TRAINING & WORKSHOP

PREVENTION AND SUSTAINABILITY IN THE INDIAN DAIRY SECTOR

FOR PRODUCTIVITY, LIVELIHOOD GENERATION AND CLIMATE RESILIENCE



Setting the context

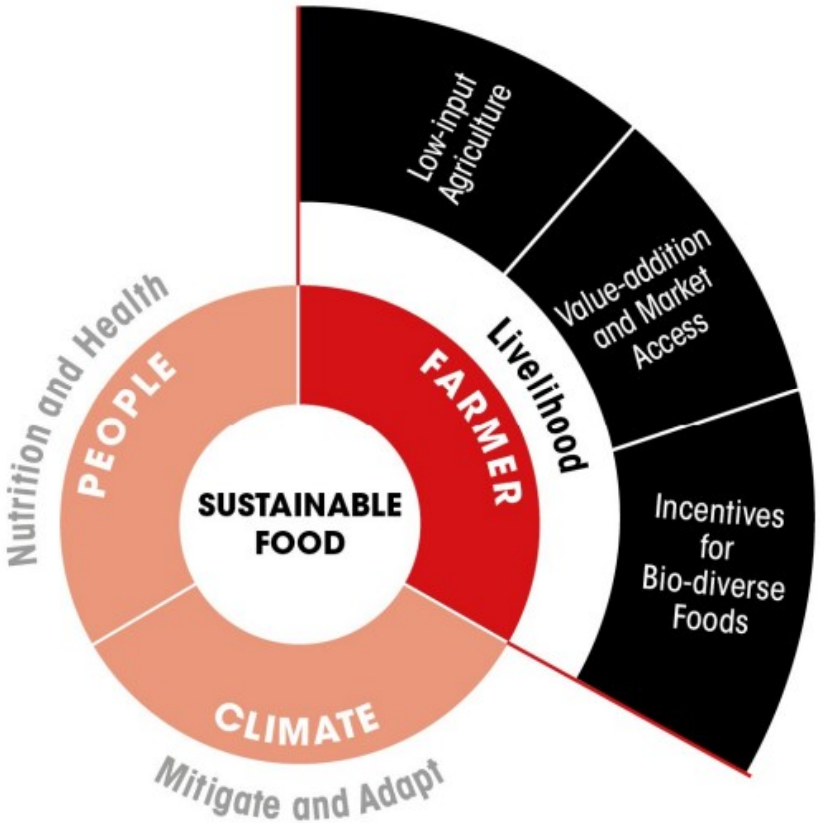
Amit Khurana
Director, Sustainable Food Systems Programme, CSE

Connecting food-climate-farmer-consumer



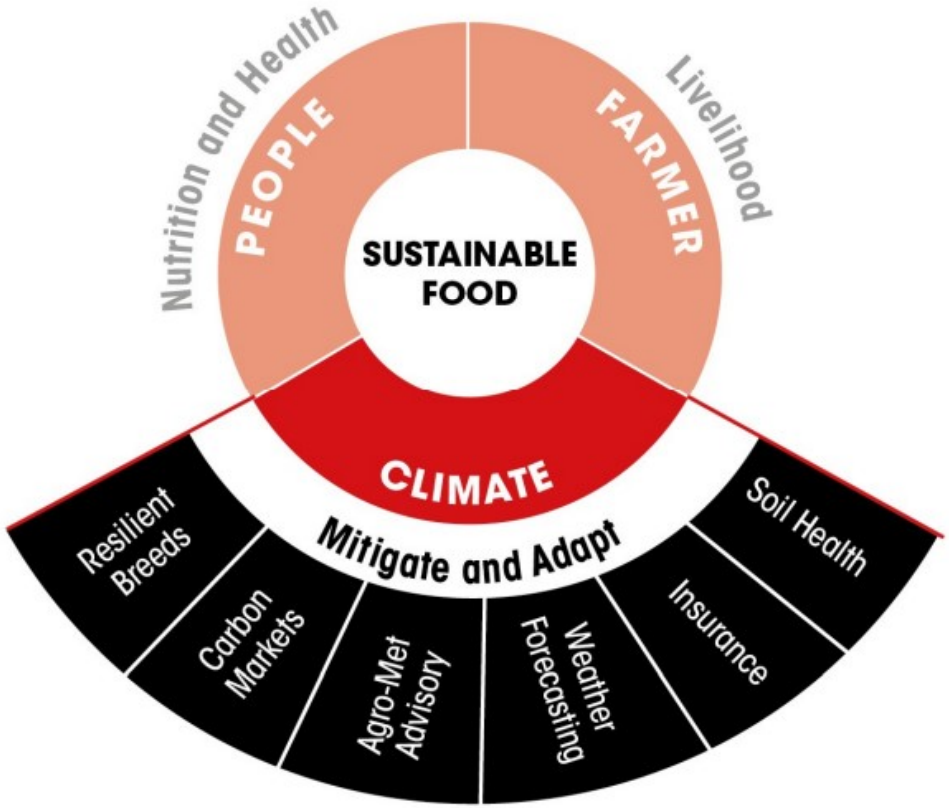
The Livelihood Connect

- **Putting more money in the hands of farmers** means building food systems that will rebuild nature so that there is sustainability; less cost
- Today farmers discount nature; destroy fertility; deplete groundwater; then add costs for chemicals and inputs; this makes them even more vulnerable when the next storm comes
- **Need systems that invest in nature**; low cost but high value Need nutrition for local food security
- **Need producers to connect to markets**



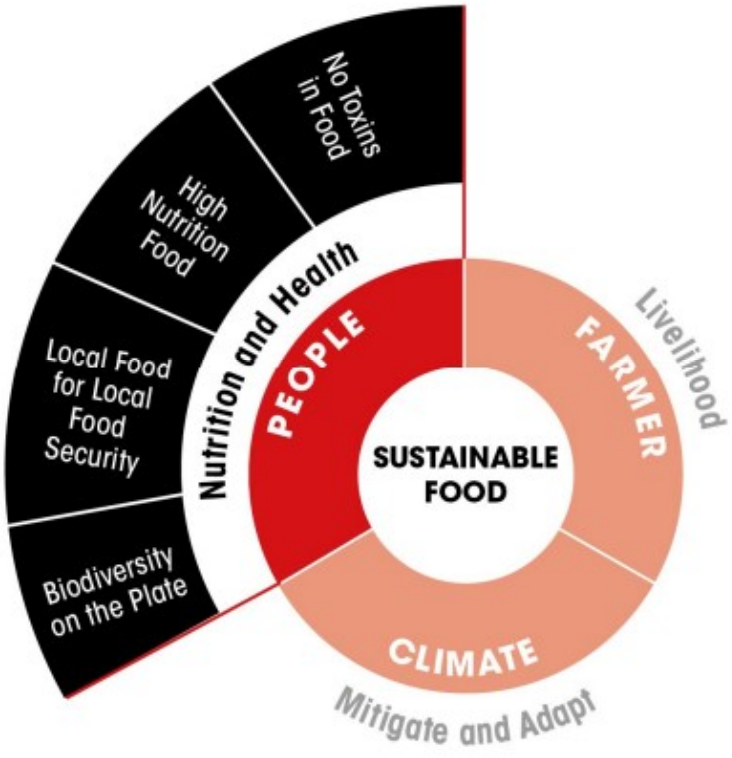
The Climate Connect

- **Agriculture is impacted because of climate change** but this sector is also a major cause of climate change. Biodiversity is about resilience
- Adaptation will only work if farmers have **timely and accurate information about weather anomalies**.
- **Farmers need safety nets** designed for extreme weather and climate impacts.
- **They need insurance systems** that will be designed for uncertain times and high risk.
- **We need carbon markets** to work for producers and not auditors.

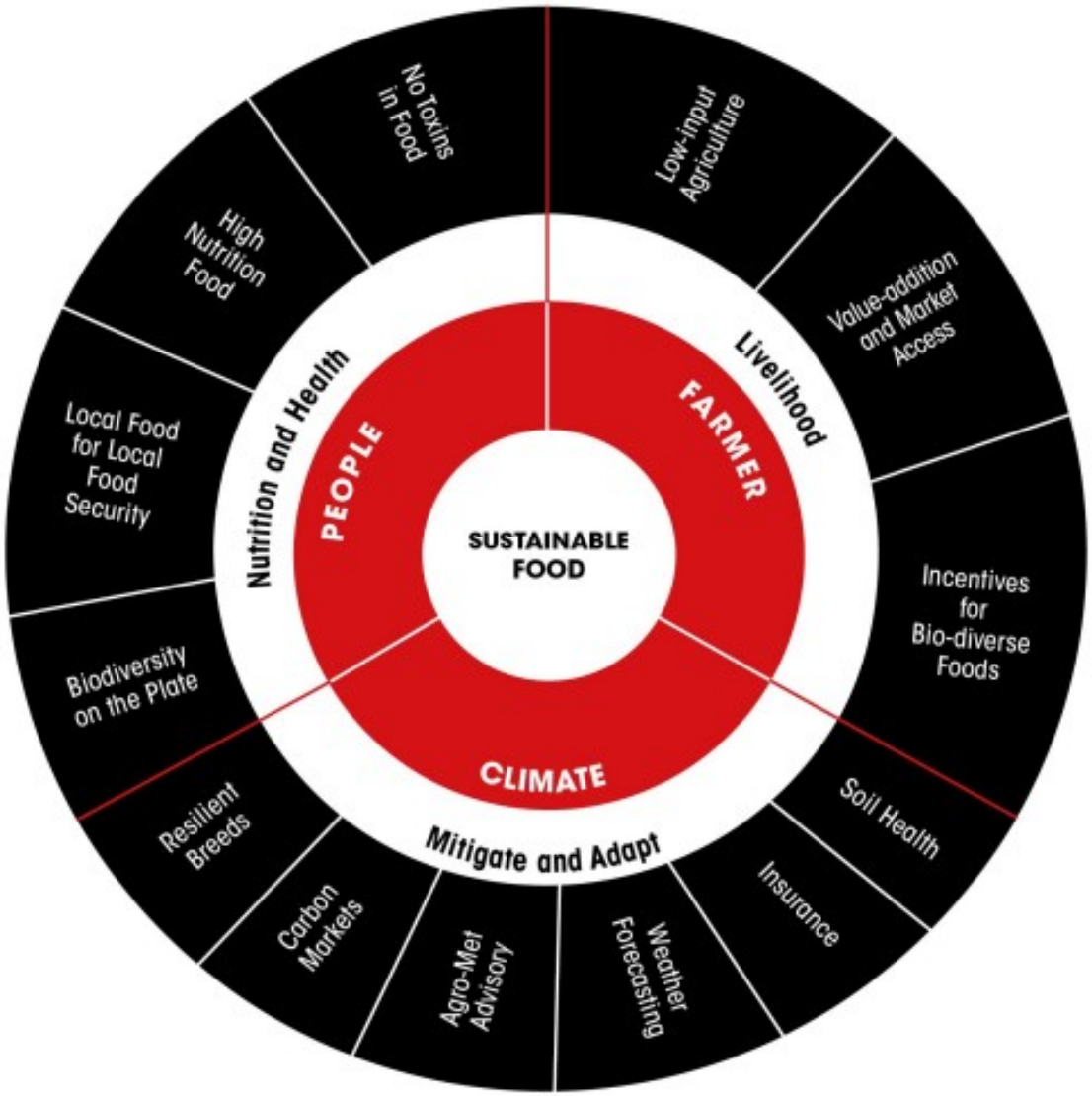


The People Connect

- **What we eat determines our health.** Food is about nutrition food is about medicine. Toxins used for producing food add to our health burden
- If agriculture is redesigned so that there is more money in the hands of producers they will not discount our health and nature.
- **We need not just food; but nutritive food that reaches everyone for food security**
- We need to junk the junk; obesity and NCD is about regulating industry.



Sustainable Food Systems



Sustainability in food systems

- Sustainability is about who grows – local food for livelihood security
- Sustainability is about how we grow – less intensive and less toxic
- Sustainability is about what we grow – biodiversity rich and nature-friendly
- Sustainability is about what we eat – less processed and more bio-diverse and local

Focus 1:

Agro-ecology, agri-climate connections, resilience and livelihoods

Focus 2:

Sustainable livestock systems and reducing AMR

Why should we worry? Triple crisis of AMR!

Crisis 1: Antibiotics are becoming ineffective

- **Critically important antibiotics** losing power to kill bacteria
- **Expensive** antibiotics used
- Treatment options **reducing**

Crisis 2: The antibiotic development crisis

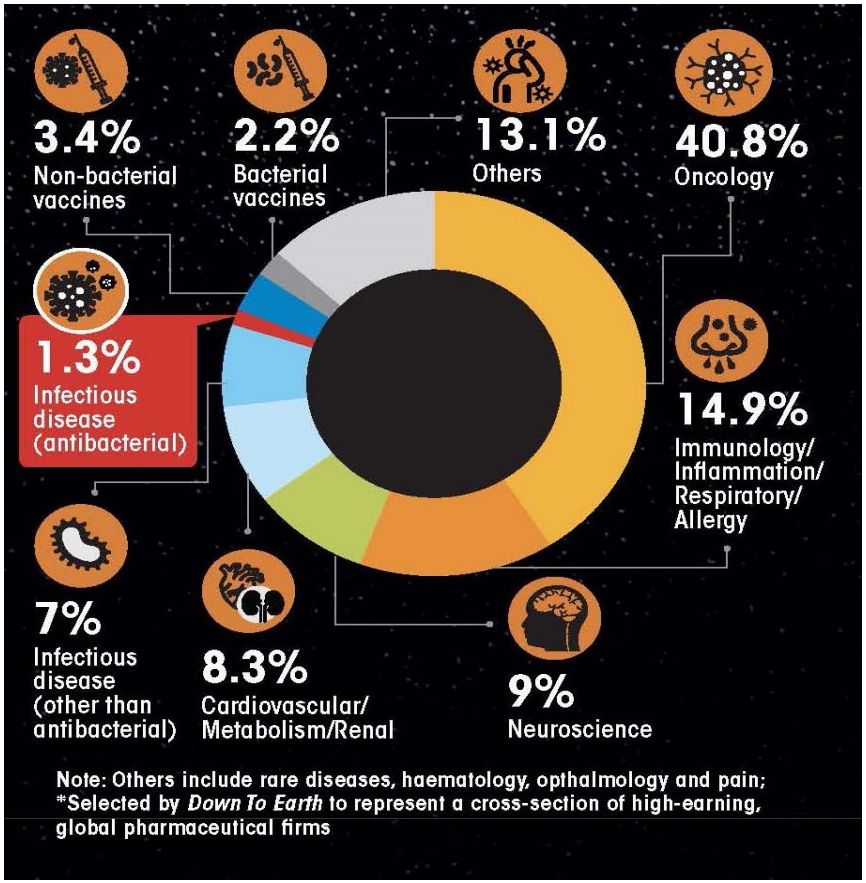
- **No new class of antibiotics developed since 1980s**
- **Those developed over last decade inadequate to treat growing unmet need; growing resistance**

Crisis 3: The issue of antibiotic access

- **Existing** and **newer** antibiotics
- Bigger problem in **LMICs**

Hollow pipeline !

Market failure or commercial interest ?



Out of **1007 molecules** in clinical pipeline of 15 global pharmaceuticals, **only** 13 **are antibacterial** candidates, being developed by **four companies.** 8 out 13 are by one company (GSK).

As on 2022

Impact is beyond human health; more in low- and middle-income countries (LMICs)

Human Health

1.14 M deaths in 2021 (attributed directly)

4.7 M deaths in 2021 (associated with AMR)

- About 85 per cent of deaths estimated in countries of Asia, Africa, Latin America

AMR **killed more people than HIV/AIDS** (0.7 M) or malaria (0.6 M) in 2021

Livelihood, Economy, Development

AMR in livestock can cause **global GDP loss of USD 575 billion**

Annual livestock production losses by 2050 due to AMR is expected to equal consumption needs of **746 million** people

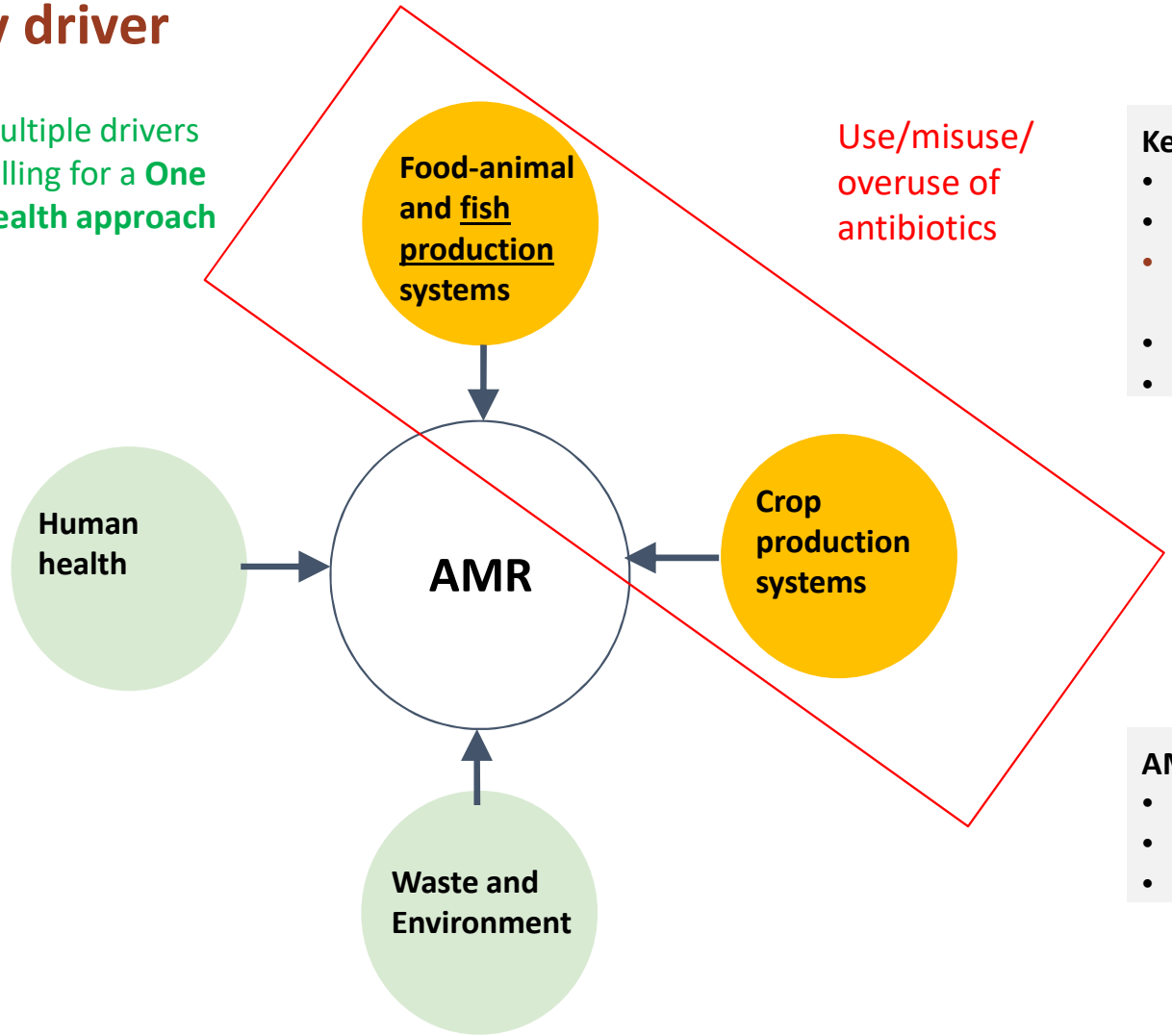
By 2030

Additional 24 million people into extreme poverty; most in LMICs

AMR could derail achievement of several SDGs by 2030

One-Health nature of the AMR problem, and food systems a key driver

Multiple drivers calling for a **One Health approach**



Key sectors

- Fish for meat
- Poultry (eggs and meat)
- **Buffalo and cattle (milk and meat)**
- Bee-keeping for honey
- Crops (food, feed)

AMR determinants

- Antibiotic resistant bacteria
- Antibiotic resistance genes
- Antibiotic residues

Three key issues w.r.t. antibiotic use in intensive food production systems

Antibiotic use

Therapeutic

- **Therapeutic doses**
- **Clinically diagnosed infectious disease**

Non-therapeutic

Growth promotion

- Increase the **rate of weight gain**
- Increase **efficiency of feed utilization**
- **Mass, routine use** (largely through feed at sub-therapeutic doses)

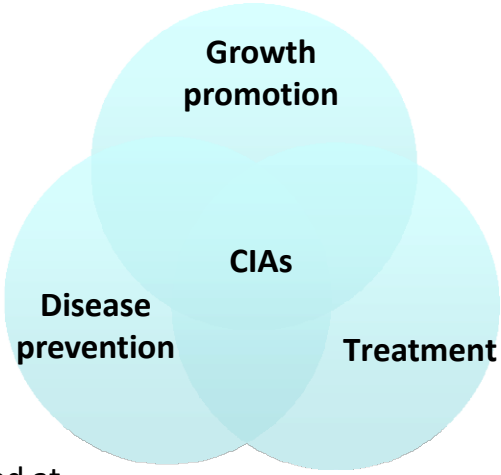
Prevention (prophylaxis)

- Individual or group of animals/fish
- With no clinical sign
- Often routine use

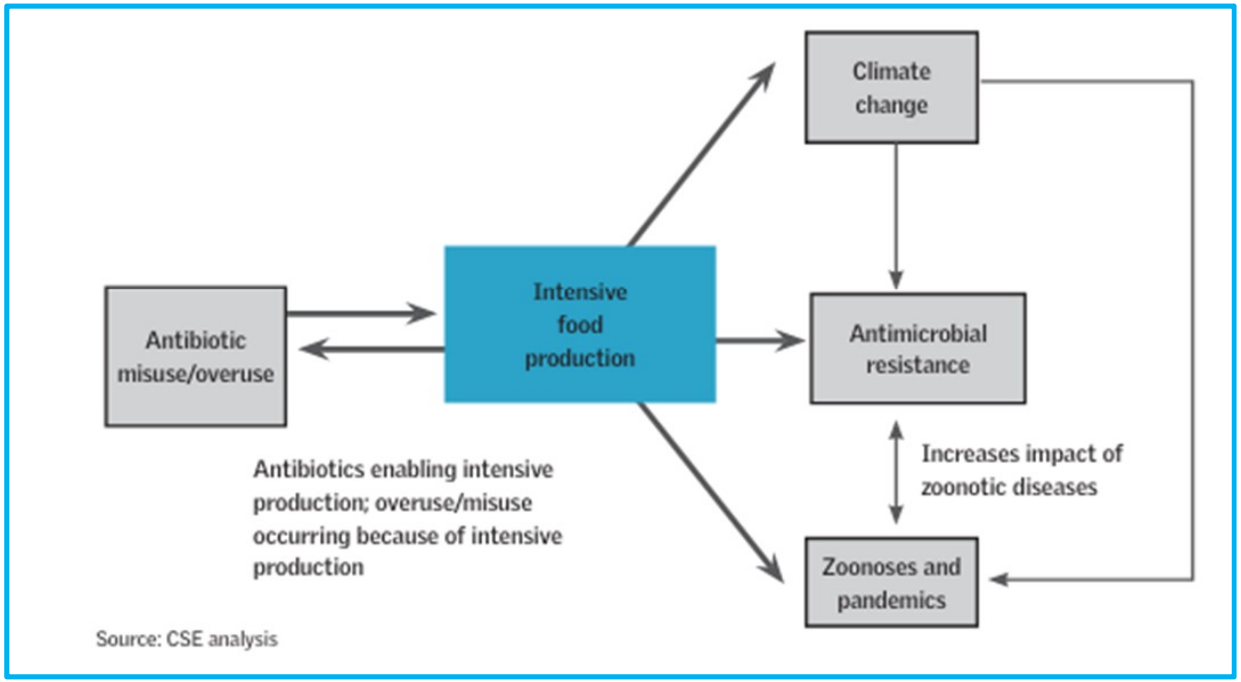
Prevention – (control / metaphylaxis)

- In a **group of healthy animals** (presumed to be infected/may have already been sub-clinically infected because they are at risk of infection), **where one or more animal is already infected**

- **Though non-therapeutic, now being positioned as therapeutic by some agencies. Not 'real' prevention.**



Intensive food production systems: breeding ground for multiple crises – AMR, zoonosis, climate change



- The good part – Indian dairy sector is so far largely about small-holders
- More dependence on intensive systems – more the challenge to remain sustainable
- Cooperative movement that enables decentralized production system is more sustainable.
- Challenge to meet the growing demand and yet be sustainable

Antibiotic misuse/overuse fuels unsustainable intensive systems

Prevention-led pathway for sustainable growth – The only option!

Preventing an occurrence of a disease which eventually reduces the need (and subsequent use) of antibiotics

Why prevention?

- Cost effective approach
- Suitability for a country like India (with a high number of small farmers; growth conditions, less resources)
- Scale up possibility if it has incentives
- Sustainable and transformative
- Perhaps the only prudent approach going forward for growing sustainably

Preventive pillars

- Improving resilience traits
- Biosecurity and farm management
- Quality feed
- Vaccination
- Antibiotic alternatives like Ethnoveterinary medicines (EVM)

Sustainability

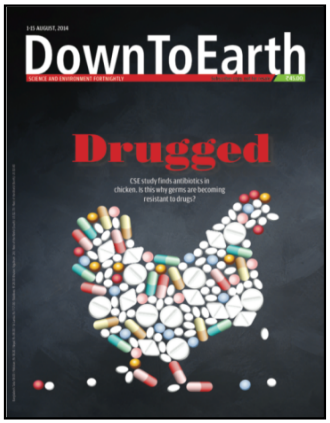
- More productivity, income
- Better trade
- Safe milk and nutrition security
- Less emissions
- Less AMR, less zoonoses
- Improved animal welfare
- Improved resilience
- Greater diversity

CSE's work on Sustainable Livestock Systems and reducing AMR

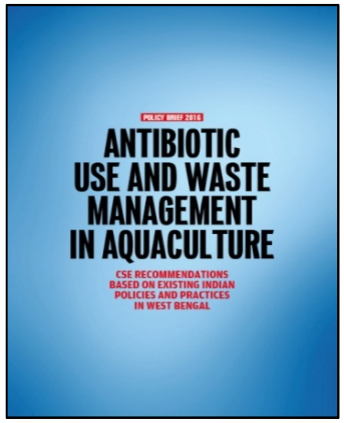
AMR | Food and environment aspects | India



Antibiotics in honey, 2010



Antibiotic use in poultry, 2014



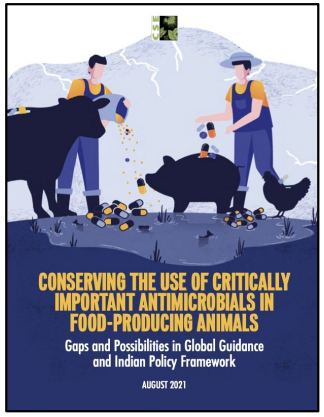
Antibiotic use in aquaculture, 2016



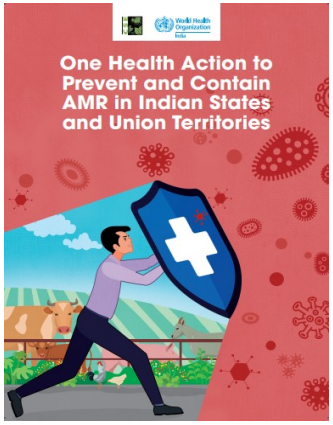
AMR in poultry environment, 2017



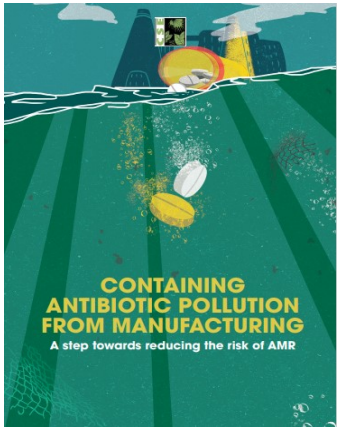
Antibiotic use in fast food supply chain, 2017



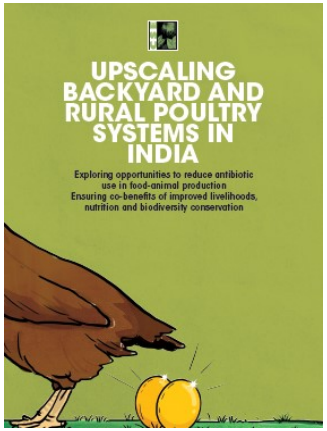
Conserve the use of critically important antimicrobial, 2021



One health action to prevent and contain AMR, 2024



Containing antibiotic pollution from manufacturing to reduce the risk of AMR, 2024



Up-scaling backyard and rural poultry systems in India, 2025

AMR | Food and environment aspects | India



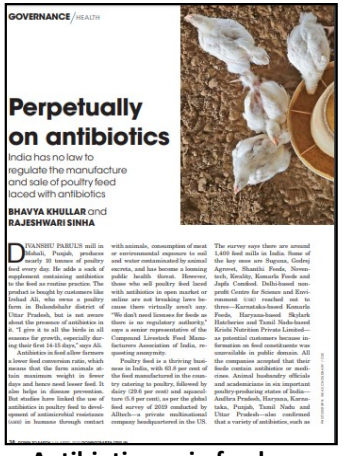
Disposal of pharma manufacturing waste, 2017



Antibiotic use in crops, 2019



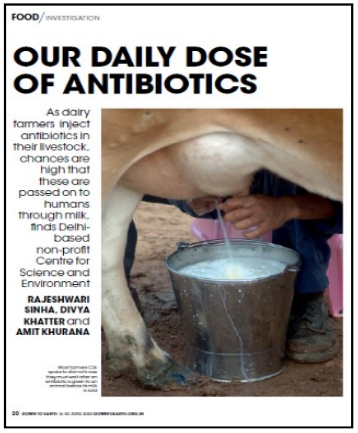
Disposal of unwanted drugs, 2019



Antibiotic use in feed, 2020



Antibiotic use in fast food supply chain, 2020



Antibiotic use in dairy, 2020

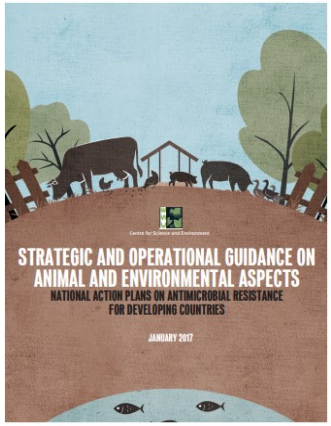


Use of ethno medicines in dairy sector, 2022

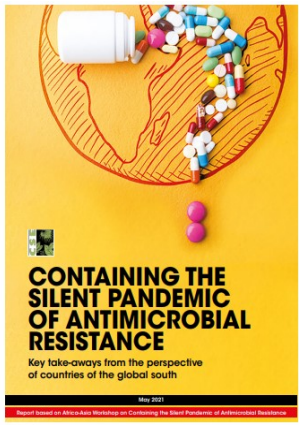


Reducing antibiotic use in poultry sector, 2024

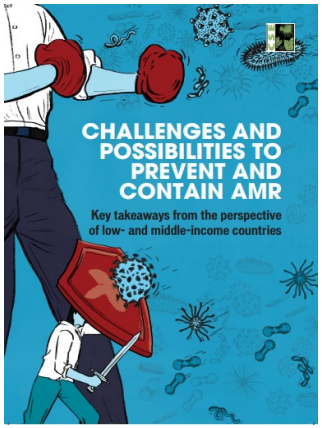
AMR containment | LMICs, global, Zambia



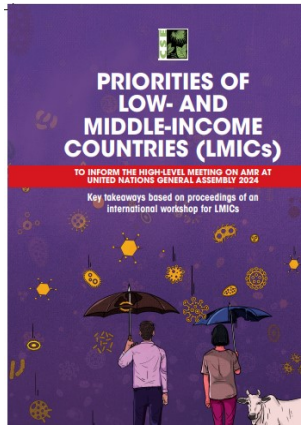
2017



2021



2024



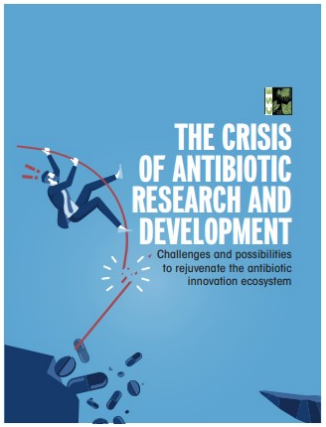
2024

LMIC priorities to contain AMR



Supporting Zambia's NAP-AMR 2019-20





The global crisis of antibiotic R&D, 2023

Thank you!

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