



*Concentrated Solar Thermal (CST) technology*

## **NDDB's solar initiative**

Today, India is the largest producer of milk in the world. And this success did not come overnight but through persistent toil by the rural milk producers and the vision and expertise of NDDB. As a result of sustained efforts by the dairy cooperatives through Operation Flood, Perspective Plan and the present National Dairy Plan (NDP), India's dairy sector succeeded in maintaining a steady growth. All initiatives of NDDB are aimed at achieving the objective of making dairying an instrument of socio-economic change.

One such initiative is the implementation of "Concentrated Solar Thermal (CST)" in the dairy sector. Being world's largest milk producer, India can take pride in the existing milk processing facilities catering to the diverse needs of the consumers. Dairy processing essentially involves chilling, pasteurization and packaging of liquid milk and manufacturing of value added products like Butter, Ghee, Milk powder, Cheese, Curd, Butter Milk, Lassi etc.

Dairy cooperatives alone handles about 500 lakh litres of milk per day (LLPD) through more than 200 dairy processing plants in the country. Processing plants of varying capacities from 1 LLPD to 40 LLPD handle liquid milk till its packing and have facility to manufacture value



added products such as SMP, Butter, Cheese, Curd etc. Milk processing essentially involves time controlled heating and cooling of milk, using thermal energy generated by combustion of fossil fuels and electrical energy. Fuel by far, is the largest component of manufacturing cost of milk processing and product manufacturing, other than raw materials and packing materials.

Geographically located between Equator & Tropic of Cancer, India receives enough solar energy for a viable solar thermal generation solution, to mitigate heat generation through traditional process of fossil fuel combustion. Thermal energy generated after capturing solar radiation has been transferred & successfully integrated to dairy equipment for low heat hot water applications (@ 80-85°C) like can washer, crate washer, cleaning in place (CIP) and boiler feed water.

In line with the Government of India's policy, to provide long term sustainable clean, renewable and viable source solar energy, NDDB has implemented 15 installation of "Concentrated Solar Thermal (CST)" in various dairy plants with the financial support from MNRE & UNDP-GEF. The combined financial support

