TRAINING & WORKSHOP

PREVENTION AND SUSTAINABILITY IN THE INDIAN DAIRY SECTOR

FOR PRODUCTIVITY, LIVELIHOOD GENERATION AND CLIMATE RESILIENCE



Framing presentation

Prevention and sustainability in the Indian dairy sector

Rajeshwari Sinha
Sr. Prog. Manager, Sustainable Food Systems Programme, CSE

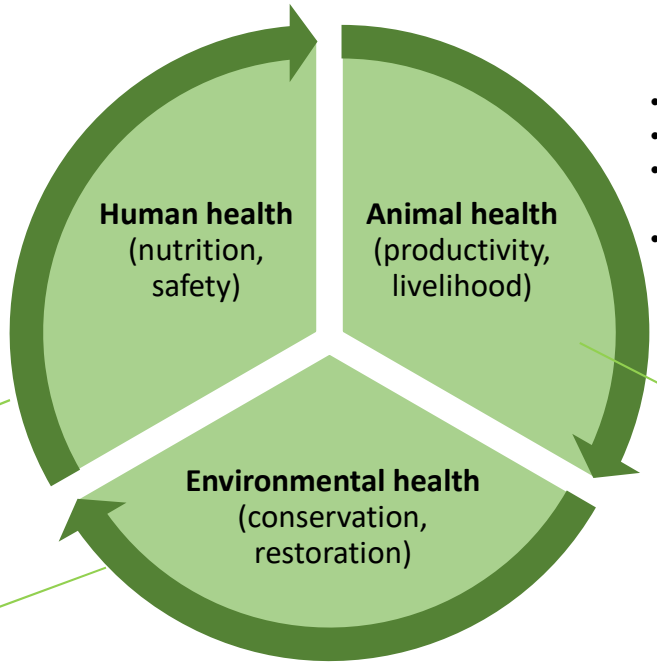
Prevention and sustainability through One Health lens

CONSUMER FOCUS

- Prevent contamination and adulteration
- Point-of-care testing, routine surveillance and cold chain infrastructure
- Fair price for farmers
- Consumer trust restored

Better supply chain control will lead to safe milk, nutrition security for the consumer; better incomes for stakeholders

Environmental stewardship means less pollution, natural resource degradation, emissions; better resilience, health, savings



PREVENTION FOCUS

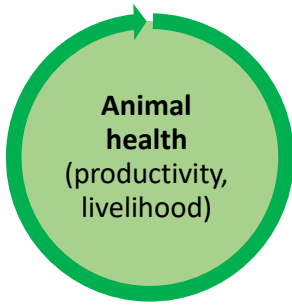
- Disease prevention and control
- Reduce antibiotic use and AMR
- Improve veterinary care, diagnostics, surveillance
- Animal welfare

Healthy animals mean less disease, outbreaks, expenses, environmental impact; better productivity, incomes, safe milk, nutrition

CIRCULARITY, MITIGATION FOCUS

- Waste to energy
- Waste to organic fertiliser
- Enteric emission mitigation

PRIORITY 1: Containing AMR – the One health problem!



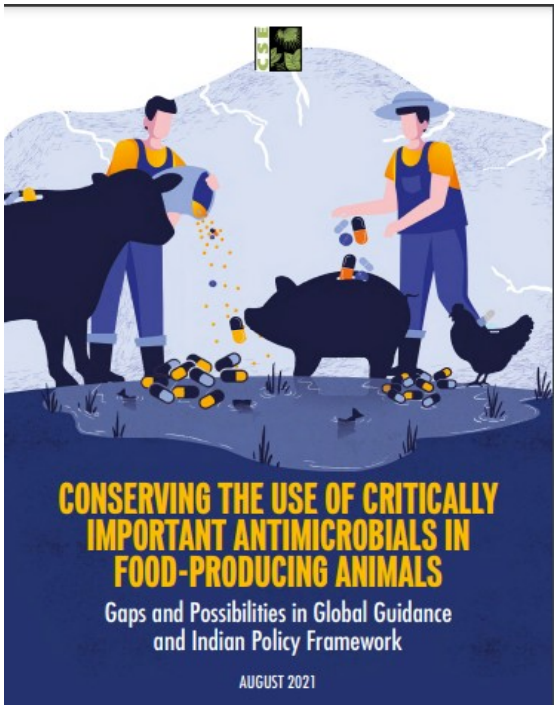
Antibiotic use in Indian dairy sector

HPCIAs

- **3rd, 4th and 5th generation cephalosporins**, Eg: Cefotaxime
- **Quinolones and fluoroquinolones**, Eg: Levofloxacin

CIAs

- **Aminoglycosides**, Eg: amikacin
- **Penicillins**
- **Ansamycins**, Eg: Rifampicin
- **Drugs used solely to treat tuberculosis or other mycobacterial disease**



After colistin ban in 2019, the MoHFW has recently (2025) banned several antibiotics from use in food animal production systems in India.

Time to ensure implementation

Led by NDDB (with TDU), ethnoveterinary medicine shows huge potential



EASY TO SWITCH

Low-cost ethnoveterinary medicines can help curb the use of antibiotics in Indian dairy sector and combat the overlooked pandemic of antimicrobial resistance

DEEPAK BHATI, RAJESHWARI SINHA AND AMIT KHURANA

NEW DELHI

SOME LIFESAVING solutions are so simple and obvious that they remain hidden in plain sight. This is particularly true for livestock disease treatments that have evolved over generations through experiences of communities, withstood the test of time, are embedded in local culture and practices and yet, the knowledge remains untapped in the absence of standardisation and scientific validation. More often than not, dairy farmers, and some field veterinarians, indiscriminately use antibiotics for treating even common infections in animals.

Researchers with Delhi-based Centre for Science and Environment (CSE) found evidence of such rampant misuse and overuse of antibiotics in 2020 and 2021, during consultations with dairy farmers and experts from various sectors such as animal husbandry, food safety, human health. They had observed that most dairy farmers skip the critical withdrawal period—a prescribed number of days during which the treated animal should be excluded from the milk supply chain to allow antibiotic residues to be excreted out of its body. In 2020, the Food Safety and Standards Authority of India (FSSAI) had also found antibiotic residues in milk samples.

Such abuse of antibiotics not only adds to the treatment costs, but also increases the burden of antimicrobial resistance (AMR). Interaction between antibiotic residues and pathogens in various environmental matrices (soil and water) and in living organisms can lead to formation and spread of bacteria that are resistant to antibiotics. A

Assessment on use of ethnoveterinary medicines in the Indian dairy sector, 2022

NDDB's Mastitis Control Popularization Project

2016-Oct 2022

7.8 lakh cases in 25 unions

Overall **80.4%** cure rate

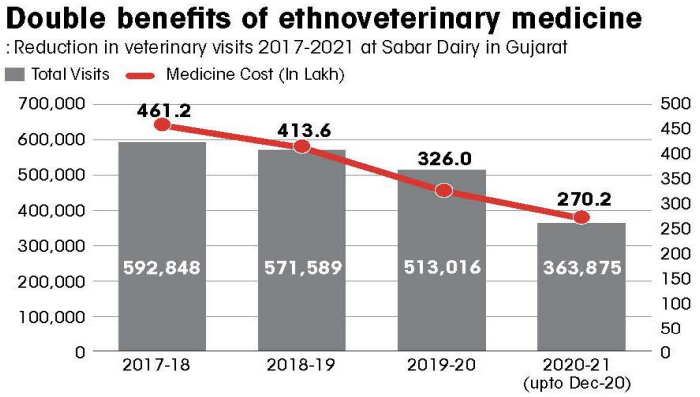
Disease	Number of unions/producer companies treating with EVM	Total number of cases treated across unions (in thousands)	Cure rate (%)
Mastitis	25	255	**78.4**
Fever	18	163	**82.2**
Diarrhea	20	151	**84.4**
Indigestion	19	32	**83.4**
Wound	16	9	80.5
Bloat	18	7	76.0
Retention of placenta	17	6	71.2
Lumpy skin disease	8	3	66.2
Prolapse	17	2	69.6
Sub-total		628	80.9
Other ailments		152	78.3
Total	25	780	80.4

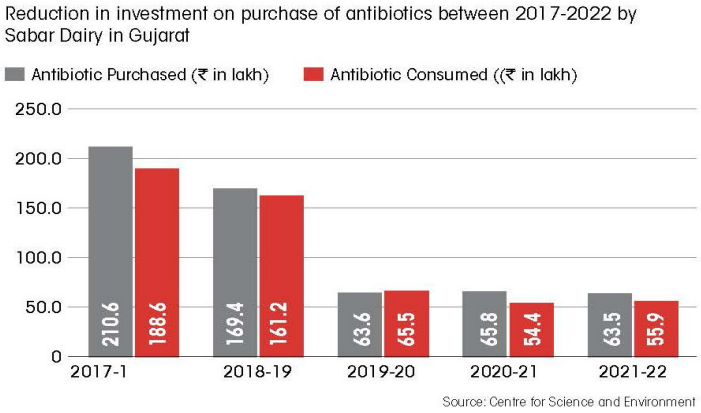
> six lakh cases

Animal health (productivity, livelihood)

EVM benefits adding to sustainability – can be transformative !

Animal health (productivity, livelihood)





- Safe milk and milk products for consumer
- Reduced treatment expenses
- Less loses: productivity and income

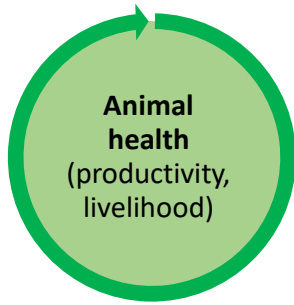
EVM: The way forward to scale up the adoption…

Animal health (productivity, livelihood)

- Strong and consolidated evidence for different diseases and conditions (beyond NDDB related projects)
- Ensure standardization and quality of preparations sold and keep them affordable and accessible
- Regulatory framework (such as for labelling, testing, approval etc.)
- Can poultry and aquaculture sectors replicate the success? Who will lead this (cooperative movement not as strong as dairy)
- Leverage the global recognition to EVM. FAO's July 2026 paper on **'Traditional herbal medicines as alternatives to antimicrobials in the livestock sector'** is important part of EVM's global journey. It also highlights similar concerns that should be addressed
- **EVM can be India's solution to the world**

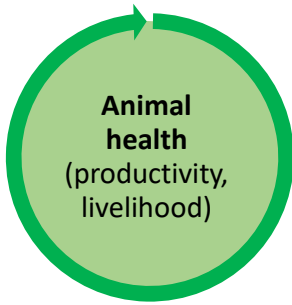


Prevention pillars



Vaccination	**Farm biosecurity**	**Better farm management practices**
Feed	**Alternatives**	**Improving resilience traits**

Key issues (examples)



- **Policy**
  - Regulatory framework for feed/alternatives
  - National policy/guideline on biosecurity
  - Policy backed mainstreaming of EVM
- **Implementation**
  - Resistance to ear-tagging
  - Vaccine adoption hesitancy
- **Extension services**
  - Last mile veterinary connectivity
  - Diagnostic deficits leading to empirical antibiotic overuse
- **Supply chain**
  - Vaccine cold chain disruption
- **Farmer's awareness**
  - On preventive measures
  - On disease management- mastitis, reproductive disorders
- **Cost/Economics**
  - Disconnect in retail vs. farm-gate milk prices
  - Feed price inflation; affordability of balanced ration
  - High cost of veterinary visits
- **Breeds**
  - Indigenous vs Cross-bred productivity
  - Emission status, disease resilience

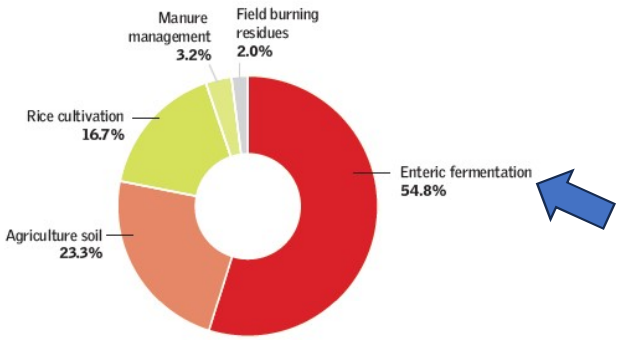
PRIORITY 2: Mitigating emissions

Environmental health (conservation, restoration)

Dairy sector enteric emissions (Greenhouse Gases; methane) are a big part of overall emissions and total enteric emissions

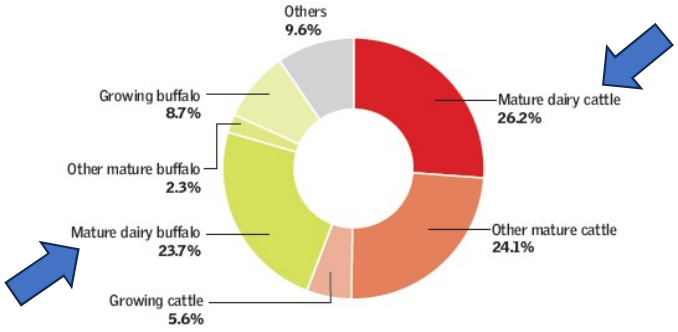
- **Enteric emissions (2020):** 54.8 per cent of agriculture emissions
- **Cattle and buffaloes:** 90 per cent of enteric emissions, 'Mature dairy cattle' and 'mature dairy buffalo' accounted for nearly half (49.8 per cent)
- **Emission mitigation is reported** through ration balancing programme, feed additives, green fodder; breed improvement etc. (limited and sporadic initiatives; huge scope of improvement; GoI data, NDDB/other projects)

Graph 1: Emissions from enteric fermentation and manure management as part of agriculture emissions



Source: BUR-4; Note: BUR-4 reports the use of a global warming potential (100 years) of 21 for methane.

Graph 2: Share of enteric emissions from cattle and buffalo in livestock emissions



Source: BUR-4; Note: BUR-4 reports the use of a global warming potential (100 years) of 21 for methane.

Mitigating emissions: The way forward…



Address the global narrative

- Livestock emissions are 'survival emissions' and not 'luxury emissions'
- Emission-intensity based approach different than emissions
- Value of Indian cattle is not just based on milk
- Low-emitting and less productive indigenous cattle offers resilience, affordability, works well for small-holder
- We need solutions that suit our farmers

Improve our approach

- **Improve emission measurement:** Overcome limitations in measurement and monitoring of emissions that captures the diversity and feed intake (accuracy, specific emission factors, reduce uncertainties etc.)
- **Develop and scale up affordable and practical mitigation solutions** related to feed, fodder, breed, and health
- **Create robust incentives** after due diligence (e.g., carbon credits for enteric emission reduction)

PRIORITY 3: Circularity of resources – revive what we practiced for ages!



Waste to energy

Opportunity 1: Biogas/compressed bio gas generation

- Nearly **three million tonnes** of cow dung per day (about 1.1 billion tonnes per year) and **150–180 crore** litres of cow urine daily
- Several initiatives: National (GOBARdhan; recent allocation of Rs 23000 cr for 10 years) and state level (Godhan Nyay Yojana of Chattissgarh).
- NDDB has also been leading this in many states
- Benefits include – clean cooking fuel, clean energy in remote/rural areas. Reduces fossil fuel consumption, emissions; improves health of the women cooking.
- Important that new initiatives are effectively implemented, scaled up and benefits are measured and documented

Waste to fertiliser

Opportunity 2: Organic fertiliser

- Dairy waste (dung and urine) can play a pivotal role in making India's organic/natural farming movement a success. It has the potential to:
  - Revive the declining soil by improving its biological health
  - Reduce dependence on chemical fertilisers, reduce fertiliser import bills
  - Reduce cost of cultivation, improve incomes
  - Provide chemical free, safe food
- This win-win strategy will need a logistics-backed ecosystem (preferably at the local level) that ensures affordable access to manure fertilisers
- Caution: 'AMR SAFE' manure; recent Indian studies have reported AMR genes in manure

PRIORITY 4: Safe milk and nutrition security



Consumer trust needs to be restored

- Milk to be free from contaminants (antibiotics aflatoxins, pesticides) and toxic adulteration (detergents, urea, disinfectants etc.) and microbiological contamination through water

Dairy, a critical source for nutrition security

- Helps avoid hidden hunger and wasting/stunting in children; source of animal protein for those who eat no/less eggs or meat; source of bioavailable calcium and quality animal fat

Healthier dairy options can help minimize overconsumption of ultra-processed foods/beverages (e.g. namkeen lassi vs. sugar loaded soft drinks)

4,700 Litres Milk Destroyed In Mumbai Food Safety Crackdown

Across multiple raided establishments, officials seized and destroyed 4,710 litres of adulterated and suspect milk valued at Rs 1,85,780 to protect public health.

Press Trust Of India | Mumbai News | Aug

97% milk samples found adulterated in this state: 6 smart ways to check milk purity at home

TOI Lifestyle Desk / etimes.in / Updated: Feb 05,

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Adulteration found in 3,049 milk samples supplied to Karnataka dairies in a year: Govt. informs Council

Published - March 12, 2026 07:01 pm IST - Bengaluru

THE HINDU BUREAU

Maharashtra Milk Scam: How To Identify Adulterated Milk After 2.3 Cr Litre Synthetic Milk Crackdown

An FDA probe in Maharashtra's Dharashiv district has found that over 2.3 crore litres of adulterated milk may have been supplied across the state in the past six months.

by **Tashika Tyagi** Updated: July 15, 2026 12:11 PM

ENVIRONMENT • INDIA

India, the world's leading dairy producer, struggles to rid its market of adulterated milk

Water is often added to Indian milk, but so are chemicals and vegetable oils. The quality of Indian dairy products is therefore frequently questionable, a fact highlighted by a recent scandal in the state of Gujarat.

Thank you!

For more information, contact:

Amit Khurana
Programme Director
Sustainable Food Systems
k_amit@cseindia.org

Rajeshwari Sinha
Senior Programme Manager
Sustainable Food Systems
s_rajeshwari@cseindia.org

Neeraj Kumar
Deputy Programme Manager
Sustainable Food Systems
k_neeraj@cseindia.org