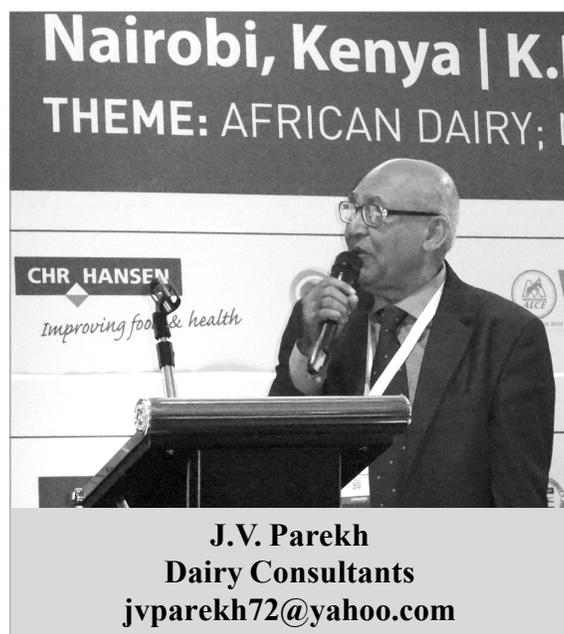


lecture

Applicability of Cooperative Amul Model in African Small Holder Dairying*



Africa rising



Africa Today

- Africa - Land of Opportunity.
- It is the 2nd largest continent divided into 54 different countries.
- It has world's largest reserves of a number of strategic minerals and abundance of agriculture crops.
- At 4.9% compound annual growth rate of its GDP, Africa is the world's third fastest growing region.
- Africa possesses about 60 per cent of the potentially available cropland in the world (590 million hectares).
- Africa's surface area is more than that of China, US, India and 15 other countries put together.
- The continent's population exceeds that of US, Indonesia and four other nations.
- But it is one of the poorest regions of the world, its GDP is about one tenth that of the US's.
- USA : \$ 14.1 trillion
- Africa : \$ 1.6 trillion

* This Lecture was delivered by the author at 15th African Dairy Conference and Exhibition organized by ESADA in Nairobi - Kenya during 14-16 August 2019.

Enabling Demographic Shifts

Population growth; bigger markets

- World growth 1.09% at 51.25/SqM
- Africa growth 2.52% at 42.51/SqM
- Europe growth 0.08% at 33.55/SqM
- Asia growth 0.90% at 101.96/SqM

In 2034, Africa is expected to have the world's largest working-age population of 1.1 billion.

Enabling Demographic shifts - Economic Growth

- Emerging markets and developing economies @4.7%
- Advanced economies @ 2.4%
- World average @ 3.7%

Enabling Demographic shifts - Purchasing Power Parity

- Emerging Middle Class
- Enhanced Purchasing power

Enabling Demographic shifts - Urbanization

- World annual urbanization rate Av. @ 2%
- Euro area @ 0.5%
- Sub-Saharan Africa @ 4.1%
- North America @ 1%

Urbanization at 68% will be in cities by 2050 with as much as 90 percent of the urban growth centered on Asia and Africa.

Economic Union and ICT

- Size: 11.6 Million sq. km
- Population: 482 million
- GDP: \$667 billion
- Annual Imports: US\$ 209 billion
- Annual Exports: US\$ 105 billion

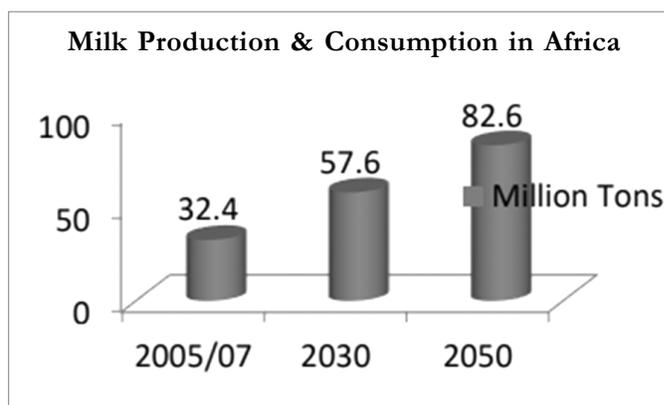
Present Status of the Dairy Industry in Africa

- Dairy is one of the most important agricultural sector in Sub-Saharan Africa with a huge potential for alleviation of poverty and improving food security and nutrition.
- Productivity is extremely low with some countries in Africa recording as low as 174 kg per year/cow compared to over 10000 kg per cow per year in many countries.
- Infrastructure still undeveloped
- Milk consumption in Africa is the lowest estimated at 36kg per capita per annum as compared to WHO recommended consumption of 200 kg per capita per annum.
- Dairy production growth is still below the 1% mark, with the total continental production accounting for less than 2% of the total world milk production.

- The ratio of milk supplied for processing in most countries on the continent is less than 10% of the milk produced. Within the Common Market for Eastern and Southern Africa (Comesa) region, dairy product demand is now at 14 million tons, with the region producing only six million tons.
- The East African region is the highest milk production zone in Africa and has an excellent ecology for dairy production. It has a fair concentration of dairy herds. Lots of investment opportunities exist within the industry for donor, private and public sector partnerships.
- The top five African milk producing countries in terms of milk volume are Sudan, Egypt, Kenya, South Africa and Algeria. Meanwhile, the first four countries alone produce 52% of total African milk.
- In the five countries of the EAC (East African Community) Kenya is the largest milk producer accounting for 58% of total milk production and 25% of the total milk supply in the region's market.

Milk Production & Consumption in Africa

- East Africa; 80% by Small holders
- Low and irregular productivity app. 450L/Cow per lactation
- App. 3% Annual Growth
- More than 10 percent of the world's cattle population
- <3% of global milk production
- Spends <\$500 million every year on milk imports from Europe and North America
- Over 80% marketed through informal channels
- Average per capita consumption at 50kg - global at 111 kg
- Consumption growing at App. >3.2%



Status of Indian Dairying

In the last four and half decades, milk production grew eight-fold, from about 22 million tonnes in 1970-71 to 176.35 million tonnes in 2017-18. With about 95% of dairy animals' owner owning less than 5 animals, dairying in India is primarily a small holder system.

The growth in milk production has outpaced the growth in the population and food grain production, resulting in continuous growth in the per capita availability of milk from 112 grams per day in 1970-71 to about 374 grams per day in 2017-18 and thus contributing towards the nutritional security of India.

Dairying and Animal Husbandry contributes around ₹ 7.7 lakh crores (USD 5.3 Billion) per year to the GDP which is around 4.2 per cent of National GDP. It has emerged as a primary source of income for about 70 million rural households - most of them are landless, small or marginal farmers. Animal Husbandry and dairying is contributing around 30 per cent of total agriculture GDP.

India is currently the largest producer of milk in the world, a status it has maintained since the late nineties. This has largely been achieved through a combination of favorable policies and an institutional network that has helped support millions of rural households in pursuing their livelihoods through small scale dairy farming. About 30% of the milk produced is collected and processed by the organized dairy sector. Cooperatives now link more than sixteen million small dairy producers to urban markets and provide them a stable source of income. The growth of this network of institutions has been acknowledged to be a key factor in the growth of the Indian dairy sector. The dairy industry in India is going through major changes with the liberalization policies of the Government and the restructuring of the economy. This has brought greater participation of the private sector. This is also consistent with global trends, which could hopefully lead to greater integration of Indian dairying with the world market for milk and milk products. India today is the world's largest and fastest growing market for milk and milk products with an annual growth rate of about 4.5 per cent.

Role of Dairying in Farmers' Income

Low capital investment, short operating cycle and steady returns, make dairying a preferred supplementary livelihood option for rural households. As a tool of socio-economic development, it has been contributing to the livelihood of farmers in many ways – income from milk and milk products, insurance against drought, emergency cash requirements, household nutrition, fuel

for cooking, manure for crops, draught power for farming and many more.

As per the Situation Assessment Survey (2013) of NSSO, dairying is a supplementary source of income for almost half of the agricultural households. It is noteworthy that that between 2002-03 and 2012-13 (the latest period for which data is available), contribution of “Animal farming” in income of agricultural households grew from 4 per cent to 12 per cent while that of “non-farm activities” and “wages & salaries” had in fact declined. Income from dairying contributes around 84% to the income from “Animal farming”. Considering the relatively higher growth of milk sector during the last five years as compared to agriculture and other allied sectors, there is every reason to believe that the contribution of animal farming and dairying in particular to total income of rural households has significantly grown.

The findings from the NSSO data indicated that the share of income has increased drastically from 5 per cent to 12 per cent in the case of livestock farming, 45 per cent to 48 per cent in crop production, while that of the wages and non-farm have declined between 2003 and 2013.

A renewed focus on dairying would immensely contribute to accomplishing the vision of the Government of India to double the farmers' income by 2022.

Dairy Cooperatives

The journey of Indian dairy sector from the situation of deficit in 1950s and 1960s to the situation of self-sufficiency in the decade following 1970s has seen various dairy development interventions. Operation Flood, Perspective Plan, National Dairy Plan and other programmes of Central and State Governments have collectively made the country self-reliant in milk production.

In this journey from deficit to sufficiency, dairy cooperatives, representing mostly the small holders, have played a leading role by continuously striving to augment incomes and livelihoods of rural milk producers and by supplying safe milk to consumers. The dairy cooperatives give back about 75% of the realisation to the farmers, who own and control the cooperatives, while globally only about 30-40% of the consumer price goes back to the farmers.

Unique Features of Indian Dairying

- In India, unlike large dairy farm systems, milk is produced not in mass but by masses – livelihood for small dairy holders.
- The ownership of bovines in the country is more equitable than agricultural land
- Small and marginal farmers with land holdings

of less than 2 hectare account for the larger share in the ownership of dairy animal as well as milk production

- Milk is the largest contributor (₹4923 billion) to value of agriculture & allied output (27%) in GDP
- It acts as insurance in times of stress and uncertainty during the periods of agriculture failure
- It plays important role in providing employment to farmers, especially women
- Dairying is a major source of subsidiary income. It contributes about 12% of rural household income and is as high as 20-30% in case of landless households. Thus, dairying provides wide arrays of benefits and addresses a multitude of issues both.

Role of Women in Indian dairying

- About 70 percent of total work force engaged in dairying is women and the share of women in the total time spent on dairying by all the household members is 64 percent.
- Dairying gives gainful employment to women in India for whom the alternate employment opportunities do not exist. Therefore, Dairying acts as a catalyst for women to provide them social recognition and economic empowerment.

India's Small holder system

- Mixed crop-livestock system is suitable for the countries where the by-products of one are used as inputs for the other and thus they co-exist, support each other and do not compete.
- The use of crop residues as animal feed, dung as manure and domestic fuel, and livestock as draught power, protect the environment from an overuse of chemical fertilizers and fossil-fuels.
- Also residual feeding system does not compete for land to grow food crops. This is more important for a nation where providing food to everyone is a priority.

The Birth of Amul

- It all began when milk became the symbol of protest
- Founded in 1946 to stop the exploitation by middlemen
- Inspired by the freedom movement

The seeds of this unusual saga were sown more than 73 year ago in a small town in the state of Gujarat in western India. The exploitative trade practices followed by the local trade cartel triggered off the cooperative movement. Angered by unfair and manipulative practices

followed by the traders, the farmers of the district approached the great Indian patriot Sardar Vallabhbhai Patel for a solution. He advised them to get rid of middlemen and form their own co-operative, which would have procurement, processing and marketing under their control.

In 1946, the farmers of this area went on a milk strike refusing to be cowed down by the cartel. Under the inspiration of Sardar Patel, and the guidance of leaders like Shri Morarji Desai and Shri Tribhuvandas Patel, they formed their own cooperative in 1946. The Kaira District Co-operative Milk Producers Union Ltd. began with just two village dairy co-operative societies and 247 litres of milk. Amul grew from strength to strength, thanks to the inspired leadership of Tribhuvandas Patel, the founder Chairman and the committed professional of Dr. Verghese Kurien, who was entrusted the task of running the dairy from 1950.

The then Prime Minister of India, Shri Lal Bahadur Shastri decided that the same approach should become the basis of a National Dairy Development policy. He understood that the success of Amul could be attributed to four important factors. The farmers owned the dairy, their elected representatives managed the village societies and the district union, they employed professionals to operate the dairy and manage its business. Most importantly, the cooperatives were sensitive to the needs of farmers and responsive to their demands.

The National Dairy Development Board was set up with the basic objective of replicating the Amul model. Dr. Kurien was chosen to head the institution as its Chairman and asked to replicate this model throughout the country.

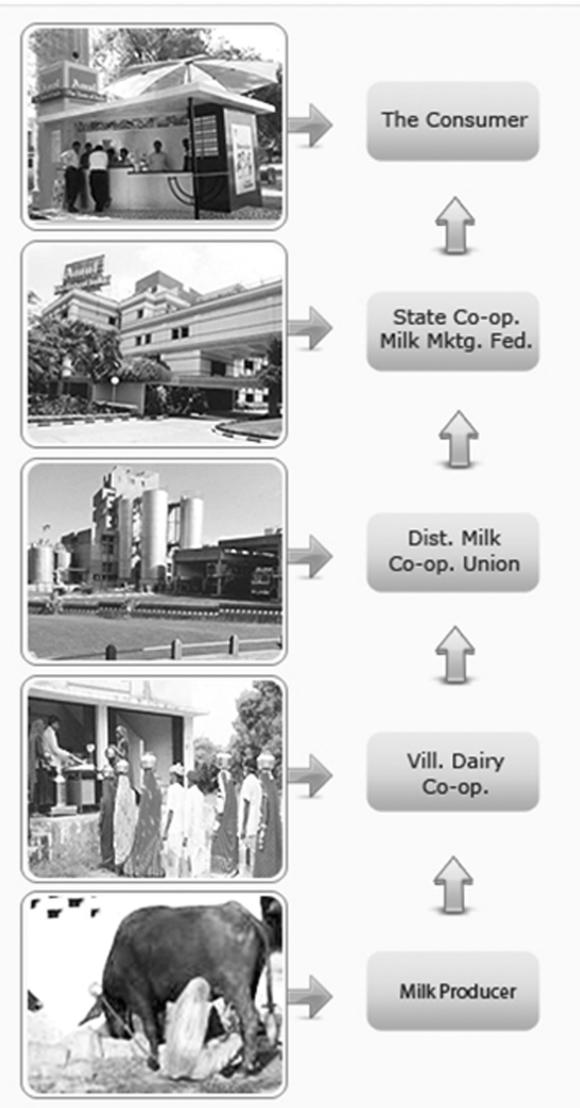
The Amul Model

The Amul Model of dairy development is a three-tier structure with the dairy cooperative societies at the village level federated under a milk union at the district level and a federation of member unions at the state level.

- Establishment of direct linkage between milk producers and consumers by eliminating middlemen
- Milk Producers (farmers) control procurement, processing and marketing
- Professional management

The Amul Model has helped India to emerge as the largest milk producer in the world. More than 16 million milk producers pour their milk in 185903 dairy cooperative societies across the country.

Their milk is processed in 218 District Co-operative



Milk Unions and marketed by 28 State Marketing Federations, ensuring a better life for millions.

Challenges

The dairy sector today is witnessing a host of challenges and 'business as usual' may not lead us in sustaining the gains of the past decades and continue to make dairying a remunerative activity.

The factors which are impacting the sustainability of dairying include challenges associated with low productivity of milch animals, natural resources constraints, rising feed/fodder costs, price volatility due to integration with the global market, lack of awareness on scientific animal management, animal healthcare, shift to non-dairy activities with relatively less drudgery, especially by the younger generation, adverse impact of climate change etc. These challenges can only be addressed by adoption of innovative technologies and approaches in

a way that contributes to enhance farmers' income and promote dairying as a sustainable livelihood option for them.

Investment Opportunities in Dairy Sector in Africa

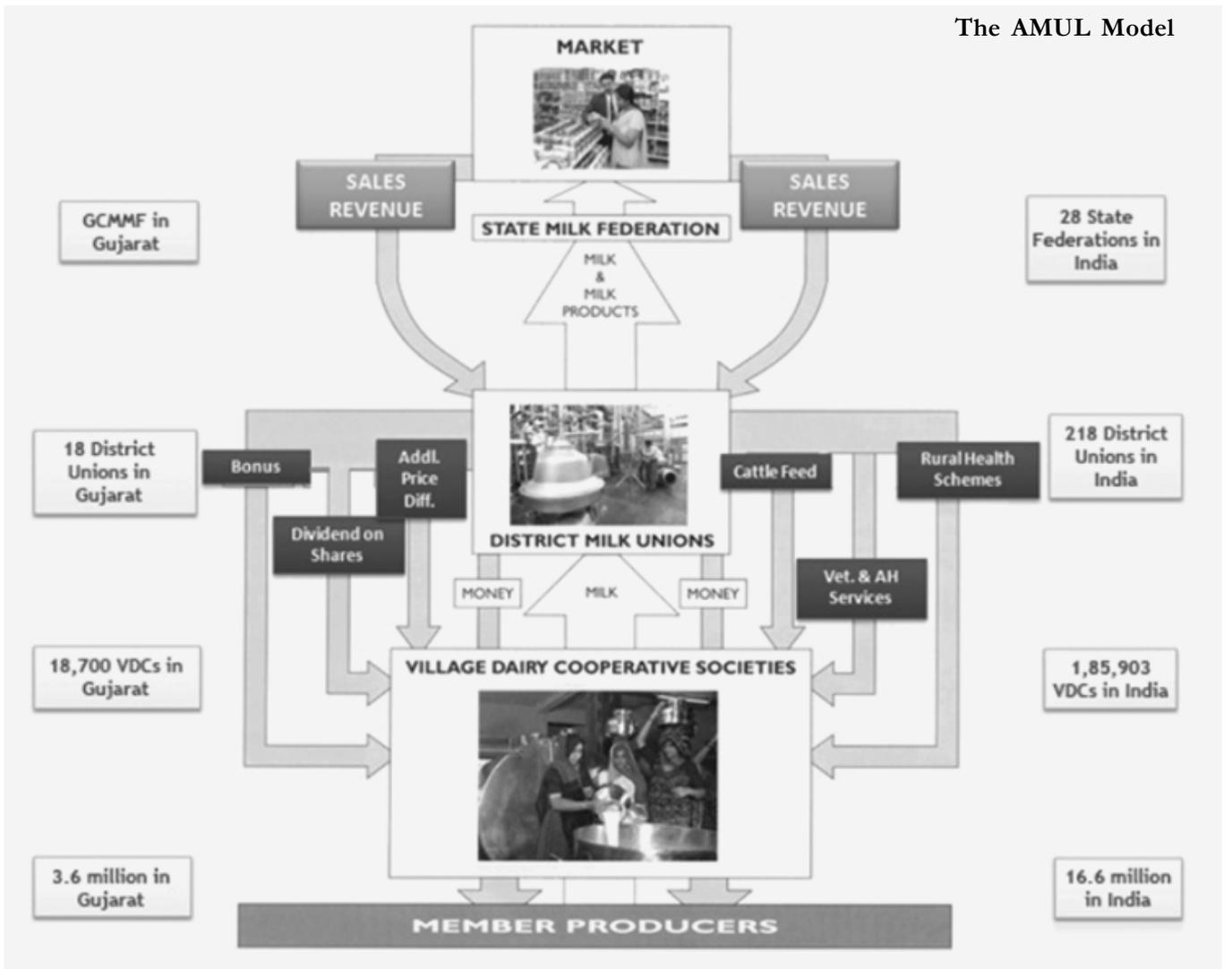
Africa today is where India was 40 years ago. In the coming decade, Africa will drive growth for global markets. McKinsey estimates Africa has 60 per cent of the world's uncultivated arable land, making it apt for green revolution.

Dairy is one of the most important agricultural sector in Sub-Saharan Africa with a huge potential for alleviation of poverty and improving food security and nutrition. Productivity is extremely low with some countries in Africa recording as low as 450 litres per year is cow. Infrastructure is still undeveloped. Milk consumption in Africa is the lowest estimated at 50 kg per capita per annum. Dairy production growth is still below the 1% mark, with the total continental production accounting for less than 3% of the total world milk production. Africa Spends approx \$500 million every year on milk imports from Europe and North America. The ratio of milk supplied for processing is less than 15% of the milk produced. Within the common market for Eastern and Southern Africa (Comesa) region, dairy product demand is now at 14 million tons, with the region producing only six million tons. The Eastern African region is the highest milk production zone in Africa and has an excellent ecology for dairy production.

Lots of investment opportunities exist within the industry for donor, private and public sector partnerships. There is a potential in investing in processing of milk for local markets and exports. The opening of milk plants through Indian investments will provide the low cost/affordable technologies and equipment for small scale processing. Establishment of reliable collection centers in the major producing areas and transportation of milk to the processing plants. Establishment of more processing plants to cater for the excess production for Butter, Cheese, Yoghurt, Ice Cream, etc.

There is a potential in investing in processing of milk for local markets and exports. The opening of milk plants through Indian investments will provide the low cost/affordable technologies and equipment for small scale processing.

- Establishment of reliable collection centers in the major producing areas and transportation of milk to processing plants.
- Establishment of processing plants to use excess milk production for Butter, Cheese, Yoghurt, Ice



Cream, etc.

- Production of powdered milk for use in ice cream manufacturing, confectioneries and at homes.
- Local commercial dairy breeding and production of Semen will reduce the importation of heifers.
- Local and regional cold distribution chain to minimize production loss and deterioration.

Export of Machinery

There is a great scope for the Indian exports of dairy machineries in Africa. At present, the total export of dairy machinery is approximately ₹250 million which could double in next five years. But the dairy machinery manufacturer needs to improve upon the overall quality of dairy machinery, in terms of selection of the material, design of the machinery, fabrication, surface finishes, etc.

Conclusion

- Though milk production has been increasing in

Africa over the years, demand has also increased and the gap between these two is widening up.

- Due to population growth and increase in per capita consumption, demand for milk is expected to increase, even more, in the future years. Increasing milk production to satisfy demand is therefore a challenge to African dairy systems.
- However, sector policies, organisational structures and support services for dairy farmers need to be properly oriented to stimulate dairy development especially by strengthening the dominant informal sector and encouraging specialised small and large scale dairy production.
- Potential exists for investing in commercial dairy farming and processing of milk and milk products and there is a great scope for the export of plant and machinery to Africa from India.