3.1 National Level

3.1.1 Dairying in Pre-operation Flood-Before 1970
   3.1.1.1 Military Dairy Farms
   3.1.1.2 The Royal Commission on Agriculture
   3.1.1.3 Dairy Development During the First Two Decades of Planning - 1951-1971
      3.1.1.3.1 Key Village Scheme
      3.1.1.3.2 Intensive Cattle Development Project
      3.1.1.3.3 Establishment of Cattle Colonies and Milk Schemes
      3.1.1.3.4 Amul and the Evolution of the Anand Model
      3.1.1.3.5 Emphasis on Cross-breeding Strategy
   3.1.1.4 An Evaluation of the First Phase

3.1.2 Dairying in Period of Operation Flood (1970-1996)
   3.1.2.1 Agencies Behind the Operation Flood
      3.1.2.1.1 National Dairy Development Board (NDDB)
      3.1.2.1.2 Indian Dairy Corporation (IDC)
   3.1.2.2 Implementation of Operation Flood
      3.1.2.2.1 Operation Flood I (1970-1981)
      3.1.2.2.2 Operation Flood II (1981-1985)
      3.1.2.2.3 Operation Flood III(1987-1996)
   3.1.2.3 An Evaluation of the Second Phase

3.1.3 Dairying in Post Reform Period
   3.1.3.1 Introduction of Milk and Milk Products Order
   3.1.3.2 Uruguay Round Agreement on Agriculture

3.1.4 Relevance of Dairy Development in India

3.1.5 Perspective 2010
   3.1.5.1 Strengthening Co-operative Business
   3.1.5.2 Production Enhancement
   3.1.5.3 Quality Assurance Programmes
   3.1.5.4 Information and Development Research
3.2 Dairying in Kerala

3.2.1 The Indo-Swiss Project

3.2.2 Dairy Development Programmes in the State
   3.2.2.1 Intensive Crossbreeding Programme
   3.2.2.2 Fodder Promotion Programmes
   3.2.2.3 Promotion of Anand Pattern Programme
   3.2.2.4 Dairy Farmers Contact Programme
   3.2.2.5 District Level Cattle Shows and Seminars
   3.2.2.6 Assistance to Set up Model Commercial Dairy Farm Units
   3.2.2.7 Milk Collection Room and Godown Building
   3.2.2.8 The Purchase of Generator
   3.2.2.9 The Purchase of Milk Cooler
   3.2.2.10 Assistance to Purchase Computer

3.2.3 Quality Enhancement: The New Strategy of the Kerala Government in the Dairy Sector
   3.2.3.1 Clean Milk Production Programme
   3.2.3.2 Women Cattle Care Promoters Programme
   3.2.3.3 Adoption of the Mnemonic Symbol
   3.2.3.4 Formation of Perspective Plans for the Regional Milk Unions
   3.2.3.5 ISO Certification Programme
Chapter III

DAIRY DEVELOPMENT PROGRAMME AT THE NATIONAL AND STATE LEVELS

INTRODUCTION

The Indian Diary System is the endeavour of small holders and it is a centuries old tradition. As a result of gradual transition from subsistence level to market system, the economic dimensions of dairying have produced increasing significance in household behaviour. Livestock farming, in India, is a source of supplementary income and is recognized as an instrument for social and economic development. Most of the significant developments in dairying, in India, have taken root in this century. The history of the dairy development can be broadly classified into three distinct phases: pre-Operation Flood, period of Operation Flood, and post reform period.

3.1 NATIONAL LEVEL

3.1.1 Dairying in Pre-Operation Flood - Before 1970

3.1.1.1 Military Dairy Farms

The earliest attempts at dairy development can be traced back to British rule, when the Defense Department established military dairy farms to
ensure the supply of milk and butter to the colonial army.¹ The first of these farms was set up in Allahabad in 1913 and subsequent facilities were established at Bangalore, Ootacamund and Karnal. These farms were well maintained and even in early stages, high quality milch animals were raised. But it failed to supply milk to urban consumers and it catered to only the needs of the military personnel.

3.1.1.2 The Royal Commission on Agriculture

The first attempt to conceive a set of policies for livestock development in India was the Royal Commission on Agriculture (1928). In its report the commission devoted a full chapter to wide-range discussion on animal husbandry in India covering such questions as: whether or not India had any excessively large cattle population; the relative roles of the cow and buffalo as milch animals; considerations relevant to the formulation of a policy for improving the quality and productivity of business etc. The commission’s observations were remarkable for its breadth of perspective and many insightful observations on the subject.²

Following the report of the Royal Commission on Agriculture, interest in promoting development of animal husbandry gradually came to focus on ways to increase milk production and to improve the quality of milch cattle. However, in the pre-independence period attempts to improve the quality of  

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the bovine population in the country were limited in scale and geographical coverage.

3.1.1.3 Dairy Development During the First Two Decades of Planning: 1951-'71

In India, the government’s attention to the dairy sector had started right from the first Five Year Plan in 1951. The government decided to develop dairy sector through various schemes to increase milk production and to supply the dairy products to urban consumers at the lowest possible price. The major attempts are highlighted below:

3.1.1.3.1 Key Village Scheme

Key Village Scheme (KVS) was the most important component of the animal husbandry development programmes during the first three Five Year Plans. Initially, its main focus was on increasing the supply of breeding bulls in the country by setting up bull breeding farms in the major cattle tracts. Gradually the KVS was transformed into a more comprehensive programme for general cattle development intended to improve the productivity of cattle by giving simultaneous attention to better feeding, improved breeding, effective disease control measures, scientific management practices and organized marketing facilities. Towards the end of the second plan nearly 600 KVS centres were functioning in the country covering an estimated 6 million cows and she-buffaloes, that is, about 10 per cent of the total stock.3 However in the

3 P.S. George and K.N. Nair, op. cit., p.2.
absence of stable and remunerative market for milk, production remained more or less stagnant. During the two decades between 1951 and 1970 milk production grew by barely 1 per cent annually while percapita milk availability declined by an equal ratio.

3.1.1.3.2. Intensive Cattle Development Project

The perceived failure of the KVS to make significant impact and the shortage of milk in the rapidly growing urban areas led to the formulation of the Intensive Cattle Development Project (ICDP). Its primary purpose was to increase the production of milk to feed public sector dairy plants in the hinterlands of the main urban centres. Consequently they placed great emphasis on cross-breeding in indigenous cows with exotic dairy breeds and tended to be concentrated in milk shed areas of large cities and towns. Animal health and breed improvement remained common elements in the project. The scheme envisaged provision of all necessary inputs and services simultaneously to milk producers. The ICDP is, thus, distinguished from KVS by the shift of attention to the cross-breeding component and closer link up with dairying and urban milk supply programmes. By 1960, 62 centers were functioning in the country under the ICDP. In areas where ICDP existed, the KVS was merged into the ICDP. In areas where ICDP did not exist, KVS was continued in the original form.4

4 Ibid, p.3.
3.1.1.3.3 Establishment of Cattle Colonies and Milk Schemes

During 1960s various state governments tried out different strategies to develop dairying, including establishing dairies run by their own departments, setting up cattle colonies in Bombay, Calcutta and Madras. These government projects had extreme difficulties in organizing rural milk procurement and running milk schemes economically, yet none concentrated on creating an organized system for procurement of milk, which was left to contractors and middlemen. Milk’s perishable nature and relative scarcity gave the milk vendors leverage, which they used to considerable advantage. This left government-run dairy plants to use large quantities of relatively cheap, commercially imported milk powder, which resulted in a decline in domestic milk production. All these factors combined left Indian dairying in a most unsatisfactory low-level equilibrium.

3.1.1.3.4 Amul and the Evolution of the Anand Model

Milk procurement from the rural areas and its marketing in the urban areas was the major problem in Indian dairying at the time India gained independence. In one of the earliest urban milk supply schemes, Polsons - a private dairy at Anand procured milk from milk producers through middlemen, processed it and then sent the milk to Bombay. In the mid-1940s, when the milk producers in Kaira asked for a proportionate share of the trade margins, they were denied even a modest increase. The milk producers went on strike refusing to supply milk to Polsons. Sardar Vallabhai Patel, a leader in India’s independence movement, intervened in the issue and on his advice the milk
producers registered the Kaira District Co-operative Milk Producers’ Union, now popularly known as AMUL, in 1946. The Kaira union procured milk from affiliated village-level milk societies. This was the genesis of organized milk marketing in India, a pioneering effort that opened a new vista for dairy development in the country.  

AMUL formed the basis for the Anand pattern of dairying, referring to its origin in Anand District, in the state of Gujarat. Under the Anand pattern structure individual farmers are joined in village level dairy co-operative societies which are joined to form district level unions which, in turn, are joined in state level marketing federations. In each state the Anand Pattern has the following features:

a. Decentralised milk production by the small milk producers
b. Milk procurement by the village level dairy co-operative societies.
c. Centralized milk processing by the district-level unions.
d. Marketing of milk and milk products by the state level federation.

The primary milk producers democratically govern this entire federal co-operative structure to ensure that higher-tier organizations serve the purpose of the lower levels and that the gains at all levels go back to the milk producers in significant measure. The core feature of the Anand pattern model is farmer control of the three stages following production, that is, procurement, processing and marketing of milk and milk products.

3.1.1.3.5 Emphasis on Cross-Breeding Strategy

The Board of Agriculture and Animal Husbandry Wing of the Government of India, in 1958, and the expert committee appointed to evaluate the KVS, in 1959, have recommended a shift of policy to the cross-breeding of indigenous non-descript cattle with exotic stock for rapid increase in milk production. Though the Third Five Year Plan referred to the need to evolve better dual-purpose breed for increasing the work capacity and milk production potential of the Indian cattle, its programmes gave high priority to cross-breeding for increased milk production. Such a shift of policy was the need of the time to meet the increasing demand of milk in the urban and sub-urban centres of the country.

3.1.1.4 An Evaluation of the First Phase

The performance of the dairy sector in the first phase, 1951-1970 is not satisfying. The low performance during 1950s and 1960s compelled the policy makers to frame a far reaching policy initiative. Dairy development through producers’ co-operatives and milk production based on milk sheds in the rural areas, modelled on the successful experience of dairy co-operatives in Gujarat, became the corner stone of the new dairy sector policy. This policy initiative turned around the Indian dairy sector and led to all-round growth with several unarticulated spread effects.


Government of India launched a massive dairy development programme popularly known as Operation Flood (OF) from 1970 to 1996. The
programme was initially started with the help of the World Food Programme (WFP) and later continued with diary commodity assistance from the European Economic Community (EEC) and a soft loan / credit from the World Bank. The OF programme established milk producers’ cooperatives in villages and made modern technology available to them. The broad objectives were to increase milk production (“a flood of milk”), augment rural incomes and transfer to milk producers the profits of milk marketing that were hitherto enjoyed by well-to-do middlemen. This kind of innovative effort has greatly increased milk production and ushered in a “White Revolution”, making India the world’s largest milk producer.

3.1.2.1 Agencies Behind the Operation Flood

Operation Flood was promoted by the proper functioning of two main agencies in the country.

3.1.2.1.1 National Dairy Development Board (NDDB)

It was constituted by the Ministry of Agriculture and Irrigation, under the Societies Registration Act, in 1965. Its headquarters were established at Anand. During its initial stages NDDB was assisted financially by the Government of India, the Danish Government and by AMUL. In 1969, NDDB formulated an integrated dairy development programme under Dr. Varghese Kurien, its founding Chairman. It was accepted by Government of India in 1970 and it functioned as a corner stone for the Operation Flood I.
3.1.2.1.2 Indian Dairy Corporation (IDC)

In 1970 the Government of India established a public sector company, the Indian Dairy Corporation (IDC). It functioned as a finance and promotion link for the Phase I programme of NDDB. The IDC was given responsibility for receiving the project’s donated commodities, testing their quality, their storage and transfer to user dairies and receiving the dairies’ payments.

3.1.2.2 Implementation of Operation Flood

The programme was implemented in three phases:

3.1.2.2.1 Operation Flood I [1970-1981]
3.1.2.2.2 Operation Flood II [1981-1985]
3.1.2.2.3 Operation Flood III [1987-1996]

3.1.2.2.1 Operation Flood I [1970-1981]:

Started in 1970, it envisaged certain specific targets:


a. The organization of one crore farmers into 30,000 village co-operatives in virtually all the states of India.

b. Establishing a national bufferstock of skim milk powder and butter oil.
c. The evolution of a national milk grid covering all parts of India and connecting all the major consumption and production centres.

d. To help the State Dairy Co-operative Federations to set up processing facilities and to develop the National Milk Herd of one crore improved buffaloes and dairy cattle.

e. To increase the daily per capita consumption of milk from 107 grams in 1970 to 144 grams in 1985.

During its first phase, the project aimed at linking India’s 18 best milksheds with the milk markets of the four metropolitan cities of Delhi, Mumbai, Calcutta and Madras. The programme visualized organizing dairy cooperatives at the village level, creating the physical and institutional infrastructure for milk procurement, processing and marketing services at the union level and establishing dairies in India’s major metropolitan centres.

3.1.2.2.2. Operation Flood II [1981-1985]:

The second phase of the programme was implemented between 1981 and 1985. It was an extension and intensification of the first phase to cover more cities and districts in India. Both in terms of the financial outlay involved [Rs. 4800 million] and of the geographical coverage (160 districts) it was one of the biggest dairy development projects ever undertaken in India by the National Dairy Development Board. The main objectives of the project are:  

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7 P.S. George and K.N. Nair, *op. cit.*, p. 3.
a) to build up the infrastructure for the development of a growing and self-reliant dairy industry consisting of 10 million rural families of milk producers and a national milch herd of about 14 million crossbred cows and she-buffaloes by middle 1980s;

b) to link up the rural supply sources and urban demand centres (with a population of 150 million) through the establishment of approximate marketing arrangements; and

c) to increase per capita consumption of milk in the national diet.

With Operation Flood II, a self-sustaining system of 43,000 village co-operatives covering 4.25 million milk producers had become a reality. Phase II mainly emphasized to build infrastructure for technical input services and management services. Phase II built on the foundations established by Phase I.8

3.1.2.2.3 Operation Flood III (1987-1996):

The third phase of the Operation Flood (1987-1996) enabled dairy co-operatives to expand and strengthen the infrastructure required to procure and market increasing volumes of milk. Phase III consolidated India’s dairy co-operative movement by adding 69,600 new dairy co-operative societies and thereby covering 90 lakhs milk producer members.9


These co-operatives form part of the National Milk Grid which today links the milk producers with consumers in more than 799 towns and cities, bridging the gap between the seasonal and regional variation in the availability of milk while at the same time ensuring a remunerative price to the producers and supplying quality milk and milk products to the consumers. For the five years ending March, 2003, the average milk procurement by dairy co-operatives grew at 7.3 per cent whereas the marketing of milk by co-operatives grew at 3.2 per cent.10

Phase III gave increased emphasis to research and development in animal health and animal nutrition. Innovations like vaccine for Theileriosis, bypass protein feed and urea-molasses mineral blocks, all contributed to the enhanced productivity of milch animals.

Another step was initiated in 1988, to augment rural income by launching Technology Mission in Dairy Development (TMDD) which aims at applying modern technology to improve productivity, reduce costs of operation and thus ensure greater availability of milk and milk products. An Integrated Dairy Development Programme (IDDP) in non-operation flood, hilly and backward areas was launched as a centrally sponsored scheme during the eighth plan and continued during the ninth and tenth plans.

The table below presents select data on the growth of the dairy sector during the three Operation Flood Phases.

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The above table shows that there is an increasing procurement of milk right from the inception of OF programme. Similarly, there was a high rate of growth in the number of dairy co-operative societies viz. from 1,33,000 in Phase I to 7,25,000 in Phase III. There exists a high positive correlation

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Operation Flood Phases</th>
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<tbody>
<tr>
<td>Date started</td>
<td>Phase I: July 1970</td>
</tr>
<tr>
<td>Date concluded</td>
<td>Phase II: March 1981</td>
</tr>
<tr>
<td>Investments (Rs. million)</td>
<td>Phase III: April 1985</td>
</tr>
<tr>
<td>Number of federations operating</td>
<td></td>
</tr>
<tr>
<td>Number of milk sheds covered</td>
<td></td>
</tr>
<tr>
<td>Number of dairy co-operative societies set up (Thousands)</td>
<td></td>
</tr>
<tr>
<td>Number of members (million)</td>
<td></td>
</tr>
<tr>
<td>Average milk procurement (million kg/day)</td>
<td></td>
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<tr>
<td>Liquid milk marketing (million liters/day)</td>
<td></td>
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<tr>
<td>Rural dairies (million litres/day)</td>
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<tr>
<td>Metro dairies (million litres/day)</td>
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<tr>
<td>Milk drying capacity (mt/day)</td>
<td></td>
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<tr>
<td>Number of artificial insemination centres (thousands)</td>
<td></td>
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<tr>
<td>Number of AIs done (million / year)</td>
<td></td>
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<tr>
<td>Cattle feed capacity (thousand mt/day)</td>
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<tr>
<td>Source: <a href="http://www.amul.com/achievementsdairycoop.html">http://www.amul.com/achievementsdairycoop.html</a>, p.3.</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.1: Achievement of Operation Flood from 1970-1996 with Select Indicators
between the number of dairy co-operative societies and procurement of milk. We observe an increase in all indicators when we reach Phase III of Operation Flood from Phase I of Operation Flood.

3.1.2.3 An Evaluation of the Second Phase

Operation Flood has been instrumental in helping the farmers to mould their own development. It helped to reach milk to consumers in 700 towns and cities through a National Milk Grid. As a result of the co-operative structure the whole exercise of production and distribution of milk and milk products has become economically viable for farmers, instead of surrendering a part of the profit to corrupt middlemen.

Apart from the application of science and technology in dairy sector and the creation of farmer-owned structures, the OF did the orchestration of all policies and programmes that affect production and distribution of milk. It has, definitely, revolutionized the dairy farmers’ way of life.

3.1.3 Dairying in Post Reform Period

The third phase of Indian dairy development started in 1991, when the Government of India introduced major trade policy reforms that favoured increasing privatization and liberalization of the economy. The dairy industry was delicenced in 1991 with a view to encourage private sector participation and investment in the sector. Two major events were turning points in the post reform period, in dairy sector.
3.1.3.1 Introduction of Milk and Milk Products Order

The Government introduced the Milk and Milk Products Order (MMPO) in 1992 under the essential commodities act of 1955 to regulate the production of milk and dairy products. The order required permission from State/Central registration authorities to set up units handling more than 10,000 litres of milk per day or milk solids upto 500 tons per annum, depending on the capacity of the plant. The order included sanitary and hygienic regulations to ensure product quality.

However, concerns were raised about these government controls and licencing requirements for restricting large Indian and multinational firms from making significant investments in this sector. The government, therefore, amended the MMPO in March, 2002, and restrictions on setting up milk processing and milk product manufacturing plants were removed and the concept of milkshed was abolished. This amendment is expected to facilitate the entry of large companies, which would definitely increase competition in the domestic markets.

3.1.3.2 Uruguay Round Agreement on Agriculture

The second major development in Indian dairy sector policy came when India signed the Uruguay Round Agreement on Agriculture (URAA) in 1994 and became a member of the World Trade Organization (WTO), which made India open up its dairy sector to world markets. The import and export of dairy products were deliscenced and dechanalized and trade in dairy products
was allowed freely with certain inspection requirements. The first major step was taken in 1994-95, when the import of skim milk powder and butter oil were decanalized. Restrictions on the remaining products were removed in April 2002. Now India has bound its import tariffs for dairy products at low levels according to the Uruguay Round decisions.

3.1.4 Relevance of Dairy Development in India

The dairy development in India offers a unique advantage over industrial development or agricultural development. The spread effect of dairy development is noteworthy because it is more evenly distributed than either agricultural development or industrial development. Dairy development programmes mainly benefit the weaker sections of society. Most of the cultivating households, irrespective of the size of their land Holdings, own some milch animals or the other. These animals can easily be maintained on the crop residues, on weeds, green grass etc. The largest input, however, is the intensive use of family labour. It is abundantly available because of lack of alternative employment opportunities for the rural population except during the sowing and harvesting seasons.\textsuperscript{11}

Introduction of dairy development programme leads to better utilization of land, water and human resources. Dairying is reckoned with as an instrument of social and economic change. The dairy development aims not only to improve economic output but also to improve the nutrition of the people

both in rural and in urban areas by providing a ready source of balanced nutrients.\textsuperscript{12}

### 3.1.5 Perspective 2010

Operation Flood (1970-1996) paved the way to take up new initiatives and create new conditions to firm up India’s world leadership in milk production. The new challenge for the dairy industry was to explore ways to emerge stronger using the network created under Operation Flood. The response is ‘Perspective 2010’, a plan that attempts to take the dairy co-operative movement to its highest potential. ‘Perspective 2010’ focuses on four key areas. These include strengthening Co-operative Business, Production Enhancement, Assuring Quality and creating a National Information Network.\textsuperscript{13} NDDB facilitated the planning process and will provide technical support and need-based finance for implementing ‘Perspective 2010’.

#### 3.1.5.1 Strengthening Co-operative Business

Perspective 2010 aims to recruit, train and motivate increasing number of women to work for co-operatives, to achieve significant improvements in dairy husbandry, as they primarily shoulder animal husbandry related responsibilities in rural India. It visualizes the consolidation and growth in milk and milk product marketing, promoting better equity for regional co-


\textsuperscript{13} http://www.nddb.org/perspective strategy.p.1.
operative brands and developing qualified and skilled manpower. It also aims to persuade the State and Central Governments to remove the shackles on co-operative laws so that co-operatives can compete on equal terms with other forms of enterprise.

Expanding the market is a major target of perspective 2010. It offers financial and technical help to milk unions and federations in areas such as sales promotion, consumer education, infrastructure development etc. As part of sales promotion it recommends standardization of artwork, colour, logo and retail outlet design across regional co-operative brands with a view to promote better recall by consumers under a common mnemonic umbrella. Another target is increasing women membership in dairy co-operatives to 50 per cent and improving women participation in the governance of dairy co-operatives at all levels.

3.1.5.2 Production Enhancement

Perspective 2010 stresses to improve the production potential of indigenous breeds of cattle such as Sahiwal, Gir, Rathi and Kankrej and breeds of buffalo such as Murrah, Mehsana and Jaffarbadi through appropriate selection programme. It gives proper direction to crossbreeding technology to increase production in such a way that crossing of non-descript cattle with Holestein Friesian in areas with adequate feed and fodder and with Jersey in resource-poor areas.14 As a step to increase production and availability of fodder, it

appeals to unions, NGOs and co-operatives to put common property area under improved pasture and fodder tree. It promotes first aid coverage through village level societies and disease Free Zones in the country.

3.1.5.3 **Quality Assurance Programmes**

As part of increasing quality it facilitates improvement of hygiene, sanitation, food safety and operating efficiency in the dairy plants and sensitize dairy personnel to product quality aspects as per international standards. It promotes encouragement of quality incentives supported by educational programmes for dairy co-operative society staff, transporters and farmer producers. Quality is assured through facilitating dairy co-operatives in ISO 9000-2000 (Quality Management Systems), ISO HACCP (Safety Management Systems) certification and maintain the required plant conditions under the accreditation on a sustainable basis.

3.1.5.4 **Information and Development Research**

‘Perspective 2010’ plans to link large Co-operatives, Unions, Federations and NDDB in a national network that collects and disseminates information to all. It ensures the availability of analytical information for policy planning and implementation. The integrated dairy industry information service facilitates decision making at various levels in co-operative institutions with the help of an extensive on-line computer network that analyses relevant data obtained from Dairy Co-operative Societies, District Milk Producers’ Union, State Milk Marketing Federations, NDDB and research institutions. Perspective 2010 also proposes the need of a National Database that generates
data on milk supply (producer, animal and village data) data on milk and milk product demand (consumer and urban data) performance data (societies, unions and federations) and secondary data (domestic and international).

3.2 DAIRYING IN KERALA

In Kerala, organized attempts to develop the animal husbandry sector began with the Key Village Schemes (KVS) in 1950s. The scheme continued to operate in the subsequent periods but a large number of these key village scheme centres were merged with the Intensive Cattle Development Programme (ICDP) later on.

3.2.1 The Indo-Swiss Project

The first major effort at cattle breeding and dairy development was started in Kerala as late as 1963 under the Indo-Swiss Project in the high ranges of the western ghats on 200 acres of government land. The first five years of pioneering work concentrated mainly on the establishment of a well equipped breeding centre and experimental farm. India’s first bull station and semen laboratory for deep frozen semen were established here. The breeding work at Mattupatty began with local parental stock of about 140 cows and 45 pure Brown Swiss females and 22 breeding bulls imported from Switzerland.15

From its very inception the project aims to evolve a new breed of cattle which would thrive in the environmental conditions of Kerala. The working

15 M.V. Kamath, *op. cit.*, p. 287.
hypothesis was that the optimum proportion of exotic inheritance had to be found somewhere in the range of 50 percent to 62.5 percent of foreign blood. In such a genetic combination, it is believed that the exotic donor breed would contribute the production potential, while the local breed added important characteristics like adaptability, disease resistance, heat tolerance etc. Compared with an overall average of 720 Kgms of milk per lactation in the local parental population, the milk yield in three cross breed generations were 1963 Kgms, 1860 Kgms and 1857 Kgms in the first, second and third lactations respectively.\textsuperscript{16}

Under the initiative of Indo-Swiss project, efforts were taken to the development of field extension activities with the local farmers which were started with a mobile insemination service from an outstation and regional semen bank in Peermade, in the southern part of the Kerala High Ranges. In 1968, a few stationery insemination centres were established for the first time and two years later the Indo-Swiss Project entered into close collaboration with the State Animal Husbandry Department under the Intensive Cattle Development Project. In 1974, with massive expansion of the insemination service, all the four southern districts of Kerala, namely, Thiruvananthapuram, Kollam, Alappuzha and Idukki were brought under the Brown-Swiss cross breeding programme. A second bull station and Semen Laboratory was established in Kulathupuzha, in Kollam District. In 1981, the number of insemination exceeded 6,000,000.\textsuperscript{17}

\textsuperscript{16} Ibid, p. 288.
\textsuperscript{17} Ibid, p. 288.
3.2.2 Dairy Development Programmes in the State

3.2.2.1 Intensive Crossbreeding Programme

The cross breeding programme under Government auspices has rapidly improved the quality of cows resulting in a significant rise in the proportion of lactating to dry animals, average daily milk yields and lactation length, all of which contribute to reducing costs. This has been an important factor in the rapid growth of milk production in Kerala, but the process was facilitated among other things too. They include:

a) An increase in the price of milk relative to the price of other sources of animal protein (fish and meat)

b) A rise in the price of milk relative to the price of feed stuff;

c) A sharp reduction in the number of bullocks in the context of growing demographic pressure (that makes animals costly to maintain)

d) The unique agro-climatic conditions and improvement in technology (that make it possible to cultivate land without animal power). The fall in the requirement of draught bullocks favoured the use of crossbred cows.

3.2.2.2 Fodder Promotion Programmes

Fodder promotion programmes were concentrating on the introduction of tropical grasses and legumes, planting of green fodder under

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18 A. Vaidhyanathan, *op. cit.*, p. 133.
coconut trees, utilizing and improving fallow land and natural grass lands and promoting fodder conservation. Cultivation of fodder crops and catch crop in paddy fields were also promoted with incentives. The scheme also promotes the planting of fodder trees, which will yield nutritious green matter for cattle feeding.

Selection of beneficiaries will be done by Diary Co-operative Societies, Block Panchayat and Dairy Extension Officer of the respective area. Persons also own cattle having land for fodder cultivation and membership in Dairy Co-operative Societies would get preference over others. The seeds / slips etc. will be supplied to the selected farmers free of cost. Cultivation assistance of Rs. 5000/- per hectare for perennial crops and Rs. 1500/- per hectare for annual crops will be given to the farmers.19

3.2.2.3 Promotion of Anand Pattern Programme

In the late 1970s NDDB has taken steps to spread the Anand Pattern in Kerala as well for dairy promotion. An agreement was signed between the Indian Dairy Corporation and the Government of Kerala on June 7, 1979 and the Kerala Co-operative Milk Marketing Federation (KCMMF) formally came into existence on January 25, 1980. It forms a three-tier co-operative organization in the state with the milk producer’s societies at the village level, district producers’ union in the middle level and in the apex the Federation.

In Kerala there are 3243 dairy co-operatives including 2341 Anand Pattern Co-operative Societies (APCOS) functioning under KCMMF.\textsuperscript{20} It is also significant that while at the national level milk procurement of Dairy Co-operatives rose by 2.9 per cent, in Kerala, there has been an increase of 7 per cent on account of increase in local sale by primary dairy co-operatives and their ability to make better payments to its members.

Apart from the societies functioning under the co-operative sector, 6 societies, viz. Malanadu in Peerumedu, Nirmalgram in Kothamangalam, People Dairy Development Project in Perambra, People Dairy Development Project in Kalady, Jeeva in Kothamangalam, Milgram in Pazhanganad are working under charitable institutions.

3.2.2.4 Dairy Farmers Contact Programme

In the farmers contact programme a group of 25 to 30 farmers will be assembled together. Study classes will be taken for these farmers by the officers of the Dairy Development Department. Modern Scientific methods in cattle rearing, fodder cultivation and importance of milk hygiene and clean milk production will be discussed in the class. It has the following objectives;

a. To assemble dairy farmers and convey the modern scientific knowledge in cattle management.

b. To get feedback from the farmers so as to get enough relevant materials for policy and programme formulation.

c. To promote interaction among dairy farmers.

\textsuperscript{20} Economic Review 2004, \textit{op.cit}, p. 90
3.2.2.5 District Level Cattle Shows and Seminars

The scheme envisages to organize a programme where representatives of the Dairy Co-operatives and dairy farmers in the district are brought together for purposeful dialogue. Exchange of information will be achieved by conducting group discussions, dairy quiz, cattle shows, fodder exhibitions and through various competitions. Dairy farmers will be honoured for their expertise as demonstrated by the quality of the animals and fodder crops maintained by them. The dairy co-operative societies which show extraordinary performance will be honoured. It functions as a forum for the dairy farmers to present their professional problems and seek solution for them collectively.

3.2.2.6 Assistance to Set Up Model Commercial Dairy Farm Units

The objective of the scheme is to encourage farmers who have the necessary infrastructure and aptitude to set up a commercial dairy farm unit consisting of 5 cows which will be a model for other farmers. It is also perceived that this model farmer will be a guide to other farmers in dairy farming. The selected beneficiary should cultivate fodder in at least 50 cents of land and should construct a cattle shed suitable to house at least 5 cows.

3.2.2.7 Milk Collection Room and Godown Building

The objective of the scheme is to assist the Dairy Co-operative Societies registered under Dairy Development Department to construct suitable building to house its administrative office, milk collection room and
godown to store feeds and fodder. One basic condition to get assistance from the department is that the society should have handled an average of 400 litres milk per day during the previous financial year.

3.2.2.8 Purchase of Generator

The objective of the scheme is to assist the dairy co-operatives to purchase diesel generator sets so as to run the milk cooling and processing during the periods of power failure, voltage depression etc. so that ruin of milk and milk products does not occur.

3.2.2.9 Purchase of Milk Cooler

The main objects of the project is to help the milk co-operative societies of rural areas, registered under dairy development, to keep the milk fresh and clean for a long period and for economical transport to the dairies which are situated in cities.

3.2.2.10 Assistance to Purchase Computer

The main object of the programme is to keep accounts accurate and update in the milk co-operatives. It also facilitates to avoid malpractice and misappropriation in co-operatives and make audit easier and effective.

3.2.3 Quality Enhancement: The New Strategy of the Kerala Government in the Dairy Sector

Having made a significant stride in production and processing, milk production in Kerala is meeting its requirement in a feasible way. Now it is the
time to upgrade the quality of milk so as to face competition from the international market smoothly. The main programmes framed for quality improvement are given below:

3.2.3.1 **Clean Milk Production Programme**

It was initiated in Kerala during 1991 for improving the quality of milk received from various societies. This was started with the technical support from the National Dairy Research Institute, Bangalore. It was a training programme for the officers of the unions by Dr. Natarajan, Head, Department of Bacteriology, National Dairy Research Institute, Bangalore and his team.21 The main focus was regarding better hygienic and sanitation practices required in dairying.

3.2.3.2 **Women Cattle Care Promoters Programme**

It was launched in north Kerala during 1993. Under this programme a local woman with communication abilities is selected from the area of each society and is given training on technical subjects in a simple way like calf rearing, clean milk production, scientific feeding practices, mastitis control etc. These women, called women cattle care promoters, in turn, take classes for various women groups in the households of dairy farmers and make home visits.

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3.2.3.3 Adoption of the Mnemonic Symbol

To ensure the supply of quality products to the consumers, the Kerala Co-operative Milk Marketing Federation adopted the mnemonic symbol - the device of a drop- of the National Diary Development Board from October 24, 2001 throughout the state. Under this, the federation is committed to ensure the supply of good quality milk to the consumers by taking all necessary steps from the time of milking to the time it reaches the consumer. Benchmarks for the quality parameters have been fixed at various levels and the Federation and the Milk Unions are implementing various programmes to achieve the above benchmarks.

3.2.3.4 Formation of Perspective Plans for the Regional Milk Unions

It was implemented during the period between 2001 and 2005. The major portion of the investment in this venture is for improving the quality of milk at all stages. This helps to achieve the market growth in the highly competitive environment where the consumers are becoming more and more quality conscious.

3.2.3.5 ISO Certification Programme

In order to standardise the systems and ensure food safety under the international norms, the implementation of ISO Certification and Hazard Analysis and Critical Control Point* (HACCP) have already been taken up and the dairies of Kozhikode and Trivandrum have received ISO certification.

* ISO Certification is an international standard that provides a model for quality assurance in design and development, production, installation and servicing. ISO Certification stresses quality management system. HACCP is the international food handling and safety standard. Here the stress is more attributed to safety management system.
Conclusion

Dairy Development Programmes at the national level and in the Kerala State level have contributed to the development of lower segments of society not only through employment and income generation but also through improvement in their nutritional status and health aspects. From the position of a milk deficient country in 1960s, the dairy development programmes positioned India as the largest producer of milk in the world in 2002. The key element behind the dairy development strategy is the proper integration of rural and urban India by producing milk in rural areas through producer co-operatives and moving processed milk to urban demand centres through proper network. This policy initiative acted as the cornerstone of dairy development programmes in the country.

NB The conclusion is based on the dairy development programmes in Kerala and in India. The purpose of the chapter is to highlight how a milk deficient country in 1960s became the largest producer of milk in the world in 2002 due to these programmes. The only fact that has been added is the key element which brought about this change in the country’s milk production.