



## Dairy Sector and Climate Change

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### Why in News

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The **dairy industry has been a subject of intense debate** in recent years, **fueled by climate change crisis concerns** worldwide as well as the **advancement of various plant-based alternatives** claiming to be more sustainable replacements.

### Key Points

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- **About:**
  - With the help of **White Revolution**, India has transitioned from a **milk-deficient country to the largest producer of milk globally**.  
The **Anand model (Amul)**, which has been replicated across the country, boosted milk production.
  - Harvesting animals for **dairy and animal-based products** is crucial for **food security, poverty alleviation and other social needs**.
  - However, there are **harmful consequences of animal harvesting on climate**.
  - Further, **animal rearing has been criticized heavily by** non-profit organisations like **People for the Ethical Treatment of Animals (PETA)**, for performing cruelty against animals.
- **Importance of Dairy Sector:**
  - **Economic Dependence:** Harvesting animals for dairy and animal-based products in India is a major source of livelihood for **150 million dairy farmers**.
    - The dairy sector accounts for **4.2% of the national gross domestic product**.
    - Dairy sector is the **second-largest employment sector** after agriculture in India.
  - **Social Importance:** Dairy products are a **rich source of essential nutrients** that contributes to a healthy and nutritious diet.  
With demand for high-quality animal sourced protein increasing globally, the dairy sector is well placed to contribute to **global food security and poverty reduction through the supply of dairy products**.

- **Impact of Dairy Sector on Climate Change:**

- **GHG Emission:** Agriculture contributes approximately **16% of India's greenhouse gas (GHG) emissions** which is released by cattle during dairy farming.
  - Methane from animal waste contributes about 75% of the total GHG emissions of the dairy sector.

Recently, Indian Council of Agricultural Research (ICAR) has developed an anti-methanogenic feed supplement '**Harit Dhara**' (HD), which can cut down cattle methane emissions by 17-20% and can also result in higher milk production.
  - The three major GHGs emitted from agri-food systems, namely **methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and carbon dioxide (CO<sub>2</sub>)**.
- **Increasing Pressure on Natural Resources:** With this increasing demand for dairy, there is growing pressure on natural resources, including freshwater and soil.
  - Multinational companies such as Nestle and Danone have been accused of **promoting water-intensive dairy industry** in Punjab and the neighbouring states, which is fast depleting groundwater.
  - Unsustainable dairy farming and feed production can lead to the **loss of ecologically important areas, such as wetlands, and forests**.
  - The alarming loss of biodiversity is attributed to water- and energy-intensive crops needed to feed the cattle.
- **Growing Demand:** Global demand for dairy continues to increase in large part due to **population growth, rising incomes, urbanization and westernization of diets** in countries such as China and India.

- **Others Arguments Against Dairy Sector:**

- **Cruelty Against Animals:** Despite guidelines for appropriate handling of cattle, cruel practices continue unabated to boost production efficiencies as demand for dairy and meat continues to grow. These include:
  - Artificial insemination,
  - Widespread use of growth hormones (oxytocin) to boost milk production,
  - Slaughter of male calves,
  - Abandoning cattle that are sterile,
  - Selling livestock to slaughterhouses and tanneries when they can no longer produce milk, etc.
- **Zoonotic Diseases:** Animal exploitation through animal farming, destruction of natural habitats, livestock-associated deforestation, hunting and trading of wildlife are the leading cause of **zoonotic diseases** caused by germs that spread between animals and humans.

The novel **coronavirus disease (Covid-19) pandemic** is the latest in the long list of such diseases.
- **Food Adulteration:** Milk and milk products in India are not free from adulteration.
  - A recent **Food Safety and Standards Authority of India (FSSAI)** report revealed the presence of aflatoxin M1 and hormone residues in them beyond permissible limits through unregulated feed and fodder.
  - This led to a variety of lifestyle diseases in humans.

- **The Proposed Alternative:**

- **Veganism:** Veganism is a way of living that attempts to exclude all forms of animal exploitation and replace it with plant-based products.
  - In developed countries, the vegan movement is gaining momentum due to ecological and health benefits of plant-based food including milk.
  - PETA is promoting **vegan alternatives to replace animal-based foods**.
- **Criticism of Veganism:** Amul and its supporters argue that PETA's moves may be a ploy for multinational companies to promote synthetic milk and genetically modified seeds through a misinformation campaign.
  - They have raised questions about the suitability of chemical-laden, lab-produced plant-based milk for human consumption.
  - Further, FSSAI notified that the word 'milk' cannot be used for plant-based dairy alternatives.

## Way Forward

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- **Alternate Employment & Social Forestry:** With livelihoods of 150 million at stake, policymakers will need to **identify alternative employment opportunities** for the displaced masses.

Large-scale **social forestry** could be an answer to address this fall-out, with positive consequences to the planet.

- **Sustainable Dairy Practices:** There is a need to proactively ramp up sustainable dairy practices, which may include:
  - In order to reduce emission intensity of milk, the sector needs to urgently act to realize the existing potentials for GHG emission reduction **through technological and farm best practices interventions and solutions.**
  - Fostering changes in production practices that **protect carbon sinks (grasslands and forest)** by targeting drivers linked to degradation of natural ecosystems, agricultural expansion and deforestation.
  - Reducing its demand for resources by better integrating livestock into the **circular bio-economy.**
    - This can be achieved by **recycling and recovering nutrients** and energy from animal waste.
    - **Closer integration of livestock with crops and agro-industries** at various scales to make use of low value and low-emission biomass.

**Source: DTE**