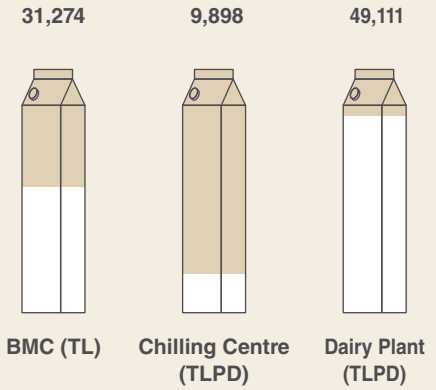


Region-wise cold chain capacity

West

(March 2023)^

Region/State	BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)
Chhattisgarh	100	71	160
Goa	42	-	110
Gujarat	26,923	6,590	33,515
Madhya Pradesh	1,759	647	1,896
Maharashtra	2,450	2,590	13,430
Regional Total	**31,274**	**9,898**	**49,111**

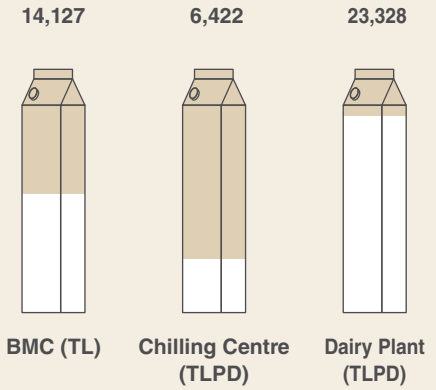


Region-wise cold chain capacity

South

(March 2023)^

Region/State	BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)
Andhra Pradesh	2,646	1,039	3,155
Karnataka	6,489	3,450	10,890
Kerala	1,614	115	3,075
Tamil Nadu	2,410	1,455	4,613
Telangana	903	363	1,475
Puducherry	65	-	120
Regional Total	**14,127**	**6,422**	**23,328**



Region-wise cold chain capacity

Grand Total

58,668	23,257	1,03,080
BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)

* Provisional
TL: Thousand Litres
TLPD: Thousand Litres Per Day
^includes infrastructure owned by MPOs & MDFVPL
Source: Milk Unions & Federations, NDDB DS & MDFVPL

Visitors

During FY 2022-23, NDDB received 2,252 guests from India and abroad.

Mr K Ayukawa, Executive Vice Chairman, Maruti Suzuki

Mr Martin Burke, CEO, International Committee for Animal Recording, The Netherlands

Mr Brian Lindsay, Director, Dairy Sustainability Framework

Mr Adolfo Orive, CEO, Tetra Pak

Dr Joe Rudek, Team Lead & Sr Scientist, Mr John Tauzel, Sr Director and Dr Joe McFadden, Asst Prof, Cornell University from Environmental Defense Fund

Mr Kiran Karamil, Agriculture Counsellor, Mr Charles McElhone, Mr Karl Ellis and Ms Janine Waller from Australian High Commission

Shri Dharam Pal Singh, Hon'ble Minister of Animal Husbandry and Dairy Development, Government of Uttar Pradesh

Shri Tage Taki, Hon'ble Minister of Animal Husbandry, Veterinary & Dairy Development (AHV&DD), Government of Arunachal Pradesh

Shri Kuldip Singh Dhaliwal, Hon'ble Minister of Animal Husbandry, Dairy development and Fisheries, Government of Punjab

Mr Gabriel Pandureni Sinimbo, High Commissioner of Namibia

Ms Margaret Kibogy, Managing Director, Kenya Dairy Board

Shri Rajesh Kumar Singh, Secretary, Animal Husbandry & Dairying, Government of India

Accounts

kkc & associates llp
Chartered Accountants
(formerly Khimji Kunverji & Co LLP)

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 2023, 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 31March 2023, 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.

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T:+91 22 6143 7333 E: info@kkcllp.in W: www.kkcllp.in LLPIN: AAP-2267

Suite 52, Bombay Mutual Building, Sir Phirozshah Mehta Road, Fort, Mumbai 400001, India

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.

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 KKC & Associates LLP
Chartered Accountants
(formerly Khimji Kunverji & Co LLP)
Firm Registration Number: 105146W/W100621

Hasmukh B. Dedhia
Partner
ICAI Membership No: 033494
UDIN: 23033494BGWSUO6721

Place: Mumbai
Date: 07 July 2023

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

Balance Sheet

AS AT 31ST MARCH, 2023

₹ in million

PARTICULARS	ANNEXURE	31.03.2023	31.03.2022
LIABILITIES			
NDDB Funds	I	32,763.64	32,288.49
Secured Loans	II	23,158.99	9,888.03
Current Liabilities and Provisions	III	7,641.85	10,233.00
Deferred Tax Liability	XVI (Note 8)	279.69	256.40
Total		**63,844.17**	**52,665.92**
ASSETS			
Cash and Bank Balances	IV	15,207.92	14,452.80
Inventories	V	0.31	0.55
Sundry Debtors		182.88	117.50
Loans, Advances and Other Current Assets	VI	24,450.34	15,046.77
Investments	VII	22,269.11	21,313.81
Property, Plant and Equipment	VIII	1,733.61	1,734.49
Total		**63,844.17**	**52,665.92**
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 KKC & Associates LLP
Chartered Accountants
(formerly Khimji Kunverji & Co. LLP)
Firm Reg No. 105146W/W-100621

Hasmukh B Dedhia
Partner
Membership No. 033494

Place: Mumbai
Date: 07 July 2023

For and on behalf of the Board,

Meenesh C Shah
Chairman & Managing Director

S Regupathi
Executive Director (Operations)

Amit Goel
Deputy Group Head (Accounts)

Place: Anand
Date: 07 July 2023

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, 2023

₹ in million

PARTICULARS	ANNEXURE	2022-23	2021-22
INCOME			
Interest		2,682.90	2,592.30
Service Charges	IX	321.94	229.77
Rent and Hire Charges		236.69	220.67
Dividend		347.05	310.92
Other Income	X	671.25	87.51
Total (A)		**4,259.83**	**3,441.17**
EXPENDITURE			
Interest and Financial Charges		710.37	673.50
Remuneration and Benefits to Employees	XI	1,081.59	1,101.70
Administrative Expenses	XII	195.78	111.86
Grants		325.66	10.29
Research and Development		123.58	107.14
Maintenance of Assets	XIII	233.83	178.64
Training Expenses		236.50	41.65
Computer Expenses		22.46	20.73
Other Expenses	XIV	94.88	72.45
Provision for Standard Asset, NPA and Contingency		300.00	250.00
Depreciation	VIII	193.57	187.08
Total (B)		**3,518.22**	**2,755.04**
Surplus during the year before tax (C) = (A - B)		**741.61**	**686.13**
Less: Provision for Taxation			
Current Tax		226.22	259.30
Deferred Tax	XVI (Note 8)	23.28	(16.95)
Surplus during the year after tax		**492.11**	**443.78**
Less: Appropriations to -			
Special Reserve	XVI (Note 13)	29.92	32.10
Balance carried to General Funds		462.19	411.68
Total (D) = (B + C)		**4,259.83**	**3,441.17**
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 KKC & Associates LLP
Chartered Accountants
(formerly Khimji Kunverji & Co. LLP)
Firm Reg No. 105146W/W-100621

Hasmukh B Dedhia
Partner
Membership No. 033494

Place: Mumbai
Date: 07 July 2023

For and on behalf of the Board,

Meenesh C Shah
Chairman & Managing Director

S Regupathi
Executive Director (Operations)

Amit Goel
Deputy Group Head (Accounts)

Place: Anand
Date: 07 July 2023

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

Cash Flow Statement

FOR THE YEAR ENDED ON 31ST MARCH, 2023

₹ in million

PARTICULARS	ANNEXURE	2022-23		2021-22	
Cash Flow From Operating Activities					
Surplus during the year before tax			**741.61**		**686.13**
Adjustments for :					
Depreciation		193.57		187.08	
Provision for Standard Asset, NPA and Contingency		300.00		250.00	
(Profit)/Loss on Sale of Investments		(10.61)		(2.43)	
Interest Income on Fixed Deposit and Bonds Considered Separately		(1,850.24)		(1,780.44)	
Dividend Income considered separately		(347.05)		(310.93)	
(Profit)/Loss on Sale of Fixed Assets Considered Separately		(148.57)		(10.49)	
Recoupment of Depreciation of Grant Assets		(17.10)		(21.31)	
Employee Retirement Benefit		34.97		151.98	
Interest and Financial Charges to Banks		60.77		6.91	
Premium Amortised on Bonds and State Development Loans		44.82	(1,739.44)	43.71	(1,485.91)
			(997.83)		**(799.78)**
Operating Cash Flow Before Changes in Working Capital					
(Increase)/ Decrease in Inventories		0.25		0.49	
(Increase)/ Decrease in Sundry Debtors		(65.39)		24.31	
(Increase)/ Decrease in Loans and Advances		(9,400.98)		960.43	
Increase/ (Decrease) in Current Liabilities		(2,926.10)	(12,392.22)	(537.95)	447.28
Cash Flow Generated From /(Used In) Operating Activities			**(13,390.05)**		**(352.50)**
Tax Refunded / (Paid)			(193.56)		(277.31)
Net Cash Flow Generated From /(Used In) Operating Activities (A)			**(13,583.61)**		**(629.81)**
Cash Flow From Investing Activities					
Interest Income		1,814.98		1936.64	
Dividend Income		347.05		310.92	
Proceeds from Maturity of Investments (Bonds)		250.00		351.45	
Purchase of Investments (Shares)		(915.00)		-	
Purchase of Investments (Bonds and State Development Loans)		(324.51)		(1,428.54)	
Decrease / (Increase) in FDR's with banks more than 90 days (net)		4,099.00		(1,801.05)	
Proceeds From Sale of Fixed Assets		193.46		10.58	
Grant Received For Purchase of Fixed Asset/(Grant Refunded)		0.14		(2.86)	
Purchase of Fixed Assets		(237.58)		(98.75)	
Net Cash Flow Generated From /(Used In) Investing Activities (B)			**5,227.54**		**(721.61)**
Cash Flow From Financing Activities					
Proceeds / (Repayment) of Borrowed Funds			13,270.96		318.71
Interest and Financial Charges to Banks			(60.77)		(6.91)
Net Cash Flow From Financing Activities (C)			**13,210.19**		**311.80**
Net Cash Flow during the year (A+B+C)			**4,854.12**		**(1,039.62)**
Cash and Cash Equivalents at the beginning of the year			**2,277.05**		**3,316.67**
Cash and Cash Equivalents at the end of the year			**7,131.17**		**2,277.05**
Cash and Cash Equivalents					
Balances with Banks:					
In Fixed Deposits			12,816.56		14,324.53
Less: Deposits with original maturity more than 90 days			8,076.75		12,175.75
			4,739.81		**2,148.78**
In Current/Saving Accounts			2,391.33		128.24
Cash and Cheques on hand			0.03		0.03
Total			**7,131.17**		**2,277.05**
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 KKC & Associates LLP
Chartered Accountants
(formerly Khimji Kunverji & Co. LLP)
Firm Reg No. 105146W/W-100621

Hasmukh B Dedhia
Partner
Membership No. 033494

Place: Mumbai
Date: 07 July 2023

For and on behalf of the Board,

Meenesh C Shah
Chairman & Managing Director

S Regupathi
Executive Director (Operations)

Amit Goel
Deputy Group Head (Accounts)

Place: Anand
Date: 07 July 2023

NDDB Funds

ANNEXURE - I

₹ in million

PARTICULARS		31.03.2023		31.03.2022
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	56.40		80.57	
Add: Grant received during the year	0.14		2.19	
Less: Grant refunded during the year	-		5.05	
Less: Recoupment of depreciation	17.10		21.31	
		39.44		56.40
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	1,594.32		1,562.22	
Add: Transfer from Income and Expenditure Account	29.92		32.10	
		1,624.24		**1,594.32**
Income and Expenditure Account				
Balance as per last balance sheet	27,078.16		26,666.48	
Add: Surplus after appropriation during the year	462.19		411.68	
		27,540.35		27,078.16
Total		**32,763.64**		**32,288.49**

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	31.03.2023	31.03.2022
Bank Overdraft (Secured against lien on fixed deposits with Banks)	8,256.02	640.76
Loan from NABARD (Secured against loan given under DIDF scheme)	14,902.65	9,247.27
Interest Accrued on Borrowed Loan (DIDF)	0.32	-
Total	**23,158.99**	**9,888.03**

Current Liabilities and Provisions

ANNEXURE - III

₹ in million

PARTICULARS		31.03.2023		31.03.2022	
a)	**Current Liabilities**				
	Advances and Deposits		60.49		58.07
	Sundry Creditors (Refer Note 10 of Annexure XVI)		169.76		215.23
	Other Liabilities		152.72		150.79
	Net liability on account of Consultancy Project				
	Funds received	20,374.42		21,918.80	
	Add : Due to suppliers for expenses	913.29		1,017.06	
		21,287.71		22,935.86	
	Less : Expenditure incurred	18,953.31		19,947.15	
	Advance to suppliers	420.66		117.12	
		1,913.74		2,871.59	
	Add : Payable to NDDB	41.97		141.17	
	(Per contra, Refer Annexure VI)		1,955.71		3,012.76
b)	**Fund received for Government of India Projects**				
	Balance as per last balance sheet	4,179.02		3,583.16	
	Fund received from Govt of India	2,049.46		2,956.86	
	Add: Interest income accrued/(Expense)	(19.13)		19.64	
	Less: Expenditure incurred	2,936.70		2,377.61	
	Less: Advance to End Implementing Agencies	535.42		0.84	
	Less:NDLM contribution transfer to Grant	0.14		2.19	
			2,737.09		4,179.02
c)	**Provisions for :**				
	Non-performing assets (Refer Note 9 of Annexure XVI)	559.34		816.58	
	General contingency on Standard Assets (Refer Note 9 of Annexure XVI)	93.67		51.79	
	Contingency (Refer Note 9 of Annexure XVI)	1,755.25		1,497.87	
			2,408.26		2,366.24
d)	**Provisions for :**				
	Leave encashment (Refer Note 5 of Annexure XVI)	48.35		99.27	
	Post retirement medical scheme (Refer Note 5 of Annexure XVI)	109.45		110.75	
	Gratuity (Refer Note 5 of Annexure XVI)	-		40.85	
	VRS monthly benefits	0.02		0.02	
			157.82		250.89
Total			**7,641.85**		**10,233.00**

Cash and Bank Balances

ANNEXURE - IV

₹ in million

PARTICULARS	31.03.2023		31.03.2022	
Balances with Banks				
In fixed deposits (Refer Note a to e below)	12,816.56		14,324.53	
In saving account (Refer Note f below)	2,343.59		-	
In current account (Refer Note g below)	47.74		128.24	
		15,207.89		14,452.77
Cash and cheques on hand		0.03		0.03
Total		**15,207.92**		**14,452.80**

Note :

Fixed deposits includes

a. ₹ 10771.28 million (Previous Year ₹ 4613.92 million) placed with Banks which are under lien for the overdraft facility.

b. ₹ 1000.01 million (Previous Year ₹ 610.50 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. ₹ 376.31 million (Previous Year ₹ 3702.40 million) of fund received for Government of India projects.

e. ₹ 468.90 million (Previous Year ₹ 506.48 million) being NDDB share in NDLM project earmarked for NDLM project.

f. ₹ 2343.59 million of fund received for Government of India projects

g. Current accounts includes ₹ 23.19 million (Previous Year ₹ 110.55 million) of fund received for Government of India projects.

Inventories

ANNEXURE - V

₹ in million

PARTICULARS	31.03.2023		31.03.2022	
Stores, spares and others	1.43		1.67	
Project equipments	3.19		3.19	
	4.62		4.86	
Less : Provision for obsolescence	4.31		4.31	
		0.31		0.55
Total		**0.31**		**0.55**

Loans, Advances and Other Current Assets

ANNEXURE - VI

₹ in million

PARTICULARS	31.03.2023		31.03.2022	
Loans to cooperatives				
Milk - Secured (Refer Note a & b below)	18,972.57		10,475.43	
Unsecured	684.43		48.25	
		19,657.00		10,523.68
Oil - Secured	80.00		100.00	
Unsecured (including interest accrued)	578.57	658.57	805.03	905.03
Loans and advances to subsidiary companies / managed units				
Secured (Refer Note a & b below)	1,795.07		1,343.96	
Unsecured	662.98		523.27	
		2,458.05		1,867.23
Loans to employees				
Secured	0.13		0.20	
Unsecured	6.55		8.02	
		6.68		8.22
Interest accrued on -				
Loans and advances	3.14		5.05	
Fixed deposits and investments	671.35		636.09	
		674.49		641.14
Advances to suppliers and contractors		40.15		22.30
Recoverable on account of turnkey projects		41.97		141.17
(Per contra, Refer Annexure III)				
Sundry deposits		18.20		17.76
Income Taxes paid (net of provisions) (Refer Note c below)		733.39		766.05
Prepaid Gratuity (Refer Note 5 of Annexure XVI)		52.39		-
Other receivables (Refer Note d below)		109.45		154.19
Total		**24,450.34**		**15,046.77**

Notes :

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

b. Secured loans includes ₹ 16775.18 million (Previous Year ₹ 8,301.42 million) given under DIDF scheme.

c. Provision of tax netted off ₹ 2247.21 million (Previous Year ₹ 2020.99 million)

d. Other receivables include grants amounting to ₹ 26.01 million (Previous year ₹ 25.44 million) awaiting FUCs

Investments

ANNEXURE - VII

₹ in million

PARTICULARS	31.03.2023		31.03.2022	
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		-	
NDDB CALF Limited	750.00		-	
		5,718.90		4,873.90
Equity Share (unquoted) in Joint Venture:				
North East Dairy and Foods Limited (Refer Note a & d below)		50.00		-
Bonds (quoted) of Government companies, financial institutions and banks (at cost net of amortised premium)		10,858.22		11,125.03
(aggregate market value of bonds is ₹ 10,924.46 million (Previous Year ₹ 11,122.49 million) as at the balance sheet date)				
State Development Loans (quoted) (at cost net of amortised premium)		5,603.09		5,295.98
(aggregate market value of State Development Loans is ₹ 5,557.73 million (Previous Year ₹ 5387.76 million) as at the balance sheet date)				
Shares (unquoted) in Co-operatives and Federations	39.00		19.00	
(Refer Note b below)				
Less: Provision for diminution in value of investments	0.10		0.10	
		38.90		18.90
Total		**22,269.11**		**21,313.81**

Details of Investment in Subsidiaries

₹ in million

NAME OF SUBSIDIARY	31.03.2023		31.03.2022	
	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 c below)	54,000,042	10.00	9,000,007	10.00
NDDB Dairy Services (NDS)	200,000,000	10.00	200,000,000	10.00
NDDB Mrida Limited	9,500,000	10.00	-	-
NDDB CALF Limited (Refer Note d below)	75,000,000	10.00	-	-
	600,644,656		**471,144,621**	

Notes :

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

b. Investment in National Co-operative Organics Ltd. and Bhartiya Beej Sahakari Samiti Ltd. of ₹ 10 million each were made.

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

d. Issuance of shares certificate/ISIN are under process.

Property, Plant and Equipment

ANNEXURE - VIII

₹ in million

PARTICULARS	Gross Block (at Cost)				Depreciation				Net Block	
	As at 01.04.2022	Addition	Deduction/ (adjustments)	As at 31.03.2023	As at 01.04.2022	For the year	Deduction/ (adjustments)	As at 31.03.2023	As at 31.03.2023	As at 31.03.2022
Freehold Land (Refer Note 1 to 3)	456.45	-	43.96	412.49	-	-	-	-	412.49	456.45
Leasehold Land	64.16	-	-	64.16	15.32	0.75	-	16.07	48.09	48.84
Buildings and Roads	2,012.58	9.96	-	2,022.54	1,230.15	52.59	-	1,282.74	739.80	782.43
Plant and Machinery	53.82	-	42.74	11.08	53.50	0.16	42.74	10.92	0.16	0.32
Electrical Installations	190.29	6.11	4.28	192.12	144.56	9.85	4.25	150.16	41.96	45.73
Furniture, Computers and Others Equipments	1,093.86	80.27	19.57	1,154.56	879.24	102.04	18.67	962.61	191.95	214.62
Sotware Licence	258.72	18.33	-	277.05	236.22	6.11	-	242.33	34.72	22.50
Rail Milk Tankers	372.64	-	(3.00)	375.64	247.53	19.58	(3.00)	270.11	105.53	125.11
Vehicles	23.00	5.14	2.25	25.89	19.91	2.49	2.25	20.15	5.74	3.09
Total	**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**
Previous Year	***4,473.01***	***75.38***	***22.87***	***4,525.52***	***2,662.12***	***187.08***	***22.77***	***2,826.43***	***1,699.09***	***1,810.89***
Capital Work in Progress including Capital Advances									153.17	35.40
Total Fixed Assets									**1,733.61**	**1,734.49**

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.

Service Charges

ANNEXURE - IX

₹ in million

PARTICULARS	2022-23	2021-22
Training fees	20.11	6.90
Procurement and technical service fees	164.39	112.01
Testing charges	117.82	107.98
Fees from consultancy and feasibility studies	17.75	1.66
Royalty and process knowhow fees	1.87	1.22
Total	**321.94**	**229.77**

Other Income

ANNEXURE - X

₹ in million

PARTICULARS	2022-23	2021-22
Profit on sale of fixed assets (net)	148.57	10.49
Profit on sale of investments	10.61	2.43
Other interest income	38.34	31.67
Excess provision and NPAs written back	74.81	2.65
Recoupment of depreciation of grant assets	17.10	21.31
Sale of milk	2.02	1.95
Miscellaneous income	379.80	17.01
Total	**671.25**	**87.51**

Remuneration and Benefits to Employees

ANNEXURE - XI

₹ in million

PARTICULARS	2022-23	2021-22
Salaries and Wages (including ex-gratia)	862.64	852.48
Contribution to Provident, Superannuation fund and Gratuity	145.93	185.77
Staff welfare expenses	73.02	63.45
Total	**1,081.59**	**1,101.70**

Remuneration excludes ₹ 35.58 million (Previous Year : ₹ 24.88 million) shown as part of Research and Development expenses.

Administrative Expenses

ANNEXURE - XII

₹ in million

PARTICULARS	2022-23	2021-22
Printing and stationery	5.44	3.85
Communication charges	9.77	8.68
Audit fees and expenses (including taxes)		
Audit fees	1.09	0.98
Income Tax audit	0.33	0.27
Out of pocket expenses	0.02	0.02
	1.44	1.27
Legal fees	5.21	3.85
Professional fees	32.09	10.90
Vehicle expenses	4.45	2.61
Recruitment expenses	0.44	0.25
Advertisement expenses	10.94	5.69
Travelling and conveyance expenses	87.87	43.35
Electricity and rent	33.18	27.38
Other administrative expenses	4.95	4.03
Total	**195.78**	**111.86**

Maintenance of Assets

ANNEXURE - XIII

₹ in million

PARTICULARS	2022-23	2021-22
Repairs and maintenance		
Buildings	144.17	112.31
Others	73.31	55.47
Rates and taxes	13.34	8.45
Insurance	3.01	2.41
Total	**233.83**	**178.64**

Other Expenses

ANNEXURE - XIV

₹ in million

PARTICULARS	2022-23	2021-22
Premium amortisation	44.82	43.71
Prior period expenditure	0.15	0.59
Other expenses	49.91	28.15
Total	**94.88**	**72.45**

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

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".

Significant Accounting Policies forming part of financial Statement

ANNEXURE XV

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.

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.

Significant Accounting Policies forming part of financial Statement

ANNEXURE XV

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 Ltd., Jharkhand State Co-operative Milk Producers' Federation Ltd., Shahjahanpur Mahila Dugdh Utpadak Sahakari Sangh Ltd. and Jilha Dudh Utpadak Sahakari Sangh, Varanasi (Varanasi Milk Union). 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 : ₹ 132.71 million (Previous Year: ₹ 234.95 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) ₹ 1185.93 million (Previous Year : ₹ 1145.14 million)

3.4. Service tax demands ₹ 916.50 million (Previous Year : ₹ 916.50 million)

3.5. Other Demands

₹ in million

PARTICULARS	AUTHORITY	2022-23	2021-22
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	0.19	-

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 ₹ 76.40 million (Year ended 31 March, 2022 ₹ 70.12 million) for Provident Fund contributions and ₹ 50.88 million (Year ended 31 March, 2022 ₹ 46.51 million) 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, 2023			Year ended 31 March, 2022		
	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	36.53	1.08	29.81	33.62	0.83	37.89
Interest cost	35.95	7.75	43.08	30.98	7.50	36.59
Expected return on plan assets	(33.09)	-	(36.13)	(28.44)	-	(26.56)
Actuarial losses/(gains)	(20.74)	(4.52)	(30.69)	32.11	(4.51)	26.44
Total expense recognised in the Income and Expenditure	**18.65**	**4.31**	**6.07**	**68.27**	**3.82**	**74.36**
Actual contribution and benefit payments for year						
Actual benefit payments	(47.85)	(5.62)	(42.64)	(43.23)	(4.23)	(32.51)
Actual contributions	111.90	-	56.99	65.07	-	123.74
Net asset / (liability) recognised in the Balance Sheet						
Present value of defined benefit obligation	(516.97)	(109.45)	(616.91)	(513.59)	(110.75)	(615.36)
Fair value of plan assets	569.36	-	568.56	472.74	-	516.09
Net asset / (liability) recognised in the Balance Sheet	**52.39**	**(109.45)**	**(48.35)**	**(40.85)**	**(110.75)**	**(99.27)**
Change in defined benefit obligations (DBO) during the year						
Present value of DBO at beginning of the year	513.59	110.75	615.36	458.98	111.16	542.14
Current service cost	36.53	1.08	29.81	33.62	0.83	37.89
Interest cost	35.95	7.75	43.08	30.98	7.50	36.59
Actuarial (gains) / losses	(21.25)	(4.52)	(28.70)	33.24	(4.51)	31.25
Benefits paid	(47.85)	(5.61)	(42.64)	(43.23)	(4.23)	(32.51)
Present value of DBO at the end 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, 2023			Year ended 31 March, 2022		
	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment
Change in fair value of assets during the year						
Plan assets at beginning of the year	472.74	-	516.09	421.34	-	393.49
Acquisition adjustment	-	-	-	-	-	-
Expected return on plan assets	33.09	-	36.13	28.44	-	26.56
Actual company contributions (Excluding Contribution made by Gratuity Trust and charges deducted by LIC)	111.90	-	56.99	65.07	-	123.74
Actuarial gain / (loss)	(0.52)	-	1.99	1.12	-	4.81
Benefits paid	(47.85)	-	(42.64)	(43.23)	-	(32.51)
Plan assets at the end of the year	**569.36**	**-**	**568.56**	**472.74**	**-**	**516.09**
Actual return on plan assets	32.57	-	38.12	29.56	-	31.37
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	7.50%	7.50%	7.50%	7.00%	7.00%	7.00%
Expected return on plan assets	7.50%	NA	7.50%	7.56%	NA	7.28%
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	2022-23	2021-22	2020-21	2019-20	2018-19	2017-18
Gratuity						
Present value of DBO	516.97	513.59	458.98	449.30	389.45	357.02
Fair value of plan assets	(569.36)	(472.74)	(421.34)	(418.09)	(371.87)	(341.48)
Funded status [Surplus / (Deficit)]	52.39	(40.85)	(37.64)	(31.21)	(17.58)	(15.54)
Post-Retirement medical benefits schemes (PRMBS)						
Present value of DBO	109.45	110.75	111.16	81.01	69.98	71.19
Other defined benefit plans (Leave Encashment)						
Present value of DBO	616.91	615.36	542.14	522.08	419.02	379.07
Fair value of plan assets	(568.56)	(516.09)	(393.49)	(393.45)	-	-
Funded status [Surplus / (Deficit)]	(48.35)	(99.27)	(148.65)	(128.63)	-	-

Particulars	For the year ended 31 March, 2023	For the year ended 31 March, 2022
Actuarial assumptions for long-term compensated absences		
Discount rate	7.50%	7.00%
Expected return on Gratuity plan assets	7.50%	7.56%
Expected return on Leave Encashment plan assets	7.50%	7.28%
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 2023-24 has not been ascertained.

6 Disclosure of related party and Transactions with them for the year ended 31st March, 2023 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 Ltd.
Animal Breeding Research Organisation (India)
Anandalaya Education society
Jharkhand State Co-operative Milk Producers' Federation Ltd.
Shahjahanpur Mahila Dugdh Utpadak Sahakari Sangh Ltd.
NDDB Foundation for Nutrition
Varanasi Dugdh Utpadak Sahakari Sangh Ltd.
North East Dairy & Foods Ltd.
Bhartiya Beej Sahakari Samiti Ltd.
National Co-operative Organics Ltd.

3) Key management personnel

Mr. Meenesh Shah	Executive Director upto 14 Nov 2022
Mr. Meenesh Shah	Managing Director w.e.f. 15 Nov 2022
Mr. Meenesh Shah	Chairman w.e.f. 24 June 2021

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	23.97	-	-	24.29	0.35	5.22	-	10.63	0.03	474.27	244.22	23.97	230.05
	27.59	-	-	*24.29*	*0.70*	*0.12*	-	*3.36*	*0.03*	*6.25*	*93.67*	*27.59*	*374.27*
Indian Immunologicals Limited	56.63	-	-	72.00	29.32	14.47	-	6.60	3.77	893.28	166.77	56.63	726.51
	54.51	-	-	*36.00*	*27.16*	*0.38*	-	*3.45*	*(0.87)*	*382.18*	*323.32*	*54.51*	*893.28*
Mother Dairy Fruit and Vegetable Private Limited	24.93	-	-	250.00	119.10	27.17	-	-	21.46	937.25	98.74	24.93	838.51
	4.71	-	-	*250.00*	*123.08*	*3.19*	-	-	*28.79*	*504.71*	*504.71*	*4.71*	-
NDDB Dairy Services	-	-	-	-	8.01	8.92	-	1.87	(0.81)	473.70	55.40	-	418.30
	-	-	-	-	*6.80*	*2.14*	-	-	*1.48*	-	*55.40*	-	*473.70*
NDDB Mrida Limited	-	95.00	-	-	0.01	8.60	-	13.28	(2.01)	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
NDDB CALF Limited	-	750.00	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**105.53**	**845.00**	**-**	**346.29**	**156.79**	**64.38**	**-**	**32.38**	**22.44**	**2,778.50**	**565.13**	**105.53**	**2,213.37**
	86.81	***-***	***-***	***310.29***	***157.74***	***5.83***	***-***	***6.81***	***29.43***	***893.14***	***977.10***	***86.81***	***1,741.25***

₹ 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 Ltd.	1.62	-	-	-	0.26	1.86	-	23.34	0.59	79.49	67.29	1.62	12.20
	0.96	-	-	-	*0.30*	*1.78*	-	*0.19*	*(3.99)*	*16.39*	*2.14*	*0.96*	*30.77*
Animal Breeding Research Organisation	2.08		-	-	-	4.10	-	-	1.61	-	-	2.08	-
	3.76	-	-	-	-	*3.46*	-	-	*14.71*	*3.76*	*23.11*	*3.76*	*45.64*
Anandalaya Education Society	-		-	-	0.59	1.08	-	0.03	0.13	-	-	-	-
	-	-	-	-	*(0.88)*	-	-	*0.04*	*0.08*	-	-	-	-
Jharkhand State Cooperative Milk Producers' Federation Ltd.	-	-	-	-	0.17	2.91	-	2.15	0.79	-	-	-	-
	-	-	-	-	*0.09*	*0.86*	-	-	*0.83*	-	-	-	-
Varanasi Dugdh Utpadak Sahakari Sangh Ltd.	-	-	-	-	-	0.29	227.11	6.22	4.35	453.91	221.43	-	232.48
	-	-	-	-	-	-	-	-	-	*49.57*	-	-	*49.57*
North East Dairy & Foods Ltd.	-	50.00	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
Bhartiya Beej Sahakari Samiti Ltd.	-	10.00	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
National Co-operative Organics Ltd.	-	10.00	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**3.70**	**70.00**	**-**	**-**	**1.02**	**10.24**	**227.11**	**31.74**	**7.47**	**533.40**	**288.72**	**3.70**	**244.68**
	4.72	***-***	***-***	***-***	***(0.49)***	***6.10***	***-***	***0.23***	***11.63***	***69.72***	***25.25***	***4.72***	***125.98***

Notes to Accounts forming part of the Financial Statement

ANNEXURE XVI

Remuneration to key management personnel

	₹ in million
Mr. Meenesh Shah	6.37
	5.67
Total	**6.37**
	5.67

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, 2023	Depreciation for the year	Accumulated Depreciation as at 31st March, 2023
Buildings and Roads#	1633.00	42.52	1078.06
	1633.00	*42.57*	*1035.54*
Electrical Installations#	30.83	1.00	28.10
	30.86	*1.00*	*27.13*
Furniture, fixtures, computers, and office equipment	8.73	0.00	8.73
	8.88	*0.00*	*8.88*
Rail Milk Tankers	345.49	16.55	258.85
	345.49	*16.55*	*242.30*
Total	**2018.05**	**60.07**	**1373.74**
	2018.23	***60.12***	***1313.85***

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, 2022	Adjustment during the year	Closing Balances at 31st March, 2023
Deferred Tax Assets /(Liability):			
Depreciation	(17.00)	9.96	(7.04)
	(22.69)	*5.69*	*(17.00)*
Expenditure allowable on payment basis	151.57	(2.25)	149.32
	133.03	*18.54*	*151.57*
Gratuity	10.28	(23.47)	(13.19)
	9.47	*0.81*	*10.28*
Voluntary Retirement Scheme	0.01	0.00	0.01
	0.01	*0.00*	*0.01*
Special Reserve	(401.26)	(7.52)	(408.79)
	(393.18)	*(8.08)*	*(401.26)*
TOTAL	**(256.40)**	**(23.28)**	**(279.69)**
	(273.36)	***16.96***	***(256.40)***

(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	816.58	51.79	1,497.87	2,366.24
	1,006.13	*54.30*	1,055.81	*2,116.24*
Created during the year	0.74	41.88	257.38	300.00
	0.45	-	*252.06*	*252.51*
Reversed during the year	(257.98)	-	-	(257.98)
	(190.00)	*(2.51)*	*190.00*	*(2.51)*
Closing balance	**559.34**	**93.67**	**1,755.25**	**2,408.26**
	816.58	***51.79***	***1,497.87***	***2,366.24***

(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 31 March 2023, there were sundry creditors of ₹ 21.07 million (Previous Year: ₹ 13.92 million) and no overdue to the entities that are classified as Micro and Small Enterprises under the Micro, Small and Medium Enterprises Development Act, 2006.

11 Interest income includes ₹ 832.66 million (Previous Year ₹ 811.86 million) from Loans & Advances and ₹ 1,262.41 million (Previous year ₹ 1,249.95 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 New Companies namely NDDB Mrida Limited and NDDB CALF Limited were incorporated by NDDB with effect from 1 July 2022 and 25 February 2023 respectively. NDDB Mrida Limited commenced its business activities from 17 August 2022. NDDB CALF Limited was formed for carrying on the activities of CALF division, which was part of NDDB till 31 March 2023. The said company commenced its business activities from 1 April 2023.

15 The figures of the previous year have been regrouped/re-arranged wherever necessary.

In terms of our report of even date attached.

For KKC & Associates LLP
Chartered Accountants
(formerly Khimji Kunverji & Co. LLP)
Firm Reg No. 105146W/W-100621

Hasmukh B Dedhia
Partner
Membership No. 033494

Place: Mumbai
Date: 07 July 2023

For and on behalf of the Board,

Meenesh C Shah
Chairman & Managing Director

S Regupathi
Executive Director (Operations)

Amit Goel
Deputy Group Head (Accounts)

Place: Anand
Date: 07 July 2023

NDDB Officers

Head Office, Anand

Chairman & Chief Executive

Meenesh C Shah
B Sc (DT), PGDRDM

Chief Executive's Office

T V Balasubramanyam
SR MGR, B Com, LLB (Gen)

Rajesh Kumar
SR MGR, B A (Eco), PGDRM

Managing Director

Meenesh C Shah
B Sc (DT), PGDRDM

Managing Director's Office

Rajesh Singh
MGR, BCA, PGDM (Mktg & Fin)

Nikit Bansal
MGR, B Com, CA

Senior General Managers

Rajesh Nair
Director, B Sc, M Sc (Analy Chem), Ph D (Chem)

Lalit Prasad Karan
SR GEN MGR, B Sc, PGDPM

S Regupathi
SR GEN MGR, M Com, ICWA, PGDRDM

R O Gupta
SR GEN MGR, BVSc, MVSc (Med)

Accounts

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Tusar Kanti Patra
SR MGR, B Com, ICWA,

Vinai Gupta
SR MGR, B Com, ICWA, PGDM (RM-X)

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Ashutosh K Mishra
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R Arumugam
MGR, M Com

Rashmi Prateesh
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Swapnil Thaker
MGR, M Com, CA, PGDM (RM-X)

Dipen R Shah
MGR, BBA, MBA (Fin), ICWAI

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DY 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

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Nayankumar D Kathawala
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N G Nayee
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V P Bhosale
SR MGR, BVSc & AH, MVSc (Med)

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50 MTPD Bypass Protein Plant at 200 MTPD Cattle Feed Plant, Ghanie-Ke-Banger, Gurudaspur

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AITI Training Centre Project, Guwahati

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Anthrax Project, IVPM, Ranipet

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Automated Dairy Plant Project, Arilo, Odisha

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Cheese Manufacturing and Whey Powder Plant Project, Himmatnagar

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Effluent Treatment Plant, Rohtak

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Jalandhar Dairy Project, Jalandhar

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Ludhiana Dairy Expansion Project, Ludhiana

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Milk Product Plant Project, Barauni

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Purabi Dairy (WAMUL) Project, Guwahati

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Anil M Adroja
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Ashok Kumar Sahani
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Sohel A Pathan
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Jay Y Barot
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Chippada Uday Bhaskar
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Amol M Jadhav
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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-SS – Accelerated Breed Improvement Programme through Sexed and Sex-sorted Semen

ABIP IVF-ET – Accelerated Breed Improvement Programme through Embryo Transfer

ABS – Adult Bovine Serum

ACU – Adult Cattle Unit

ADDP – Assam Dairy Development

AI – Artificial Insemination

AKF – Aga Khan Foundation

ALDA – Assam Livestock Development Agency

AMR – Antimicrobial Resistance

AMCU – Automatic Milk Collection Units

AMCS – Automatic Milk Collection Software

AMU – Antimicrobial Usage

A-HELP – Accredited Agent for Health and Extension of Livestock Production

APART – Assam Agribusiness and Rural Transformation Project

ARIAS – The Assam Rural Infrastructure and Agricultural Services Society

AT – Action Team

BAIF – BAIF Development Research Foundation

BBSSL – Bharatiya Beej Sahakari Samiti Limited

BDS – Bull Distribution Software

BIS – Bureau of Indian Standards

BMC – Bulk Milk Cooler

BMF – Breed Multiplication Farm

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

CBHF – HF crossbred

CBJY – Jersey crossbred

CBMM – Continuous Butter-Making Machines

CFSP&TI – Central Frozen Semen Production and Training Institute

CII – Confederation of Indian Industry

CSR – Corporate Social Responsibility

CST – Concentrated Solar Thermal

CSTR – Continuous Stirred Tank Reactor

CKMM – Continuous Khoa-Making Machines

DAHD – Department of Animal Husbandry and Dairying

DCAM – Disease Control through Alternate Methods

DCS – Dairy Cooperative Society

DIDF – Dairy Infrastructure Development Fund

DPMCU – Data Processor based Milk Collection Units

DPR – Detailed Project Report

DPMCU – Data Processor Milk Collection Units

DTC – Dairying through Cooperatives

ECIL – Electronics Corporations of India Limited

EFS – Extended Frozen Semen

ELISA – Enzyme Linked ImmonoSorbent Assay

EIAs – End Implementing Agencies

ERP – Enterprise Resource Planning

ETP – Effluent Treatment Plan

EVM – Ethno-Veterinary Medicine

EPP – Empty Pea Pods

FAO – Food and Agriculture Organisation of the United Nations

FAHD – Fisheries, Agriculture Husbandry and Dairying

FDU – Fodder Demonstration Unit

FMD – Foot and Mouth Disease

FMD-CP – Foot and Mouth Disease Control Programme

FSSAI – Food Safety and Standards Authority of India

FSD – Frozen Semen Dose

FP – Filter Paper

FPO – Farmer Producer Organisation

FSSAI – Food Safety and Standards Authority of India

GBRC – Gujarat Biotechnology Research Centre

GCMMF – Gujarat Cooperative Milk Marketing Federation Ltd

GDT – Global Dairy Trade

GHG – Greenhouse Gas

GoI – Government of India

GSFC – Gujarat State Fertilizers and Chemicals Ltd

GWAS – Genome Wise Association Studies

HGM – High Genetic Merit

HORTICORP – Kerala Horticultural Products Development Corporation

IA – Implementing Agency

IBR – Infectious Bovine Rhinotracheitis

ICAR – Indian Council of Agricultural Research

IDA – Indian Dairy Association

i-DIS – Internet Based Dairy Information System

IDF – International Dairy Federation

IDF WDS-2022 – International Dairy Federation's World Dairy Summit-2022

IETS – International Embryo Technology Society

IFFCO – Indian Farmers Fertilizer Cooperative Limited

IIL – Indian Immunologicals Limited

ILC – Inter Laboratory Comparison

INAPH – Information Network for Animal Productivity and Health

IMC – Inter-Ministerial Committee

IRMA – Institute of Rural Management, Anand

IVEP – In Vitro Embryo Production

JMF – Jharkhand Milk Federation

JICA – Japan International Cooperation Agency

Kg – Kilogram

KL – Kilo Litre

KLPH – thousand litres per hour

KCMMF – Kerala Cooperative Milk Marketing Federation

KfW – Kreditanstalt für Wiederaufbau

KRIBHCO – Krishak Bharati Cooperative Limited

KOF – Karnataka Cooperative Oilseeds Growers' Federation

LCA – Lifecycle Assessment

LKGPD – Lakh Kilograms Per Day

LLPD – Lakh Litres Per Day

LMP – Liquid Milk Processing

LN2 – Liquid Nitrogen

LH&DC – Livestock Health & Disease Control

LRP – Local Resource Person

LSD– Lumpy Skin Disease

LSDV – Lumpy Skin Disease Virus

MAITs – Mobile AI Technicians

MAITRIs– Multi-Purpose AI Technicians in Rural India

MDFVPL – Mother Dairy Fruit & Vegetable Pvt. Ltd.

MDL – Mazagon Dock Shipbuilders

MLST – Multi-Locus Sequence typing Technique

MLVA – Multilocus Variable Tandem repeat Analysis

MNRE – Ministry of New and Renewable Energy

MPC – Milk Producer Company

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

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

NBHM – National Beekeeping and Honey Mission

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

NCOL – National Cooperative Organics Limited

NDDB – National Dairy Development Board

NDC – Nationally Determined Contribution

NDERP – NDDB Dairy ERP

NDLM – National Digital Livestock Mission

NDP I – National Dairy Plan 1

NDP II – National Dairy Plan 2

NDS – NDDB Dairy Services

NEDFL – North East Dairy and Foods Limited

NER – North-Eastern States

NFN – NDDB Foundation for Nutrition

NFL – National Fertilizers Limited

NIAB – National Institute of Animal Biotechnology

NLM – National Livestock Mission

NPDD – National Programme for Dairy Development

NRLM – National Rural Livelihoods Mission

ODA – Official Development Assistance

OH – One Health

OPU – Ovum Pick-up

OPU-IVEP – Ovum pick-up and In vitro embryo production

PAT – Profit After Tax

PBNL – Pristine Biologicals NZ Limited

PC– Producer Company

PCR – Polymerized Chain Reaction

PI – Participating Institutions

PIP – Project Implementation Plan

POI – Producer Owned Institution

PROM – Phosphate Rich Organic Manure

PS – Pedigree Selection

PSB – Public Sector Banks

PSU – Public Sector Undertakings

PT– Progeny Testing

QCI – Quality Council of India

QPR – Quarterly Progress Report

RBP – Ration Balancing Programme

RGM – Rashtriya Gokul Mission

RMP – Residue Monitoring Plans

RUC – Ready-to-Use Culture

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

SCI – Shipping Corporation of India Limited

SCENV – Standing Committee on Environment

SMP – Skimmed Milk Powder

SOPs – Standard Operating Procedures

SRLM – State Rural Livelihood Missions

SS&SM – Sero-surveillance and Sero-monitoring

SDCFPO – Supporting Dairy Cooperatives and Farmer Producer Organisations

SDGs – Sustainable Development Goals

TKgPD – Thousand Kg Per Day

TLPD – Thousand Litres per Day

TMR – Total Mixed Ration

TPH – Tonne Per Hour

ToT – Training of Trainers

TSDDCFL – Telangana State Dairy Development Co-operative Federation Ltd

UAT – User Acceptance Testing

UHT – Ultra Heat Treated

UT – Union Territories

VADP – Value-Added Dairy Products

VMDDP – Vidarbha Marathwada Dairy Development Project

WAMUL – West Assam Milk Producers' Cooperative Union Limited

WGVFPCL – Wayanad Grama Vikas Farmer Producer Company Limited

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- International Dairy Federation
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