

CHAPTER I

INTRODUCTION

1.1 DAIRYING - ITS IMPORTANCE

The parliament of the Democratic Republic of India resolved in 1954 that the objective of economic policy should be a socialistic pattern of society. To meet this objective the Government of India has decided to implement a number of development projects. The accent of these projects is on attainment of positive goals, raising of living standards, solving problems of unemployment and malnutrition, enlargement of opportunities for all, promotion of enterprise among the disadvantaged classes, inculcating a sense of partnership among all sections of the community and in essence bringing about a social change. Dairying projects fit in this definition and are, therefore, termed as development project in every sense.

Till recently, the Indian Dairy Industry was a victim of high number of animals and low level of production of milk in the world. This paradoxical situation was an outcome of inter-related clusters of puzzling constraints in the form of low yields, absence of economies of scale, poor technology, absence of assured market and remunerative price particularly during the flush period, destruction of high yielding milch animals and their progeny in urban areas by city-kept stable owners. When all the various dairy development schemes failed in terms of generating desired results- the Operation Flood (OF) - a massive dairy development project was brought into existence in the 1970's as a modern dairy development strategy to

surmount all the barriers of traditional dairying faced by a marginal milk producer. (Milk is an article of diet which is accepted by all classes of rural and urban population. The average per capita availability of milk in the country, at present is estimated at 110 gm. per day as against the minimum requirement of 210 gm. per day recommended by the Indian Council of Medical Research. The low level of milk consumption is primarily due to the poor state of milk production in the country. Owing to these facts, the need for increasing rapidly the milk production in the country was pertinently felt.)

1.2 OPERATION FLOOD

Operation Flood, a massive dairy development programme, was launched on July 1, 1970 at the instance of the Government of India. The programme was to be implemented in two phases by the National Dairy Development Board (NDDB). The first phase viz. Operation Flood I which was launched on July 1, 1970 was terminated on 31 March 1981. This was a co-ordinated Rs 100 crore project designed by the National Dairy Development Board and launched by the Indian Dairy Corporation (IDC). Operation Flood began the gigantic task of upgrading and modernising milk production, procurement, processing and marketing, thus waging an all out offensive against scarcity and all its associated ills. Funds generated by the sale of dairy commodities donated by the World Food Programme (FAO-UN) assisted this project to carry out its mission. This included establishing dairy co-operative unions in rural milk sheds,

setting up of animal husbandry units, constructing modern dairies in major cities, organising storage and long distance transportation and project planning with manpower development. In short, 'Operation Flood laid the firm foundation upon which the Indian dairy industry can grow, develop and diversify.

The second phase, Operation Flood II, is a fully articulated programme designed to build on the strong infrastructure laid by the earlier project. This Rs 500 crore project was launched on Oct 2, 1979. This programme is being assisted by the European Economic Community (EEC) by providing as a gift, butter oil and milk powder, and by the World Bank, with a soft loan.

The major influence on the design of the first Operation Flood was a specialised form of milk producers' co-operative. The first co-operative of this kind was registered at a town called Anand and such dairy co-operatives are now often referred to as "Anand Pattern Dairy Cooperatives." The basic unit of the Anand Pattern is the Village Milk Producers Co-operative. This is a voluntary association of all milk producers in a village who wish to market their milk collectively. Membership is limited to one member from each milk producer family. Members can market only their own family's milk through the co-operative. Most village cooperatives have 100-200 members, representing 50-90% of the village's families. A family's herd averages 1.3 cows and/or milch buffaloes, each producing 1-2 litres (1.75 - 3.5 pints) of milk daily. Often, 20-30% of the members are landless labourers

1 crore = 10 million

1 \$ = Rs 10

and another 40-60% are small holders with less than 4 hectares (10 acres) of land. Milk earnings are 70-80% of all earnings for these families. All the Village Milk Producers Co-operatives in a District are members of their District Co-operative Milk Producers Union. There are 400 Districts in India, each with an average of 1,250 villages or hamlets and a total rural population of 1.25-1.5 million (200-250,000 families).

The Union is the "Core" of the Anand Pattern. On behalf of its Village Co-operative Members, it owns and operates a dairy processing plant and often a cattle feed compounding plant too, it organises twice - daily collection of milk from the village co-operatives, it markets balanced cattle feed concentrates, green fodder seeds etc. to the Village Co-operatives and it operates Mobile Veterinary Clinics, which visit the Village co-operatives once weekly, it trains employees of each village co-operative for their work as Secretary (Chief Executive), Clerk, Milk Tester, lay artificial inseminator, lay animal first aid worker etc., it also organises the production of semen for artificial inseminator and its distribution (by the trucks which collect milk) to Member Village Co-operatives. The Union's employees (professional managers and technical personnel, equipment operators etc.) run the dairy and cattle-feed plant. Milk processed at the dairy is marketed to urban centres as liquid milk and/or products, such as baby-food etc. All the Union's operating expenses are paid out of margins earned on milk marketed on behalf of its Member Village Co-operatives.

An important feature of the Anand Pattern's policy making structure is that policy - makers are all village co-operative milk producers. Only milk producers actively marketing milk to their village cooperative can be elected to their co-operative's Managing Committee. Only elected Chairman of Village Co-operative Managing Committees can be elected to their Union's Board of Directors. This means that active milk producer members are the policy makers throughout the structure.

For this reason, the policies of the Anand Pattern Dairy Co-operatives emphasize the price paid to the milk producers for their milk and the services provided to members to help them increase milk production and its profitability. These policies, however, are strongly influenced by the co-operative's need to build up their position in the market and to command consumers confidence. Less than one-third of all milk produced in the villages is marketed outside the village - and, of that milk, the co-operatives handle some 15% which in turn represents only one-tenth of all urban consumption. Competition from the traditional milk traders, using free market forces (plus frequent dilution), is tough. So the co-operatives have to keep their price structure competitive.

In this task, they are helped by their intensive grass roots structure and their judicious use of modern dairy technology. Thanks to the intensive coverage achieved by the Village Milk Producers Co-operatives, these co-operatives achieve break even when they procure some 200 litres (40-50 gallons) daily. Thereafter, they operate

on 4-5% of payments for milk received from the union . The Unions operating costs vary according to its product mix : processing for bulk shipment as liquid milk for urban consumption typically adds 20-25% to the price paid by the union for milk, while processing into conserved products adds 40% - and consumer packaging adds another 20%. When liquid milk in bulk^u shifted to a city from a distant rural milk shed, it is re-processed and either retailed unpackaged by a bulk-vending system, or it is packed in bottles or sachets, adding either 23 or 33% to the union's price paid for milk. Thus, the retail value of the modern dairies output is estimated at 166% of the payments made to producers for their milk, while the comparable figure for rural milk handled by the traditional sector is 211%. As a result, the co-operative system pays producers some 15% more for milk than the traditional traders and the modern system as a whole gets the final product to consumers at prices 9% lower than those of the traditional system.

The modern system's price structure is based on using modern technology to get liquid milk to the consumer as efficiently as possible: on a milk-solids basis, its liquid milk, retails at 28% less than the traditional traders liquid milk, where as its conserved (and packaged) products are priced to reflect their full cost on a milk-solids basis, they retail at 9% more than traditional traders products (and at 38% more than the modern dairies liquid milk). In effect, the modern dairies pricing policies are the opposite to those followed by dairy industries in the west, where liquid milk is priced as high as the market will bear and conserved

products are priced at whatever prices will clear the market and, in some countries, when that is not achieved, the state buys "surplus" products and/or subsidises milk. In India, milk as such is rarely subsidised. Operation Flood, for e.g., has used funds to provide low-cost capital for modernisation of milk production, processing and marketing, rather than for subsidising milk.

1.3 What is Dairying? Is it an Industry?

Like any other industry, dairying, in short, deals with a number of aspects such as production of raw material (i.e. milk), organisation for collection and transportation of raw-material to a processing plant with or without intermediate treatment (milk being a perishable commodity, chilling enhances the shelf life by arresting rate of growth of micro-organisms which spoil the milk) processing of raw-material and manufacture of finished products to the consumers. All these aspects require investments of various types. Therefore, dairying can easily be recognized as an industry and involves some capital and therefore, application of a concept of "return on investment" must also be involved. Also whether dairying is planned or unplanned, public, private or co-operative in its development, it is imperative that the investment pays for the opportunity cost of the additional resources engaged. Like any other industry, it becomes necessary to determine the attractiveness of the additional investment before such an investment is made.

1.4 Special Characteristics of Dairying

Dairying has some special characteristics, which make it different from any other industry. These are as follows :-

(i) Production of Milk

Most of the milk produced in the country comes from millions of milk producers, which are normally small, poor and unorganised. Surveys conducted have established that these producers mostly fall in the category of small and marginal farmers and agricultural labourers residing in the rural areas. These producers have small capital in the form of a few milch animals generally one or two. The majority of milch animals are inefficient converters. The milk producers normally being too poor are unable to acquire improved animals. It does not pay to feed inefficient animals well so that they continue to produce little milk. In fact, the inefficient animals tend to multiply and deteriorate generation by generation and the milk producer becomes too poor to keep and feed the animals. This brings forth social dimensions in dairying and makes the concept of social cost benefit analysis relevant. Dairying is considered as one of the most effective rural industry which can help in equitable distribution of gains to the most vulnerable and weakest sections of the society and is an ideal solution to the wide-spread problems of poverty, unemployment, under employment and malnutrition in the rural areas. It follows that although dairying is an industry, any dairy development project must serve our rural population and contribute to the solutions of the problems of rural poverty and, therefore, have social orientation.

(ii) Milk production is seasonal and regional

Like other agricultural commodities, some areas have better potential for milk production than others because of agro climatic factors and, therefore, production of milk is regional. Besides, production of milk is seasonal. This is because of highly seasonal

pattern of rain fall resulting in large variations in seasonal feed supplies. The flush and lean season ratios are between 2 to 3 : 1 while the urban demand of milk is more or less constant in a particular year. Therefore, processing capacity of rural/semi-rural dairies is not based on an average availability of milk in a year, but on flush season production of milk, so that farmers' milk is not refused by the dairies during the flush season. This is one of the important social responsibilities of the dairy industry. In the flush season, the surplus milk is converted into milk products having longer shelf-life. Of course, this would mean extra investment on plant and machinery which would amount to over capitalisation as well as under utilisation of capacities during the lean season. These are inbuilt characteristics of the dairy industry.

(iii) Potentials of milk production

India has a vast potential in enhancement of milk production because the indigenous cows can be upgraded in milk yield potential manifold by cross-breeding with imported exotic bulls or their semen. This potential makes dairying an attractive business venture but with a long gestation period, which means that pay back period is normally longer in the dairying industry as compared to other industries.

(iv) Urban versus rural milk production

Traditionally milk producers along with their animals reside in rural areas on account of availability of cheaper fodder and wastes of farm by products. In view of the fact that demand of milk is largely from the urban areas, there has been noticeable migration of milch animals from the rural to urban centres so that the milk

could be produced close to the consumption points to save on transportation costs. However, this has resulted in very high cost of milk production due to higher costs of feed, housing and maintenance. This has also added to pollution problem caused by disposal of cow-dung, urine, etc. in addition to economic loss arriving from waste of good genetic material (cows and buffaloes) by the cattle keepers who cannot afford to keep these animals when they get dried and, therefore, send to slaughter houses. Production of milk must take place logically in the rural areas in order to overcome the above mentioned problems.

(v) Integrated development of dairying

In advanced countries such as West Germany, Netherland, Denmark, United Kingdom, Australia, etc. farmers cooperatives have emerged as a great cohesive force. In our country also only one institutional structure has proven effective in getting dairy development done i.e. a unified organisation of milk producers, which is responsible for procuring, processing and marketing its members' milk and also for marketing of technical inputs for milk production. As this institutional structure is owned and operated by the milk producers, it is, therefore, responsive to the producers needs. Such a structure enables the producers to hire their own professional and technical personnel. It also enables producers to invest on milk production and enhancement programme.

Under this system, beginning is normally made by defining areas (districts) having over a lakh and quarter of breadable milch animals congregated into packets each having about 250 milch animals. These

pockets (villages) form the basic unit in the system. The primary milk producers at the village level are organised into functionally effective cooperative societies with initial support from loan - grant and finally develop into a self-reliant Federation. Each cooperative society enrolls only actual milk producers who own a milch animal as its members. Such milk producers become members of the society by purchasing nominal share of Rs.10/- each and by payment of an entrance fee of Re.1/-. They elect their executive committee of nine honorary members who is entrusted with the responsibility of the proper functioning of the society. Depending upon the amount of milk handled, society employs salaried staff of three to six persons as Secretary, Treasurer, Milk Tester, Clerk, Stock Man, etc. 50 to 80 co-operative societies federate into a district level union. The working of the union is directed by the Co-operative Board of Directors elected from amongst the farmer producers and representatives from financial institutions, technocrats and professional managers. The Union handles the functions of procurement, processing and marketing of milk and provides inputs like cattle feed, liquid semen/frozen semen for artificial breeding, veterinary treatment and preventive health cover. In the initial stages the union is financed by way of loans and grants. A time lag of four to five years is normally sufficient to make the union break even. At a state level all the district unions are federated into an apex level organisation called the State Federation.

For the purpose of this research project, a dairy development project would mean an integrated project based on the pattern mentioned above.

1.5 Appraisal of a Dairy Development project

As in the case of any other commercial project appraisal of dairy development project also involves analysis of the following four aspects. (1) Technical (2) Financial (3) Economic (4) Managerial. This research project however, deals with only economic aspects of a Dairy Development Project.

1.6 Present Practices

At present, a dairy development project is being selected for financing on the basis of the following analysis :

(i) The Profitability analysis

The profitability analysis of the dairy co-operative societies and unions is based on the incremental cash flow resulting from investment made under a dairy development project. These investments are normally made on milk chilling, processing and distribution facilities, preparation of a cattle feed plant and milk production and enhancement programme. Projected funds flow statement reveals whether a particular dairy cooperative society or a union is making the operational deficits or surplus. It is expected that a typical dairy cooperative society or a union is making the operational deficits or surplus. It is expected that a typical dairy cooperative society or a dairy union should start making operational surplus latest from the 4th year or so. Finally the profitability analysis is done in respect of the federation. The operating surplus should be before charging depreciation and interest.

(ii) Liquidity analysis

The liquidity analysis is then checked in respect of a typical dairy cooperative societies federation. The funds flow analysis indicates whether federation/union/DCS will have a sound liquidity position

to meet its obligations or not. The idea is to check whether the unit would require any short-term borrowings or will have surplus funds after meeting the requirements of working capital and would be in a position to repay the loans received from the financial institutions.

(iii) Overall project viability

The Internal Rate of Return (DCF Method) is the most universally used method for determining the attractiveness of an additional investment or in other words to determine the overall project viability. It is useful as a selection criterion if the investment alternatives under consideration are not mutually exclusive. This may be the case, for example, when investments in dairying do not affect investments in agriculture or when dairying investments are compared with investments outside dairying.

Techno-economics of the Project

In order to carry out analysis at (iii) above, a techno-economic of the project is prepared, which includes the following statements :

- i) Projected Operating Statement of a typical dairy cooperative society.
- ii) Capital Investment on Processing & Distribution Facilities.
- iii) Technical Inputs : Projected Capital and Operating cost of Union.
- iv) Projected Cash Flow Statement of a Typical Dairy Cooperative Society.
- v) Project Capital Investment and Operating Statement of a Dairy Plant.
- vi) Projected Cash Flow Statement of the Union.

vii) Overall Financial Position of the Project.

viii) Discounted Cash Flow Rate of Return on Investment.

1.7 Is this analysis adequate ?

The above analysis is really not adequate as it does not give a picture of the return to all resources engaged. This does not tell how efficiently additional capital, land, labour, etc. are utilised in the investment regardless of their ownership. This is important for the economy, as a whole. Therefore, the present practice only provides the financial analysis without giving any idea of economic analysis. Economic evaluation eliminates transfer payments such as taxes and subsidies, uses shadow prices and includes secondary benefits accruing to the economy. The question therefor , arises -"should a dairy development project be rejected simply because the internal rate of return is less than 12%?" In my opinion it is not proper to determine the attractiveness of investment on a dairy development project simply because the internal rate of return is lower than the prescribed rate or commercial rate of interest. This is because of the fact that a dairy development project has several other socio-economic benefits. For example, a dairy development project would result in substantial increase in the income and living standards of millions of rural milk producers. The project would also result in improved income distribution. Food grain production in the project area is also expected to increase due to the increase in the availability of manure from the milch animals and the incremental capacity to purchase fertilisers, irrigated water and other crop inputs. One of the most important benefits would arise from year-round employment opportunities provided to the landless agricultural labourers and small farmers.

1.8 Objective of the Study

The object of the research was to determine the criteria and methodology for economic analysis of a project which would provide answers to the questions raised in the previous para.

On the basis of this approach and frame work of analysis, it aims at examining the validity of the following statements of hypothesis:-

- (i) While organized dairying has economically benefitted all categories of farmers viz. landless, marginal, small, intermediate and large, the landless and marginal categories received the maximum benefits followed by small and intermediate farmers and the large farmers received the least benefits.
- (ii) The year round remunerative market provided by the Anand Pattern Dairy Co-operative would create a pull in the village system to increase milk production and to manage dairying more efficiently. This pull, in turn, would greatly increase the utilization of technical inputs such as veterinary aid, artificial insemination, cattle-feed concentrate feeds etc., which the cooperative would try to push down the system and which would ultimately result in increase in milk production.
- (iii) Not only would total milk production increase, but a greater proportion of milk produced would be sold than was the case earlier without adversely affecting nutritional status of the food intake of rural households.
- (iv) Organized dairying has a significant and useful economic impact as revealed by increase in the quantity of milk procured, inputs

(artificial insemination, cattle feed, animal health care and mini-kits), generation of additional employment opportunities, increased purchasing power and creation of infrastructure and institutional facilities.

(v) The growing market orientation would increase pressures towards greater efficiency in the management of milk production at all levels and help dairying at the village level to break out of the present low level - equilibrium - trap. These efficiencies would be reflected in the long run in lower calving intervals, longer lactation length, higher breeding efficiencies, and in general, in increasing proportion of bovine population contributing to milk production. It would also get reflected in decreasing average cost of milk production and greater returns from dairying.

(vi) Organized dairying would make village people more receptive to scientific, technological and managerial innovation incorporated in operation flood.

1.9 Methodology

The economic analysis for the research project was done on the basis of three sample dairy development projects chosen at random from different parts of the country namely Guntur in Andhra Pradesh, Surat in Gujarat and Bhopal in Madhya Pradesh. In each milkshed, two villages - one having an Anand Pattern Dairy Cooperative & one without such a co-operative (control village) were selected for detailed study and analysis. In Guntur however two control villages were selected in addition to one co-operative village. Thus the total number of villages selected were seven i.e. 3 in Guntur, 2 in Gujarat and 2 in Bhopal.

Each pair of villages was selected to provide a balanced picture of the impact of the dairy cooperative and to make a comparison of the two villages possible on various counts. The districts were purposely selected; the Guntur & Surat unions were one of the oldest Anand Pattern unions and at a very advanced stage of development; Bhopal a relatively young union doing fairly well.

In both the villages (i.e. co-operative and control) a census of all households was conducted. In the census, data regarding members of the household, ownership of land & livestock, ownership of other assets and consumer durables, production and disposal of milk and membership in co-operatives as well as other institutions were solicited.

The census was followed by a detailed investigation of the households. This was confined to 50 households in each village (i.e. 350 households in all 7 villages.) This sample was selected so that households with and without land, with and without milch animals and with small and large holdings of land and animals would all be adequately represented.

The investigation covered areas such as land use, cultivated practices, use of inputs, production and disposal of crops, cattle use and feeding practices, production and disposal of milk and milk products, household expenditure patterns and changes in assets, food consumption patterns, membership in organisations, views on their functioning and views on various aspects of modernising interventions. The census as well as the sample survey were conducted with structured questionnaires.

The structured investigations were followed by interviews and discussions with selected heads of households in the villages, selected women, interviews and discussion with village leaders, institution officials, spearhead team members, dairy union officials, and other related and government officials.

1.10 Data Base

The analysis is mostly based on primary data collected through the sample survey covering 350 households selected from the above 7 villages.

Secondary data relating to the general agro-ecological features, demography, status of agriculture and animal husbandry, and infra-structural facilities available in the study areas were collected from the respective taluka offices and reports and records of the Dairy Unions concerned.¹ Impact studies done by the Indian Institute of Rural Management-Anand also provided useful information and guidance for this study. Other relevant publications of the Indian Dairy Corporation and National Dairy Development Board were also referred to.

1.11 Review of Economic Studies relating to Dairy Industry in India

Dairying is one of the most ancient occupations established in rural areas. Though modern dairying started in 1951, research studies relating to economic aspects of dairying have not been adequate. This deficiency could be attributed to the under-organized nature and unorganized data base of the industry. A great deal of

1) Impact of OF-I at the village level - Katar Singh and V Mukunda Das

the research that has been conducted since the 60's in investigating the economic and social impact of dairy co-operatives in their village settings have focussed on very limited number of variables, such as level and distribution of per capita income from dairying, employment pattern of food consumption etc. Only a few studies, notably those conducted by Somjee & Somjee, A.S.Patel, R.K.Amin etc. focussed on the processes - through which the profound social and economic changes that the dairy co-operatives were found to bring in their wake - were realized. Even these researches overly concentrated on the socio-economic dimensions and missed entirely the structural changes in the livestock enterprise that on-set and the maturity of dairy co-operatives seem to cause. Some impact studies conducted by the Indian Institute of Rural Management during 1980-81 and subsequently also threw some light on the processes through which the impact of the dairy co-operative's works itself out on the economic setting of the village - and more importantly, on the structure of village dairy enterprises.

1.12 World Dairy Economy and India

India occupies a notable position in the world cattle economy with 54 million cows and 26 million buffaloes; it is the largest cattle breeding country in the world. India stands fifth in milk production in the world. It produced 8.58 million tonnes of cow's milk in 1975-76 and 16.5 million tonnes of buffalo's milk during the same period. This constitutes 6.45 percent of the world's milk production² in that year. Inefficient and poor maintenance of such a large number of cattle is responsible for the fact that although there are 12% more dairy animals in India than in four leading countries put together, India produces

2. Food and Agriculture organisation (FAO) Production year Book - 1975
United National Organization (UNO), Rome, Vol. 25, 1976, P.54

less than 12 percent of the milk produced by these leading countries in the world.³

India has nearly 50 percent of the buffaloes inhabiting the world.³ Buffalo's milk constitutes 76% of the total milk production of India, whereas cow's milk constitutes 94% of total milk production⁴ in the world. Thus the Indian Dairy industry depends mainly on the buffalo in contrast to that of the world which depends mainly on the cow.

The Cooperative system of organization of the dairy industry has received acceptability in many of the countries where dairying is one of the major national industries.⁵ In Holland 85 percent of milk produced goes through cooperative dairy factories. In Denmark cooperative creameries and dairies handle roughly 87 percent of milk. In USA 75 percent of non-fat dried milk is processed by cooperatives. In

3. D.N.Khurodi. Increased production and rationalized consumption of milk in Asia. Paper submitted at the los Banos, Phillippines, February, 1977. Indian dairy man (Journal of Indian Dairy Science Association, India) Vol XXIX, No.3 June, 1977, P.152.

4. Genkar Nagar. Buffalo as a dairy animal. Paper submitted at All India Conference of Animal Scientists, Report of National Commission on Agriculture, Part VII, Ministry of Agriculture and Irrigation, Govt. of India, New Delhi, 1976, P.65

5. Kulandaiswamy, V., Cooperative Dairying in India (Coimbatore; Rainbow publications, 1982) P.57-58

Norway 100 percent sale of milk is handled by milk cooperatives. The National Commission of Agriculture (1976) observed "As dairy development programmes can best be organized by the cooperatives of the milk producers, the producers should first be organized into primary village level cooperative societies. Persons not involved in milk production or those associated with private milk business should not be allowed membership of these societies."⁶ The Govt. of India has also taken the same stand that cooperative form of dairying is the best form of organisational set up for the dairy industry and has formulated its strategies accordingly. "Except in certain special areas dairying will be organized by and large, through the cooperative or corporate sector. However the ultimate objective would be to foster the growth of dairying through a two-tier system of functional cooperatives with producers' societies at the village level and unions at the district level."⁷

6. Recommendation No.18 Chapter 29, Report of the Commission on Agriculture (1976)
7. Draft Five Year Plan 1978-83, Government of India, (New Delhi : Planning Commission, 1978) P.145 .