

THE WAY BEHIND WHITE REVOLUTION

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ABSTRACT

India's rise as the world's largest milk producer, with an annual output of 220 million tonnes, is rooted in a deep historical and cultural legacy. From ancient Mesopotamian dairy practices to the modern White Revolution, milk has transitioned from a sacred offering to a nutritional staple and economic asset. Key milestones include the Bombay Milk Scheme, the establishment of farmer cooperatives under Sardar Vallabhbhai Patel's guidance, and the leadership of Verghese Kurien. The formation of Amul and the National Dairy Development Board, along with Operation Flood (1970–1996), transformed India from a milk-deficient nation into a self-sufficient global leader. Operation Flood, backed by international aid and grassroots cooperative structures, significantly improved milk production, rural income, and food security. Despite current challenges such as climate change and fodder shortages, the revolution remains a powerful model for agricultural development and rural empowerment through sustainable dairy practices.

KEYWORDS: White Revolution, Operation Flood, Amul, Verghese Kurien, milk production, dairy cooperatives, NDDB

INTRODUCTION

In the world India stands first as a largest milk producer with an annual output of 220 million tonnes contributing 5 % of the country's economy. According to Warinner et al., 2015, direct consumption of milk was linked to the domestication of ruminants since 8,500 years. In early Mesopotamia around 3100-3000 BC milk was primarily processed into butter and cheese rather than milk as such. In Egypt, milk was mainly consumed by children and used in religious offerings than adults.

Due to many social, economic, and religious factors dairy industry products varied greatly among different cultures. Greeks, Romans, and Egyptians particularly in Mesopotamia, Egypt, India, and Europe not only consumed milk but also used in religious rituals offerings and ceremonies, as a symbol of wealth and sacred status (McCormick, 2012). With the advancement of cultural, technological, and agricultural development, a transitional shift from maternal infant resource to its incorporation in all dietary practices, leads to the consumption of milk and its derivatives (Stock & Wells, 2023). In 19th and 20th centuries, advances in dairy technology paves

a systematic production of milk products (Stock & Wells, 2023) as cheese and yogurt in turn enhances the nutritional diversity and replacement of human breast milk for infants (Valenze, 2011) and sustained the economy of the country.

MILE STONES IN THE HISTORY OF WHITE REVOLUTION

Kaira - a huge milk hub in Gujarat, Kaira district (now Kheda, previously a part of Bombay Presidency) a well-known milk hub being a reliable source of large volumes of milk producer in the entire region. There exists two milk producing factories around 15km north of Anand during 1895. A butter factory and a casein factory owned by Mr. Pestonji Edulji Dalal (Englishman) and German respectively. In 1926, Pestonji Edulji (Parsi man) started another butter factory under the brand name "POLSON".

BOMBAY MILK SCHEME

In 1942-43, the British government emphasized the quality of milk as the milk sold in Bombay was polluted. This incident boosted the

Kaira farmers' produce and Bombay became a readymade market in the entire region.

DAIRY FARMERS MILK COOPERATIVE

The dairy farmers were given with the least consumer price as Polson and its contractors earned a lot. Hence they decided to make a movement (1946) against British government in Bombay under the guidance of Sardar Vallabhbhai Patel, India's first Home Minister. He motivated the entire district dairy farmers to organize milk cooperatives, so as to have a control over their resources, insisted Tribhuvandas Patel, Vice chairman of Kaira District Congress Committee, to head the cooperative. In spite of this, the exploitation continues and they proposed a milk cooperative union in Anand to market the milk which was primarily rejected by the Government and after 15 days of struggle, a young engineer Verghese Kurien was unwillingly posted in Anand as a researcher in the Government India creamery in 1949. He belongs to Kerala Syrian Christian family and was chosen by the Government for an Agriculture Ministry sponsored PG degree (metallurgy) at Michigan State University. His office was placed in the same campus of Kaira Cooperative's plant. Being completed some dairy technology course he repaired the outdated 1910-era machinery and advised Tribhuvandas to build a new plant costing Rs 40,000. At that time Kurien resigned his job and assumed the post of general manager at Kaira District Cooperatives Milk Producers' Union Limited in 1950.

DEMAND SUPPLY CHAIN

During 1952, despite of huge huddles, 10 times growth of Kaira-Bombay market in insulated railway vans was attained by KDCMPUL i.e., 20,000 litres of milk compared to 2000 litres in 1948. Anand's farmers faced another problem of imbalanced demand-and-supply chain. Buffaloes yielded double the quantity of milk in winters than summers which forced them to arrive an alternative source to store and supply the excess winter milk during summer. Hence they decided to start a processing plant to convert the extra buffalo milk into products like butter and milk powder as that of cow's milk powder in the market. This new idea was materialised by dairy technologist Harichand Dalaya, Kurien's collegemate at Michigan State University. Dalaya and his

prosperous Yadav family in Uttar Pradesh ran a successful dairy business (300 Sindhi cows) in Karachi. His invention paved the way for India's first milk powder and butter plant that was inaugurated by Jawaharlal Nehru, Prime Minister on October 31, 1955, the birth anniversary of Sardar Patel.

EMERGING OF ETERNAL AMUL BRAND

Kaira Cooperative's farmers under the leadership of Kurien, thought of bringing a huge market which in turn need a new eternal brand icon beating the Polson's brand. In 1956, name "Amul" derived from the Sanskrit word 'Amulya' meaning 'priceless' was coined and became the short, catchy and easy acronym for Anand Milk Union Limited. In 1957 Kaira Cooperative registered the brand 'Amul' one of India's best-known brands.

NATIONAL DAIRY DEVELOPMENT BOARD

During the visit of Lal Bahadur Shastri, Prime Minister on October 31, 1964 to Anand, motivated Kurien to plan the wide spread of the model across the entire country. In 1965, without central government funding the National Dairy Development Board India was organised.

COMMERCIALIZATION OF REEL FILM INTO REAL LIFE

To scale up the market of milk powder, butter, condensed milk, cheese and baby food, the union hired an advertising agency - Advertising and Sales Promotion Company (ASP) in 1966, whose art director Eustace Fernandes created the famous iconic Amul girl to knock out Polson's 'butter girl'. *Manthan*, awarded film with a budget of Rs 10 lakh funded entirely by the Gujarat dairy farmers together with Kurien's efforts directed by Shyam Benegal starring Smita Patil, Girish Karnad, Naseeruddin Shah and Anant Nag boosted up the Amul's sales market into peak.

OPERATION FLOOD

PHASE I (1970 – 1981):

Implemented in 27 milk sheds around 4 metropolitan cities in the country (Bombay, Calcutta, Madras and Delhi). Outlay - \$166 million. The World Food Programme of the UN provided 126,000 tonnes of skim milk powder and 42,000 tonnes of butter oil as dairy aid which was

sold in the cities to generate funds for the programme. The European Economic Community (EEC) contributed bulk of these dairy aids.

PHASE II (1981 - 1985)

Implemented with the seed capital from European countries and a Rs 200 crore World Bank loan. In this phase, 290 urban outlets, 43,000 village cooperatives including 4.25 million milk producers, tremendous increase in number of milksheds from 18 to 136, marketing of milk increased by several million litres per day.

PHASE III (1985 - 1996)

A total of 30,000 new dairy cooperatives were established in addition to the existing 42,000 societies. This mainly focused women members and women's dairy cooperative societies. Many plans to expand, strengthen the infrastructure in both collection and marketing points like Veterinary health-care services, Animal health, feed and artificial insemination services etc. Milk

powder production increased from 22,000 tonnes in the pre-Operation Flood year to 140,000 tons by 1989.

LARGEST MILK PRODUCER

Around 1998, India overtook the US position in the world. A World Bank report on the impact of dairy development in India published revealed that over a period of ten years the sum of Rs 200 crore invested by World Bank in Operation Flood, returned and contributed a massive of Rs 24,000 crore. None of the development plan before or after has reached this remarkable input-output ratio.

CONCLUSION

White Revolution turned India's rural economy nearly high with world standards. The global climate change, poor precipitation, inavailability of fodder and creeping weaknesses in breeding programmes pose a challenge in retaining the advantages Operation Flood offered

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