CHAPTER II

DAIRYING IN INDIA'S RURAL DEVELOPMENT:
AN OVERVIEW
India occupies a pivotal position in respect of the bovine population of the world. It is estimated that India accounts for about 16 per cent of world's cattle population and about 54 per cent of world's buffalo population. According to 1987 Livestock Census, India's bovine population was 199 million cattle and 74 million buffaloes.\footnote{Andhra Pradesh, Government of, \textit{Summary Report on Livestock Census, 1987 (Provisional)}, Hyderabad, Bureau of Economics & Statistics, Government of Andhra Pradesh, 1989, p.1.} As regards milk production, India ranks third in the world after Soviet Union and the United States, with an annual milk production of 4.9 million tonnes in 1986-87.\footnote{A.K.Chatterjee and R.M.Acharya, "Dairy Industry in India - A profile," in \textit{Dairy India 1987} (Ed) P.R.Gupta, New Delhi,Rekha Printers, 1987, p.3.} While buffaloes account for 52 per cent of the country's milk production, cows account for 45 per cent and goats the rest.\footnote{Ibid., p.4.}

There are over 25 district 'Zebu' breeds of cows in India - the largest number in any country or continent in the world.\footnote{D.N.Khurody, \textit{Dairying in India: A Review}, Bombay, Asia Publishing House, 1974, p.111.} Besides, the country possesses some of the
best breeds of buffaloes in the world. However, about 80-85 per cent of the bovine stock in the country is non-descript. The average annual milk yield per cow is only of the order of 157 Kg. and per buffalo 504 Kg., which are very low compared to countries where dairy development has made significant progress such as Denmark, UK, New Zealand and USA; the average annual milk production per cow in these countries is 3000-4000 Kg.\(^5\)

Animal husbandry plays a vital role in the country's agricultural economy. The contribution of animal husbandry to the national income worked out to Rs.16,500 crores in 1984-85,\(^6\) accounting for 7.5 per cent of the national income. Within the agricultural sector, animal husbandry accounted for 20 per cent of gross value of agricultural produce. Milk and milk products became the second largest contributor to gross agricultural produce, next only to rice, accounting for more than Rs.10,500 crores in 1984-85.\(^7\)

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6. P.R.Gupta, Dairy India 1987 (Ed), New Delhi, Rekha Printers, 1987, p.84.
7. Ibid., p.84.
Hence, milk can be regarded as India's second most important agricultural commodity. The value of output of dairy industry was as much as Rs.13,170 crores in 1986. Viewed against these facts, the Seventh Five Year Plan (1985-1990) allocation of Rs.641.17 crores for animal husbandry and Rs.493.47 crores for dairying may be considered meagre.

Relevance of Dairying in Rural Development:

In India, there has been a close nexus between dairy farming and crop farming since times immemorial. Even the recent technological advances in agriculture are considered to offer scope for developing economically viable integrated crop-livestock farming systems for different parts of India. However, the main problem from the social angle is essentially the integration of modern technologies with the traditional cattle economy. In the context of scarcity of high yielding milch animals and

8. Ibid., p.79.
9. Ibid., p.79.
paucity of sufficient funds, specialized dairy farming could hardly be resorted to by a majority of milch animal keeping households. What is warranted is that profitable levels of dairy adjustment should be made with crop husbandry. This would provide additional income and gainful employment to the millions of underemployed farmers throughout the year. Further, a relatively higher labour employment elasticity coefficient of landless households and marginal farmers for milk production suggests the suitability of this enterprise for the vulnerable rural poor. Therefore, in the Indian situation dairying can be aptly called a development plan, as a development plan in this country is essentially an effort to create conditions for full employment.

Besides, dairy development has been promoted for the following factors. Firstly, dairy production is based on


the use of crop residues, natural herbage, bran, husk and deoiled cakes, which are unfit or unused for human consumption. Therefore, the milch animals do not compete for food with human beings in any major way. Moreover, it was found that such scarce inputs as are used in India's dairy production are used efficiently, and there need be no conflict between the production of milk and the production of other foods needed for an adequate national diet.  

Secondly, the distribution of milch animals is less skewed than that of land, and hence, dairy farming is likely to confer proportionately greater benefits on the poorer


16. The Annual round survey data collected by the NDDB in 18 milkshed areas of India during 1975-1978 revealed that the landless and marginal and small farmers possessing upto 5 acres of land contributed 78% of the total households accounting for 22% of the total land, 43% of draught animals, 53% of animals in milk and 51% of the milk produced, National Dairy Development Board, Dairying in India, Anand, Management and Economics Unit, NDDB, 1982, p.17. (mimeographed).
sections as compared to crop cultivation. Finally, the milch animal holdings tend to be fairly uniform.\textsuperscript{17} The limited availability of fodder and crop residue naturally limits the size of milch cattle holding which acts as a built-in safeguard against possible enlargement of dairy holdings and concentration of this productive asset.\textsuperscript{18} This factor may also ensure that dairying is scale-neutral or is in favour of smaller sizes.

However, the benefits of dairying are neither universal nor automatic, for they are dependent on efficient marketing arrangements and the availability of adequate feedstuffs, which are essentially the products from crop husbandry.\textsuperscript{19}

\textsuperscript{17} The NDDB study showed that, among the milk producer households the average milch animal holding size was 1.51 for the landless and those possessing upto 5 acres of land, while it was 2.48 for those with more than 5 acres of land, Ibid., p.17.


\textsuperscript{19} Ibid.; p.260.
There has been a great demand for dairy products in the country and this factor is also responsible for encouraging dairy development. The National Commission on Agriculture estimated that the milk yield is required to be increased to about Rs. 44.17 million tonnes by 1985 and 64.4 million tonnes by 2000 A.D. to meet the huge demand of fast increasing human population. Even the per capita availability of milk in the country is quite low at 157 gms/day in 1986-87 as against the recommended minimum nutritional requirement of 201 gms/day. Further, the relatively high income elasticities of demand and price elasticities of demand commonly observed for dairy products suggest the need for promotion of dairy development.

Dairying has also been perceived as a potent and beneficial instrument of social and economic change. Dr. V. Kurien visualises three major components for dairy

23. Price elasticities of demand are generally higher for dairy products than for foodgrains and are often greater than unity. For estimates of Indian expenditure and Price elasticities for milk and milk products, see R. Radhakrishna and K. N. Murthy, Models of Complete Expenditure Systems for India, Laxenburg (Austria), Institute of Applied Systems Analysis, 1980.
development.

(1) Dairying is an industry - but its development must also serve our rural and semi-urban population;

(2) Planned or unplanned - public, private or coopérative - in its development dairying must compete for investment funds; and

(3) Dairying must develop in such a way as to contribute to the solution of the problem of rural poverty. Within this framework, he identifies five larger dimensions of dairy development, viz., the institutional dimension, the techno-economic dimension, the industrial dimension, the dimension of technical modernization in rural areas and the social dimension. He hopes that dairy development through cooperative effort can result in technical and social modernisation of rural areas cutting across the caste carriers, making life for our rural majority more productive and satisfying.\textsuperscript{24}

Dairy development assumes special significance in improving the status of rural women. Traditionally, women had played a major role in maintaining the animals and milking them. The income from dairying is generally considered as theirs and women usually spend their earnings on better feeding and education of their children. The

increased incomes from dairying as a result of the implementation of dairy development programmes are likely to enhance the economic independence of women. Thus, besides increasing the social and economic status of women, dairy development is likely to improve the nutritional status of women and children in rural areas. Keeping this aspect in view, the workshop on 'Participation of Women in Dairy Development in South Asia' has rightly observed that the participation of women in modern dairy development can potentially be a positive step towards their economic, social and political liberation.\textsuperscript{25}

Thus, it may be observed that dairying seems to be most relevant as a development strategy for accelerating the pace of rural development in our country.

**Development of Cooperative Dairying in India:**

Organised dairying as understood in the West started in the country towards the end of the 19th century when military dairy farms and creameries were started to meet the demands of the armed forces and their families. The first cooperative dairy society was established at Allahabad in 1913. Till 1938 there were only 19 unions and societies with 264 primary societies of 11,600 producer-

However, dairy cooperatives did not make much headway in the pre-independence period.

The first major landmark in the development of cooperative dairying in India was the establishment of the Kaira District Cooperative Milk Producers' Union Ltd., popularly known as Anand Milk Producers' Union Ltd., (AMUL), at Anand in Gujarat state in 1946. Before the establishment of AMUL, the milk marketing system in the district was controlled by contractors and middlemen who used to exploit the milk producers in all possible ways, thereby earning huge profits. As a result, there was growing discontent among the milk producers. This became noticeable when the Bombay Milk Scheme, started in 1945 by the Government of Bombay, entered into an agreement with Polsons Ltd., a private dairy, to supply milk from Anand to Bombay (at a distance of 427 Km) on regular basis. When the farmers approached late Sardar Patel, a leader in India's independence movement, he advised them to form dairy cooperatives so that they could manage their milk business by themselves. The farmers, under the leadership of Shri T.K. Patel, decided to organise milk producers' cooperative societies in all the villages which would federate to form into a Union at the district level and the

latter would own milk processing facilities. It was felt by the farmers that the Government of Bombay should undertake to buy milk from the Union. But the Government of Bombay turned down their request which led to a 'milk strike' lasting for 15 days during which not a pint of milk was sold to milk merchants. The Government ultimately had to concede their demand for the formation of milk cooperatives.

Thus, AMUL was formally registered on 14th December, 1946, with five village cooperatives. The milk cooperative, under the able guidance of Shri T.K. Patel and Dr. V. Kurien, its Chairman and General Manager respectively, followed and integrated approach to dairy development linking all the major elements of dairying, viz., production, procurement, processing and marketing, and achieved remarkable progress. Today, AMUL is the largest dairy plant in the country handling an average about 6.12 lakh litres per day (1pd) from 3,65,000 milk producers from over 870 villages of the district. 27

AMUL had the blessings of an outstanding leadership that bred deep loyalty among farmers and professional managers. They instilled in them, 'integrity, pragmatism and efficiency'. 28 Highly qualified professionals were

appointed to the key positions. Singh and Kelly observed that few dairy processing operations even in the USA had equally qualified staff in the top departmental positions at that time\(^29\) as did the AMUL. The underlying socio-economic outcomes that made Anand known worldwide are:

1. The Anand experience has reassured advocates of the cooperative movement that it can be usefully applied to rural development if operated and managed on proper lines.

2. It confirms the feasibility of combining modern technology with the traditional social structure in rural areas if the institutions created recognise and use the strengths, rather than generate the weaknesses of village society.

3. It has brought to the rural areas the value of democratic participation through the use of local leadership and regular deliberation.

4. The running of the cooperatives by local staff on recognised accounting and auditing drives home the fact that India's rural people are capable of managing their affairs if given an opportunity and the training.

5. The recognition that scientific inputs can help to improve dairy production has encouraged the rural people to

\(^{29}\) Ibid., p.132.
seek similar services in other areas of rural life like health, sanitation, education, etc.  

The unprecedented success of AMUL naturally stimulated the farmers in other districts of Gujarat to emulate this example. Thus, the integrated approach to cooperative dairying successfully adopted in Gujarat later came to be known as 'Anand Pattern' of dairy cooperatives. The structure of Anand pattern milk cooperatives (which was originally a two-tier system) comprises primary milk producers' cooperative societies at the village level, milk cooperative union at the district level and cooperative milk marketing federation at the state level. The village societies consist of milk producer members at the grassroots level and are members of their respective district union. The district unions are members of the federation which is the apex body at the state level. The entire organisational structure—societies, unions and federation—is owned by the milk producers themselves.

Dr. Kurien outlines the four most important characteristics of the Anand pattern cooperatives, which provide the institutional structure for technical and socio-economic change as detailed below:

1. They are based on a painstakingly put together set of village cooperatives. Thus, in each village which is

involved, the producers have come together and have selected, from among themselves, a set of leaders whose decisions they thereafter accept, whom they trust to protect the interests of the producer-membership as a whole.

2. All the village cooperatives in a district commit themselves to the collective membership of a union of cooperatives, through which they own such facilities as a dairy plant and, most importantly, through which they hire for themselves professionals/managers and technologists to run their dairy plant, veterinary doctors to look after their animals and so on.

3. This institutional structure serves as the vehicle, to bring modern technology to the service of even poorest rural producer, who thereby gets into his own hands the instruments for technical and socio-economic change.

4. They are directed by the chosen representatives of the people who own them, the producers. The institution is, therefore, a dynamic and ever-changing structure for the exercise of self-determination by our rural people.  

In 1964, Shri Lal Bahadur Shastri, the then Prime Minister of India, visited Anand to inaugurate the cattle feed plant of the AMUL. Immensely impressed with the success of milk cooperatives in Gujarat, he advocated the

replication of Anand pattern dairy cooperatives elsewhere in the country. He realised that the dairy development programmes could be best served by effectively linking up milksheds with major urban markets. The Anand and Bombay link up provided a good example. Accordingly, the Government of India set up the National Dairy Development Board (NDDB) in 1965 to replicate the Anand pattern dairy cooperatives and make available multi-disciplinary professional dairy expertise to dairies in the public and cooperative sectors.

Initially, the NDDB faced a number of difficulties in organising new dairy cooperatives owing to reasons beyond its control. Therefore, to increase the pace of dairy development, the NDDB formulated the project 'Operation Flood' (OF) in 1968, which was approved by the Government in 1969. However, it was decided that, as a charitable trust, the NDDB could not receive and sell the project's donated commodities. Hence, the Government established a new company of its own, the India Dairy Corporation (IDC), in February, 1970. The IDC was made responsible for receiving the project's donated commodities, testing their quality, storing them, transferring them to user dairies and receiving the dairies' payments, thus making it a 'finance-cum-promotion house'. Its source of technical expertise is the NDDB. The IDC was designated as the...
authority responsible for the implementation of Operation Flood.

Operation Flood - Phase I, involving an investment of Rs.95.4 crores, was formally launched on July 1, 1970. This was at the time the world's biggest milk drive launched in any country. The project was originally scheduled to be completed in five years, but it suffered delays and was, therefore, extended upto 31st March, 1981 with the revised final allocation of Rs.116.4 crores.\textsuperscript{32}

OF - Phase I was designed to streamline the milk supply to the public sector dairies in the four metropolitan cities of Bombay, Calcutta, Delhi and Madras. To feed these cities, milk producers' cooperative societies were to be set up, on the Anand pattern, in 18 hinterland milkshed districts of ten states forming the natural milk supply areas of these cities, as complete and integrated organization for modern milk production, processing and marketing. It was intended that the proceeds from the recombination of 1,26,000 tonnes of skimmed-milk powder and 42,000 tonnes of butter oil - Rs.116.4 crore - were to be used to provide the finance needs to build up the modern

dairies in the cities and the integrated milk producer's cooperatives. 33

The project made significant progress in its stated objectives. It resulted in the formation of 12,224 village cooperatives, covering 15 lakh milk producers in 27 milksheds of the country. The annual milk production increased from 20.7 million tonnes in 1969-70 to about 31.5 million tonnes in 1980-81, while the per capita milk availability rose from 107 g/day to 128 g/day. Under the project the capacities of the five existing dairies were increased to 15 lakh lpd and five new plants were established with capacities of 20 lakh lpd. Further, the throughput of modern dairies in the four major cities increased from 9.02 lakh lpd in 1970 to 23.43 lakh lpd in March, 1981. By the end of the project period, a total of 1,779 personnel were trained for farmers' organizations against the target of 1,227. In addition to the above, 2,660 farmers from the rural milksheds were trained at Anand in improved dairy practices. 34

Encouraged by the success of OF - Phase I, the Government of India launched OF - Phase II on October 2, 1979, which was designed to replicate the Anand pattern

33. Ibid., p.29.
34. Ibid., pp. 31-33.
upto the third tier of cooperative federation of unions in 25 enlarged milksheds, covering the entire country, with the aim of erecting a National Milk Grid (NMG) linking rural milk-sheds with urban markets.

OF - phase II was completed on March 31, 1985. Against the total original outlay of Rs.485.5 crores, the fund generation was Rs.515.35 crores, and as against the phase II approved outlay of Rs.273 crores, the expenditure was Rs.277.17 crores. The project was quite successful in terms of achievement of the targets. The number of village cooperatives formed were 34,583 by March, 1985, as against the target of 29,000. The coverage of milk producers was 36.31 lakhs as against the target of 34.8 lakhs. The average milk procurement was 57.84 lakh lpd as against the target of 55.3 lakh lpd. The annual milk production increased to 38 million tonnes in 1984-85 raising the per capita milk availability to 142 g/day. While 11,644 personnel were trained for farmers' organizations by March, 1985, as many as 39,042 farmers from rural milksheds received training in improved dairy practices.35

OF - phase III, launched in 1985 at an estimated total outlay of Rs.681.29 crores, primarily aimed at

consolidating the extensive milk procurement and marketing has built during OF - I and OF - II. Presently, OF covers 250 districts, grouped into 168 milksheds in 23 States/Union Territories, with over five million farm families in 49,000 village milk producers' cooperatives. They sell, on an average, some eight million liters of milk every day, after retaining 25 per cent of it for their self consumption. It fetches them about Rs.30 millions per day, aggregating to more than Rs.10,000 millions per year.36

As a result of OF, there has been an increase in the number of dairy plants in the public and cooperative sector and their handling capacity as well. By 1986, there were 250 dairy plants in the public and cooperative sectors with an installed capacity of 162.82 lakh lpd. The average throughput of these plants was 124.38 lakh lpd, their utilization capacity being 76.4 per cent.37

It appears that Operation Flood has resulted in accelerating the pace of dairy development in the country. While there was a four-fold increase in the number of village milk producers' cooperative societies, the number of milk producer members in these societies registered a

36. Chatterjee and Acharya, op.cit., p.5.
five-fold increase between 1970-71 and 1986-87. It may be inferred from the above discussion that OF has been rightly acclaimed as the usherer of 'white revolution' in the country, giving the much needed fillip to milk production enhancement programmes through dairy cooperatives.

Operation Flood: Points of Divergence:

Operation Flood assumes significance not only as India's development strategy, but it may also yield lessons for evolving dairy development strategies in other developing countries. Hence, the programme has been subjected to wide, and often heated, debate both in the country and outside it.

On the question of replication of Anand pattern, several critics pointed out that the unusually favourable conditions responsible for the success of AMUL such as the efficacy of local leadership, existence of initial production environment, effective organization of demand for milk and political patronage rarely exist in many parts of the country, where there will be less chance of successful replication. For instance, Joshi noted that the replication of Anand pattern may take a very long period in
those regions where the ecosystems are akin to Saurashtra. Shekhawat also observed that organising cooperatives in a village with scattered population and organising milk routes have been the major problems in replicating the Anand pattern in Rajasthan. The Jha Committee, while emphasizing the diversity in commitment and performance of the state governments in implementing OF rightly remarked that:

"To hope, that in districts whose milk supply potential had not been fully developed, where the cooperative movement was unknown and where marketing through middlemen and private trade was well entrenched, another Anand could be created in less than a decade was to expect the impossible."


It was argued by some that in implementing OF, the NDDB/IDC stifled the local initiative through centralised planning and highly bureaucratic structure, while some others expressed a fear that this may perpetuate indefinitely. It was also argued that the cooperative principles of AMUL have been comprised by increasing the power of lower levels of bureaucracy and increased reliance on managers and technocrats.

Some others have questioned even the validity of AMUL as an ideal model for dairy development. Shanti George remarks that the Anand pattern is not the small man's supporter that it is made out to be but something of a capitalist cooperative. She contends that the inputs provided to members of dairy cooperatives favour large

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44. Shanti George, Operation Flood: An Appraisal of India's Current Dairy Policy, New Delhi, Oxford University Press, 1985, pp.139-140.
landholders. Nyholm et al. noted that the introduction of a cooperative marketing system has not made the small producers less dependent on the local middlemen and village leaders.\footnote{45} Dornbos et al. also doubt whether Anand pattern cooperatives can compete with private trade.\footnote{46} Uma Lele, however, points out that the Anand pattern cooperatives established their superiority over private trade by offering better services to milk producers.\footnote{47}

Tushaar Shah also notes that in comparison to the private traders, the dairy cooperatives have the advantage of having access to a technology that enables them to convert the SNF (Solids not fat) in milk into readily marketable products like skimmed milk powder, baby foods, etc. This distinctive technological advantage reinforces considerably the dairy cooperatives' ability to outprice private trade in rural milk markets.\footnote{48} He contends that in

\footnote{45} Klaus Nyholm et al., \textit{op.cit.}

\footnote{46} Martin Dornbos et al., \textit{op.cit.}


actual terms, the price paid by the dairy cooperatives is much higher since a substantial proportion of what would otherwise be the operating surplus of these cooperatives is used to provide an effective veterinary aid at no cost to the farmer, to provide subsidised inputs such as cattle feed and fodder seeds, to provide substantial end-of-the-year price difference and a bonus as a dividend towards the holding of cooperative shares.  

The Jha Committee, while emphasising the desirability of dairy cooperatives, observes that in areas where milk production is relatively underdeveloped, development effort to create the marketable surplus of milk is a pre-requisite for a profitable cooperative structure.

Baviskar and Shanti George have criticised the OF because it is based on surplus EEC donated commodities and opposed it on the ground that it is not the proper model for a country like India. It may be mentioned here that such donated commodities and commercial imports have been coming to India even before the OF programme was launched.

49. Ibid., p.9.
The Jha Committee rightly pointed out that the use of imported powder accounted for about 40 per cent of the throughput of the Indian dairy industry in the 'mid-sixties' as against less than 8 per cent at present. Hence, the criticism that OF is increasingly dependent on imports is not borne out by facts. 52

It may be pointed out that even though most of the above studies claim to be empirical, they are constrained by lack of convincing evidence. Hence, these issues are open to further analysis.

**Summing Up:**

To sum up, dairying is one of the most relevant strategies for rural development in India. It may be said that dairy development has made significant strides through cooperative effort under Operation Flood. Further, Operation Flood may be called a successful programme in terms of the achievement of targets. However, the available evidence regarding the implications of Operation Flood for the rural economy in general and dairy development in particular has been quite contradictory and insufficient which preclude any definite conclusions.

Hence, there is need for comprehensive studies concerning the various aspects of the programme both at the macro level and at the micro level.

52. L.K.Jha, *op.cit.*, p.54.