

India's Dairy Revolution

SINCE MARCH 1974 THE WORLD BANK HAS FUNDED five dairy development projects in India. These projects have supported Operation Flood, an Indian initiative to support a farmer-controlled cooperative dairy program. Other major sponsors have been the European Community and the World Food Program. An OED impact study* found that Operation Flood (OF) and associated policy changes resulted in a spectacular increase in the growth rate of Indian dairy production (from 0.7 percent annually to 4.27 percent). In fact, Operation Flood has had an impact comparable to the Green Revolution in India.

OF was not a Bank project; it was created and led by Dr. Vergese Kurien, and endorsed by the government. The Bank's interest began in 1968, but it was not until 1974 that the Board approved the first of five Bank projects in support of OF.

The Bank's support helped to validate the government's policy changes, as did the decision of the European Community and the World Food Program to provide generous amounts of dairy products to support OF. The Bank projects also bolstered the government's efforts required for the program's growth. This is an excellent example of Bank lending: a program designed by Indians, targeted for the poor, and supported by key development partners.

Policy Changes

The expansion of India's dairy industry since the early 1970s stems from two ma-

major policy changes: an end to public sector actions to directly expand dairy production, and the use of food aid to develop dairy cooperatives. Both changes reduced the price risk to farmers, small-scale traders and private processors. Profits from food aid sold at commercial prices were used to strengthen the cooperative dairy industry. Crossbreeding of local cows with specialized dairy breeds provide the technology for rapid increases in milk production. Growth in population and real incomes provided a steady increase in demand, thus averting a glut. OF serves 6 million producers directly (60 percent of which are marginal or small farmers or landless producers), and many more producers have benefited in various ways from the policy changes.

Since 1971, dairy production has grown at more than 4.7 percent a year (see Figure 1). Dairy revenues of Indian





farmers have quadrupled—they make US\$9 billion more per year than they would have had if the growth rate had remained at its pre-Flood level of 0.7 percent. Growth rates, falling real retail prices, and the magnitude of the income generated are similar to success experienced as a result of India's Green Revolution (see table 1).

Private Sector Cooperatives

Building on these early policy changes, OF developed a large, well-organized cooperative system that obtained milk in small quantities (1 and 2 liters) from millions of

producers and processed it in modern dairies. The cooperative dairy development scheme is a complete 3-level marketing system owned and operated by 6.1 million individual small-scale dairy farmers. Some 57,000 village-level Dairy Cooperative Societies own 172 Milk Producer's Unions, which in turn control 22 state-level federations. The National Dairy Development Board (NDDDB), (Dr. Vergese Kurien, Chairman) provides the national apex organization.

OF has succeeded by following the Anand Principles (based on the first such cooperative set up in 1946), intended to keep the milk coop-

erative in the private sector. These principles call for adherence to a:

- three-level, farmer-owned structure
- professional management which reports to farmer-controlled boards of directors
- right to hire and fire staff (no patronage appointments, or bureaucrats as managers)
- right to set producer and consumer prices, and
- right to file bankruptcy.

Not all these principles are observed in all states. Where state governments interfere in managerial ap-

Table 1: Price and Production Changes in Wheat, Rice, and Milk

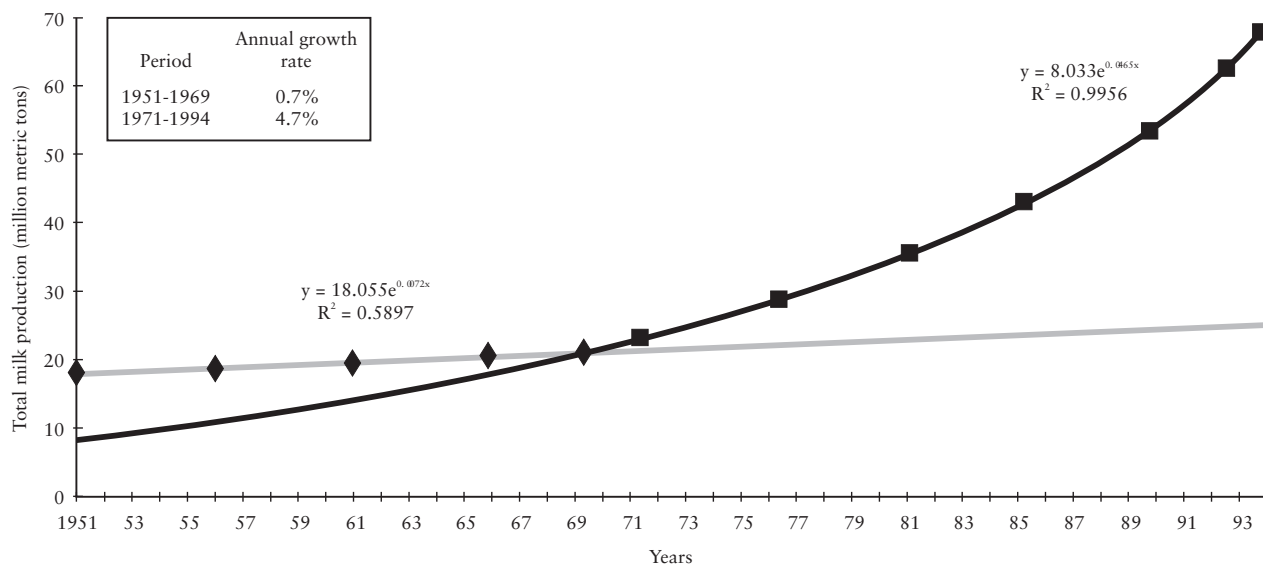
	Growth Rate (%)	Rate of Price Change (%)	Farm Gate Value of Production (1991)
Wheat	5.6	(2.3) ^a	Rs 172 billion
Rice	2.7	(1.1)	Rs 356 billion
Milk	4.7	(1.4)	Rs 242 billion

a. Parentheses indicate a decline, i.e., real wheat prices declined at 2.3 percent per annum.

Notes:

1. The growth rates for rice and wheat are calculated for the period 1961–94.
2. The growth rate for milk is for the period 1971–94
3. The rate of price change for wheat and rice is calculated for the period 1966–91 (for producer price in constant 1990 Rs).
4. The rate of price change for milk is calculated over the period 1975–96 (for cow milk at processor level in constant 1990 Rs).
5. The farm gate value of production for milk is calculated using the producer price of milk from Gulati and Bhide (1997)

Citations and data sources are given in fully in *India: The Dairy Revolution*, by Wilfred Chandler and Nalini Kumar (World Bank: Washington, DC), 1998.

FIGURE 1: India: Milk Production, 1951-94 (Exponential fit to 1951-69, 1971-94 subsamples)

pointments, staffing levels or through price controls, subventions are sometimes provided to compensate for the resulting losses (NDDB and the state federations wage a continual battle in these states to return to the full Anand principles).

Problems

In addition to the difficulty in getting some states to adhere to all the Anand cooperative principles, excess processing capacity in the corporate sector also poses a problem. This is due to Bank-fostered economic liberalization, combined with heavy subsidies (up to 50 percent of capital cost, plus tax holidays and other concessions) provided to new corporate processing plants in some states. These subsidies are not available to cooperatives.

The study recommends that there be no further lending to the dairy sector in states which have not yet adopted the full Anand pattern for Operation Flood cooperatives or which do not treat these cooperatives equally with private corporations.

Beneficiaries

Although providing assistance with cross breeding, artificial breeding, veterinary services, and input supply, OF

has been primarily a marketing project; opening new channels from remote rural producers to urban consumers. Despite this relatively narrow, single commodity focus, the project has brought multiple benefits:

Poverty: Sixty percent of beneficiaries were small- or marginal farmers, or landless producers. OF makes annual payments of \$760 million to Indian dairy producers.

Nutrition: Per capita milk consumption rose (from 107 grams/head in 1970 to 193 grams/head in 1994).

Job creation: As women substituted dairy production, for “coolie” labor on construction sites, they freed-up employment opportunities for others.

Education: Money earned from the dairy industry was used to keep children in school. Older female siblings, relieved of the need to stay at home to care for younger children, now had the option to further their schooling.

Women in Development: Six thousand village-level Women’s Dairy Cooperative Societies were formed.

The Bank’s support of Operation Flood provides a good example of achievements in the rural sector, as outlined in the “Vision-to-Action” strategy of rural development recently adopted by the Bank.

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