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India's National Dairy Board Looks to Grow

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National Plan

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Report Highlights:

India has emerged as the world's largest milk producer, with production estimated at upwards of 140.5 million metric tons (MMT) in 2014. India's National Dairy Development Board (NDDB) attributes this success to India's cooperative model, which has expanded dairy cooperatives throughout India, as well as a variety of other government-funded dairy development programs. NDDB is currently implementing its National Dairy Plan (NDP) to increase yields and expand the network of cooperatives.

Executive Summary:

NDDB has implemented a variety of Indian dairy development programs, to include 'Operation Flood' (OF) (1970-1996), which, according to NDDB, helped India to become world's largest milk producer. OF expanded the network of dairy cooperatives across India. Currently, dairy cooperatives comprise 15.1 million dairy farmers and market an average of 23.7 million liters of fluid milk per day. Although the world's largest producer, India continues to face serious challenge in terms of meeting its growing and wealthier population's increasing demand for milk. NDDB is currently implementing its NDP in order to further augment the milk production through improved animal genetics, animal nutrition, and extension. NDDB and its various subsidiaries provide financial and technical support to various state supported dairy cooperatives to strengthen the milk procurement, processing and marketing infrastructure in India. NDDB supports dairy cooperatives help milk producers to become better organized, more vertically integrated, and able to take advantage of down-stream processing.

General Information:

Dairy Cooperatives – The Anand Model

The Anand Model was established to procure milk from multiple small Indian dairy farmers, which currently constitutes the majority of Indian dairy farmers (e.g., less than two hectares of land, no more than three animals). The Anand Model is a three-tiered approach which includes: 1) multiple dairy cooperative societies (DCS) at the village level; 2) District Cooperative Milk Producers' Unions (DCMPU) at the district level; and 3) State Cooperative Milk Marketing Federations (SCMMF) at the state level.

Dairy Cooperative Societies

DCSs are formed by village milk producers. Every DCS contributes to a milk collection center, which collects and tests fluid milk, and pays farmers on fat and SNF content. DCS profits are distributed among producer members, which are based on individual milk production for the year.

District Cooperative Milk Producers' Unions

DCMPUs are processing facilities owned by multiple DCSs. Each DCMPU facility purchases milk from the DCSs for processing, distribution, and marketing in the state. Most DCMPUs also provide a range of inputs and services to DCSs, to include feed, veterinary care, and artificial insemination.

DCMPU staff train and provide advisory services to DCS members and staff. According to the NDDB, in 2012-2013, DCMPU's procured and sold on average 31.75 and 23.7 million liters of fluid milk per day. According to industry estimates, dairy cooperatives account for approximately 60 percent of processed fluid milk.

The State Cooperative Milk Marketing Federations

SCMMFs support DCMPUs in marketing and distributing of milk and dairy products. . Some SCMMFs also manufacture feed and support DCMPU activities.

Table 1. India: The Anand Model: Three Tier Structure

DCS	DCMPU	SCMMF
<ul style="list-style-type: none">• 15.1 million dairy farmers• 155,634 DCS's	<ul style="list-style-type: none">• 183 DCMPU's<ul style="list-style-type: none">○ Processing and packaging○ Marketing and distribution○ Services for DCS's: Feed and fodder, Trainings, Veterinary	<ul style="list-style-type: none">• 22 SCMMF's*<ul style="list-style-type: none">○ Feed manufacturing○ Financial and technical support to DCMPU's○ Marketing and distribution

Source: NDDB

* As per Amul's website: <http://www.amul.com/m/about-us>

National Cooperative Dairy Federation of India

The National Cooperative Dairy Federation of India (NCDFI) is the apex organization for all dairy cooperatives supported by the Government of India. NCDFI directly supports the activities of dairy cooperatives through coordination, networking and policy advocacy.

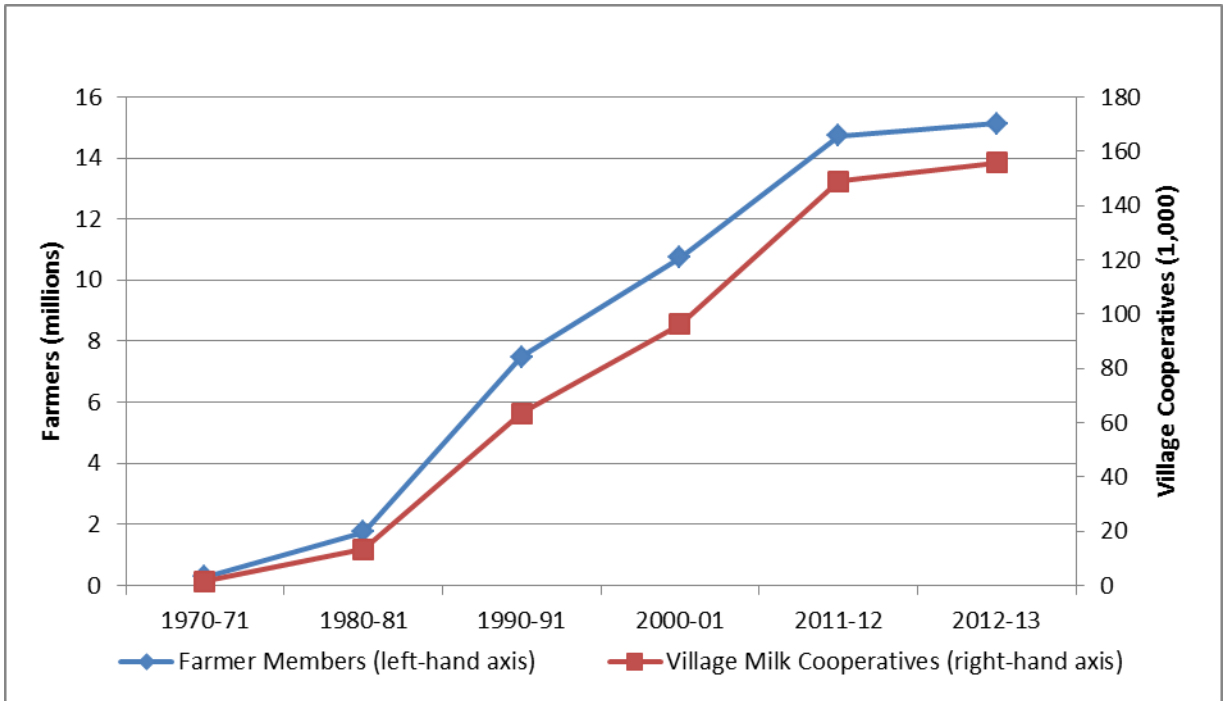
Major Functions of NDDB

The NDDB, established by Parliament in 1965, promotes and supports dairy cooperatives on a national scale, as well as implements dairy development programs financed by the government of India (GOI), such as the NDP. The NDDB's first mandate was to replicate the Anand Model across the country.

Financial and Extension Services

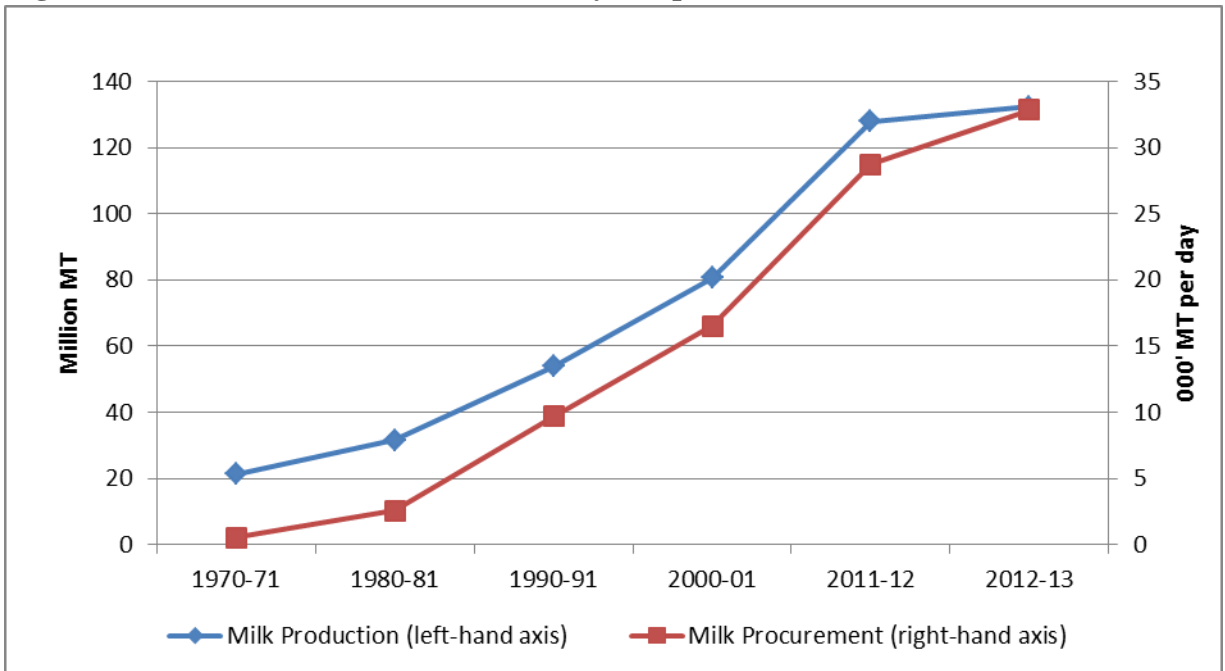
The NDDB supports dairy cooperative development by providing financial assistance and technical expertise. It also provides consultations on creating new processing infrastructure and cattle feed plants.

Figure 1. India: Dairy Cooperative Growth



Source: Annual Reports of NDDB

Figure 2. India: Milk Production and Dairy Cooperative Procurement



Source: Annual Reports of NDDB

Productivity Enhancement

NDDB programs focus on improving cattle and buffalo genetics in order to increase milk yields. Although India is the world's largest milk producer, its milk yields remain low due to low yielding native animals (especially water buffalo). In an effort improve genetics, the NDDB focuses on increasing artificial insemination, improving frozen semen production, and importing high-quality bulls for semen production.

The NDDB is presently managing three semen stations and may import live bulls and embryos to enhance its population. From 2012-13 to 2021-22, the NDDB hopes to increase semen production from 66.8 to 140 million straws, and raise artificial insemination rates from 20 to 50 percent during the same time period. Under the National Program for Bovine Breeding and Dairy Development, the GOI plans to enhance the productivity of indigenous breeds.

For more information on breeding program please see NDDB website:
<http://www.nddb.org/English/Services/AB/Pages/Animal-Breeding.aspx>.

Major activities under the animal nutrition program include the Ration Balancing Program (RBP) and Feed and Fodder Development Program (FFDP). The RBP program distributes information to milk producers using software called Information Network for Animal Productivity and Health (developed by NDDB), which provides data on how to formulate a low cost balanced ration. The FFDP provides extension services to milk producers to improve fodder production and silage making, including information on different varieties of fodder crops such as grasses and legumes.

For more information on animal nutrition programs please see NDDB website:
<http://www.nddb.org/English/Services/AN/Pages/Animal-Nutrition.aspx>

Research and Development

Major research and development topics include biotechnology, animal genetics, animal health, animal nutrition, and product process technology. The NDDB develops and transfers technologies for various dairy products to cooperatives.

Key NDDB Development Programs

Operation Flood

The NDDB developed the OF program to increase Indian dairy production. Throughout 1970-1996, OF established linkages between small rural milk producers and urban consumers through dairy cooperative societies. The objective of these organizations was to improve milk procurement, processing, and marketing.

OF was implemented in three phases:

Phase I (1970-1980)	Phase I was financed by the sale of skimmed milk powder and butter oil donated by the European Economic Community through the World Food Program, as well as World Bank loans. Phase I linked 18 of India's major milksheds (approximately 1 million rural milk producers) to Delhi, Mumbai, Kolkata, and Chennai. Profits generated from these sales were invested in constructing dairy cooperatives. 39 Districts were covered under the program during phase I.
Phase II (1981-1985)	Milksheds increased from 18 to 136 linking 290 urban markets. By 1985, Phase II established 43,000 DCS's which include 4.25 million milk producers
Phase III (1986-1996)	Phase III enabled dairy cooperatives to expand and improve performance. Services included veterinary first-aid health care, feed and artificial insemination, and continued farmer education. 162 districts were covered under the program during the final phase.

The Perspective Plan

After OF, in order to further strengthen dairy cooperatives, the NDDB implemented a 'Perspective Plan' that mainly focused on strengthening cooperative businesses, dairy production, quality control, manpower development and training and creating a national information network. Estimates as on March 2014 show that NDDB provided around \$233 million (at current dollar value) in assistance to approximately 100 dairy cooperatives.

National Dairy Plan (NDP)

The NDDB implements the NDP, which primarily focuses on increasing animal productivity, and will be conducted in two phases. From 2011-12 to 2016-17, phase I is focused on 14 major milk producing states: Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. These states account for over 90 percent of total milk production, 87 percent of the total buffalo population, and 98 percent of total forage production. Key components of phase I are productivity enhancement through genetic improvement, improving animal nutrition, and strengthening village based milk procurement systems. The NDDB is also likely to import Holstein Friesian and Jersey bulls to improve local livestock genetics. Phase I has a total financial outlay of \$416 million. For more information on the NDP please see: <http://www.nddb.org/ndpi/English/Pages/NDPI.aspx>

Key Interventions under NDP

- Produce high genetic merit bulls (HGM), disease-free cattle, and buffalo bulls by progeny testing, pedigree selection, and importing Jersey and HF bulls, embryos, and semen. The NDP hopes to produce 2,500 HGM bulls and import 400 exotic bulls and embryos.
- Raise high quality semen production to 100 million straws per year by 2016-17.
- Strengthen artificial insemination delivery services.
- Improving animal nutrition of dairy animals through the RBP and various fodder development programs.
- Strengthen village based procurement systems including milk weighing, testing, collection,

and cooling.

- Promote milk producer companies (MPC's) to expand the milk procurement network. The MPCs are promoted as alternate milk procurement and marketing network by NDDB to expand the organized sector. The NDDB has established MPC's in Rajasthan and Gujarat, which currently procure approximately 900,000 liters of fluid milk per day from around 110,000 milk producers. Other MPC's are being established in Andhra Pradesh, Punjab and Uttar Pradesh. For more information on MPC's please see:
<http://www.nddb.coop/English/Services/CS/Pages/New-Generation-Cooperatives-Leading-Producer-Companies.aspx>

NDDB Wholly Owned Companies

Mother Dairy Fruit and Vegetable Private Limited.

Mother Dairy, created in 1974 under the OF program, is a wholly owned company under the NDDB. Mother Dairy manufactures and markets fluid milk and other dairy products such as ice cream, cottage cheese, and clarified butter (*ghee*). The company also markets and distributes food products such as edible oils, fresh fruit and vegetables, frozen vegetables, processed fruit and vegetable products, fruit pulp and concentrates in bulk aseptic packaging, and fruit juices. Mother Dairy sells approximately 3.2 million liters of fluid milk per day in Delhi, Mumbai, Saurashtra and Hyderabad. It has a 66 percent market share in Delhi modern retail (organized sector), and sells approximately 2.5 million liters of fluid milk per day.

Indian Immunologicals Ltd. (IIL)

Established in 1982, IIL originally focused on developing foot and mouth disease (FMD) vaccines. It now manufactures a number of other animal vaccines and health products including antibiotics, vitamins, minerals and calcium supplements. IIL also provides animal health and breeding services to farmers. The company has a manufacturing capacity of more than 400 million doses, and in 2011-12, sold \$ 49.15 million (at current dollar value) of products, which includes human health vaccines.

IDMC Limited (IDMC)

Established in 1979, IDMC engineers and manufactures equipment for dairy, beverage, pharmaceutical, healthcare, brewery, food processing, confectionery, and industrial refrigeration companies. The company has also set up a packaging film plant for food products such as vegetable oil, coffee, tea, salt, and milk powder.

NDDB Dairy Services Limited (NDSL)

Incorporated in 2009 as wholly owned subsidiary of the NDDB, NDSL offers extension and advisory services to improve livestock production, as well as milk procurement facilities, processing, transportation, marketing, and quality assurance. The company also assists interested parties in establishing MPCs.