Approach Paper

Workshop on Sustainability in Dairy Sector and Circularity

A. Background

Dairy is crucial for ensuring food, nutrition and livelihood securities for India. More than 8 Crore families, mostly small and marginal farmers practice dairying as a livelihood in India. With assured returns in fixed intervals, dairying ensures regular cashflow for farmers.

India's livestock sector contributes around 30% of GVA to agriculture sector (or 5% of total GVA) in which dairy plays crucial role contributing more than 80% of Livestock GVA.

India continues to remain world's highest milk producer contributing nearly 25% of word's milk production. In near future, India while satisfying the national demand is expected to be a key contributor to the global demand of milk and milk products.

While leveraging opportunities offered nationally and globally, Indian Dairy also needs to address various challenges such as ensuring enough returns to the dairy farmers to continue to practice dairying as a livelihood, ensuring availability of feed, fodder and other inputs, improving productivity of animals, assured and remunerative market linkage. In the recent times, a prominent challenge faced in dairying is climate change which has been affecting, health, productivity of animals and availability of feed and water.

Though Indian Dairying have largely withstood the challenges and has remained sustainable owing to circularity of practices, in the rapidly changing external environment, the idea/practice of circularity need to be strengthened further to ensure long term sustainability of the dairy sector.

B. Circularity in Indian Dairy Sector- A traditional perspective

India's 75% of bovine ownership is with small and marginal farmers who represent about 85% of total farming community in India though they manage only 45% of Agricultural land. The bovine ownership remains far more equitable than land in India, that too controlled by small and marginal farmers who require significant attention of policy makers and administrators. Any support to dairying has a greater and equitable impact as compared to agriculture.

These small and marginal farmers have traditionally been practicing dairying harnessing the circularity and its interdependencies with agriculture. Agriculture residues remained a key feed for animals. The dung and urine produced by animals formed a key input for agriculture in various forms and as an energy source too. Bovines were also integral part of agricultural operations providing bull power.

Being practiced at a scale of 2-3 animals per household, dairy's requirement of water and energy remained minimal and labor too was absorbed within the family itself.

Hence, with a remunerative and assured market being available for milk, a small and marginal farming household found dairying as a secured livelihood activity.

C. Challenges to Dairy circularity- In changing socio-economic context

The rapid population growth, urbanization and industrialization in last century, has resulted in immense stress on land, agriculture and overall ecology. Consequently, Dairying in India too is facing lot of challenges disrupting its circular nature.

With economies of scale setting in, use of bovine power in agriculture is no longer required. The changing cropping pattern and shift towards cash/high value/mono crops is gradually disrupting the practice of residue-based feed or producing fodder within agriculture. The challenge of stray/dry animals is faced by most of the regions in the country.

With settlements getting more denser and a quest for clean cooking options, use of dung as direct energy source has diminished though its use in agriculture as input continues. With gradual increase in scale, need for alternate livelihoods in urban areas, shrinking family sizes, family labor is no longer sufficient and need for energy and water as inputs too has increased.

Additionally, the changing climatic conditions too have been affecting animal health, their productivity and thereby the livelihood of dairy farmers.

While addressing the challenge of climate change, emissions from dairying especially in terms of entering fermentation and manure management is also highlighted. Indian Dairying while taking up measures for long term sustainability needs to respond to the challenge of mitigating its own emissions/carbon footprint.

D. Manure Management as a key initiative to ensure sustainability through circularity

Dairy sector lead by National Dairy Development Board and with support from Government of India has undertaken several initiatives towards preserving or rather redefining the circularity in certain aspects to address the challenges presented above. Manure Management is one such key initiative which contributes significantly to the circularity.

Effective use of dung, harnessing its potential as a source of clean energy and organic fertilizer, is being made through different types of manure value chain models. Household level biogas plants are being setup to provide clean cooking energy to the households. Slurry produced in these biogas plants is utilized primarily in Agriculture fields or is aggregated to produce slurry based organic fertilizers. The model is popularly known as **"Zakariyapura model"**.

In another model, large quantity of dung is aggregated and fed to a centralized biogas plant situated near a dairy plant. The biogas produced is utilized in the dairy plant to satisfy thermal and electrical energy needs of the plant. While the slurry produced is converted in to organic fertilizers. The model is popularly known as **"Varanasi Model"**.

In third model, Dung is utilized in large capacity biogas plant to produce Compressed Biogas (CBG) to be used as vehicle fuel. The slurry produced is utilized to produce organic fertilizer. The model is popularly known as **"Banas Model"**.

Government of India, State Governments, NDDB and various institutions including dairy cooperatives are replicating these models at different scales. Various cross sectoral partnerships are also being firmed up to strengthen and replicate the models.

NDDB's partnership with Suzuki R&D Center India Pvt Ltd (SRDI), Gujarat State Fertilizer and Chemicals Ltd (GSFC) and Oil and Natural Gas Corporation (ONGC) are some of the examples of this.

An efficient manure value chain model while ensuring utilization of dung as clean energy and organic fertilizer, also contributes to enhancing income of farmers, improving soil health, carbon emission reduction, improving rural sanitation and contributing to human and animal nutrition.

With dung getting established as a commodity, non-milking dairy animals too can be taken care of without any additional burden minimizing the challenges of stray cattle.

E. Going Forward

While the ongoing initiatives mentioned above are promising, they need to be scaled up systematically and swiftly. And while taking up these measures the focus must not be lost on livelihood security of small and marginal dairy farmers. Long term financial viability of these models is also key to ensure they are continuing to be scaled up or replicated.

Appropriate financial and policy support too is of very much significance for these models. A policy framework which enables and incentivizes industry to take up such initiatives would be key. The framework needs to take up a sectoral perspective wherein interests of various types of manufacturers, suppliers, service providers, dairies, CBG/ CNG marketers, fertilizer companies and agriculture marketing agencies are taken care of for collective benefit.

A robust financial model, which will provide grant/credit support at the various stages would help in generating and continuing the demand for the model.

F. Conclusion

In the context as set above, it is proposed to conduct a workshop to be hosted by Department of Animal Husbandry and Dairying, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India on 3rd of March at Bharat Mandapam, New Delhi on the theme of "Sustainability in Dairy Sector and Circularity". Hon'ble Minister of Home Affairs and Cooperation has kindly agreed to inaugurate the workshop in presence of Minister of Fisheries, Animal Husbandry and Dairying.

The workshop seeks participation of key Ministries of Government of India such Jal Shakti, MNRE, Agriculture, Fertilizer, Environment and Forest. It also seeks participation on Chief Secretaries and concerned Secretaries from every state. The participation is also sought from the key stakeholders such as Dairy Cooperative Federations, Milk Unions mentioned,Oil Marketing Companies, Biogas suppliers/manufacturers, Corporates setting up biogas plants, fertilizer companies, Dairy Cooperatives and Companies etc.

The workshop proposes to conclude with an ideal and financially viable manure value chain model for different scale of operations and a draft policy framework endorsed by all the stakeholders which would be submitted to Government of India for consideration.