



SUSTAINABLE FOOD SYSTEMS

An Agenda for Climate-risked Times

Setting the context

Amit Khurana

**Director, Sustainable Food Systems
Programme, CSE**

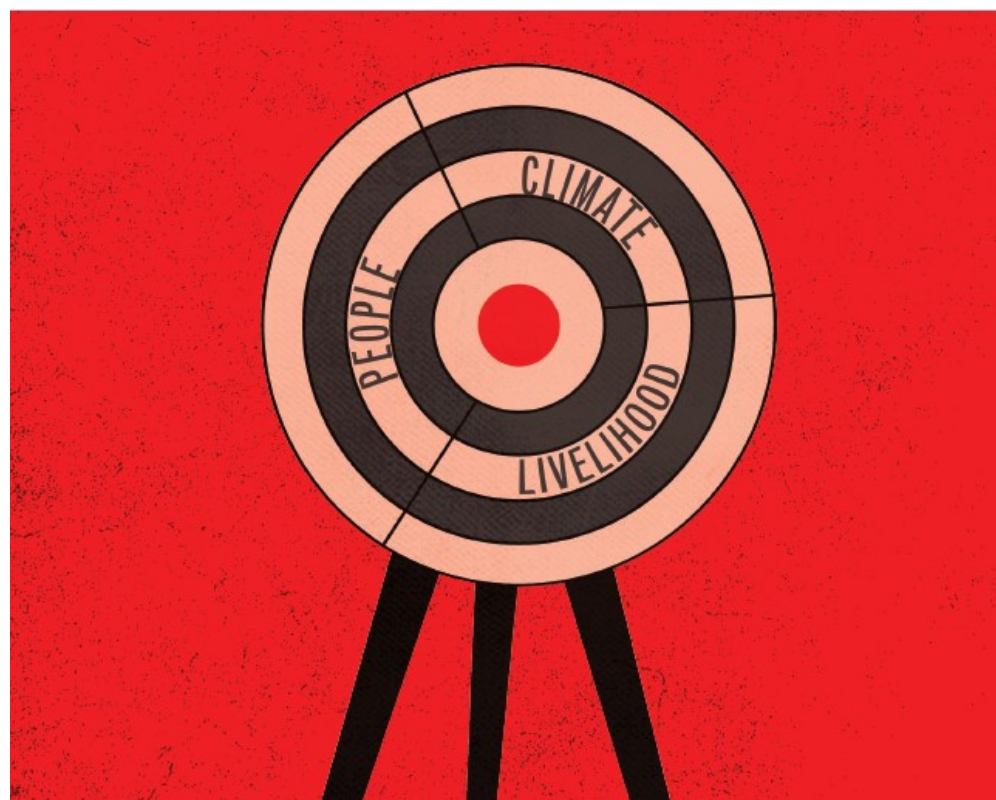


Sustainability in food systems

- 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



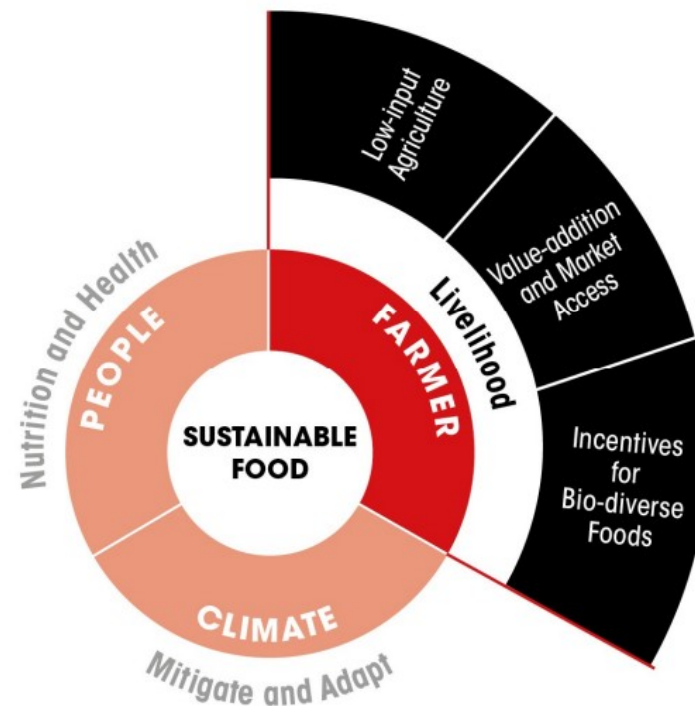
Connecting food-climate-farmer-consumer



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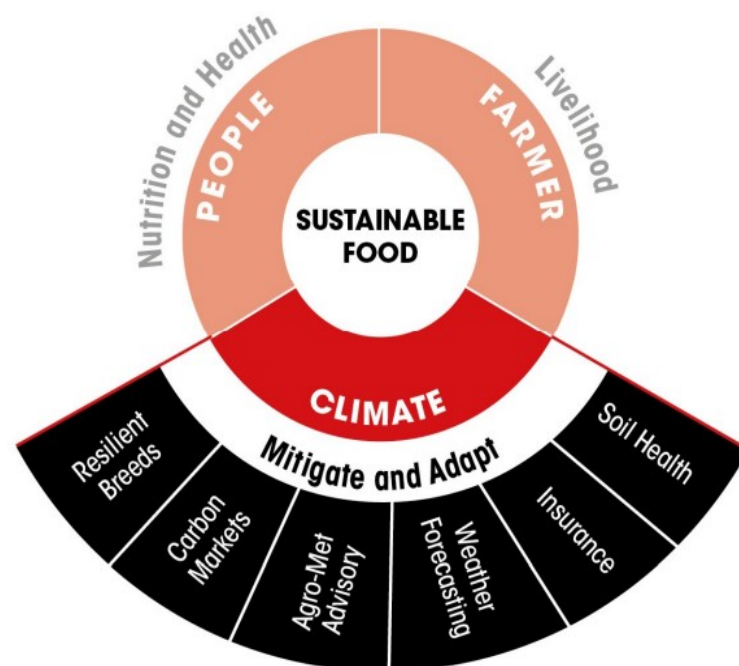
The Livelihood Connect

- **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.
- If agriculture is redesigned so that there is more money in the hands of producers they will not discount our health and nature. **Need systems that invest in nature;** low cost but high value
- **Need producers to connect to markets.** Also need nutrition for local food security



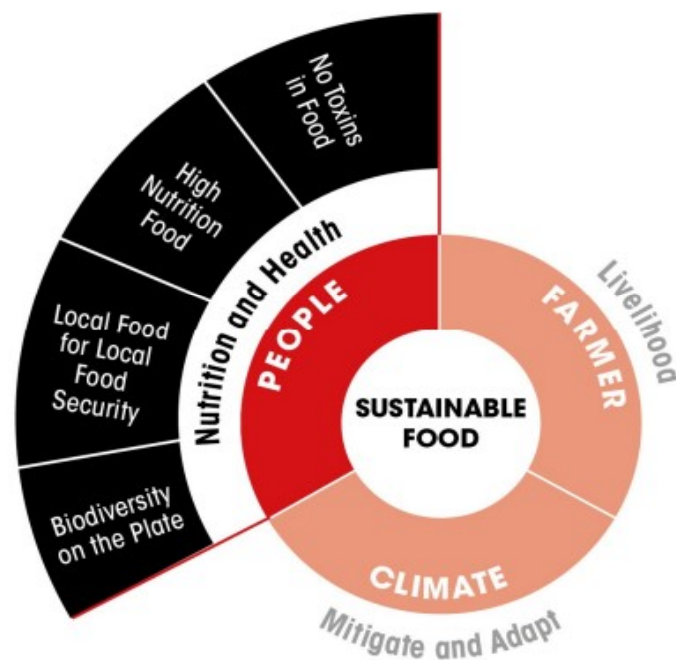
The Climate Connect

- **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.

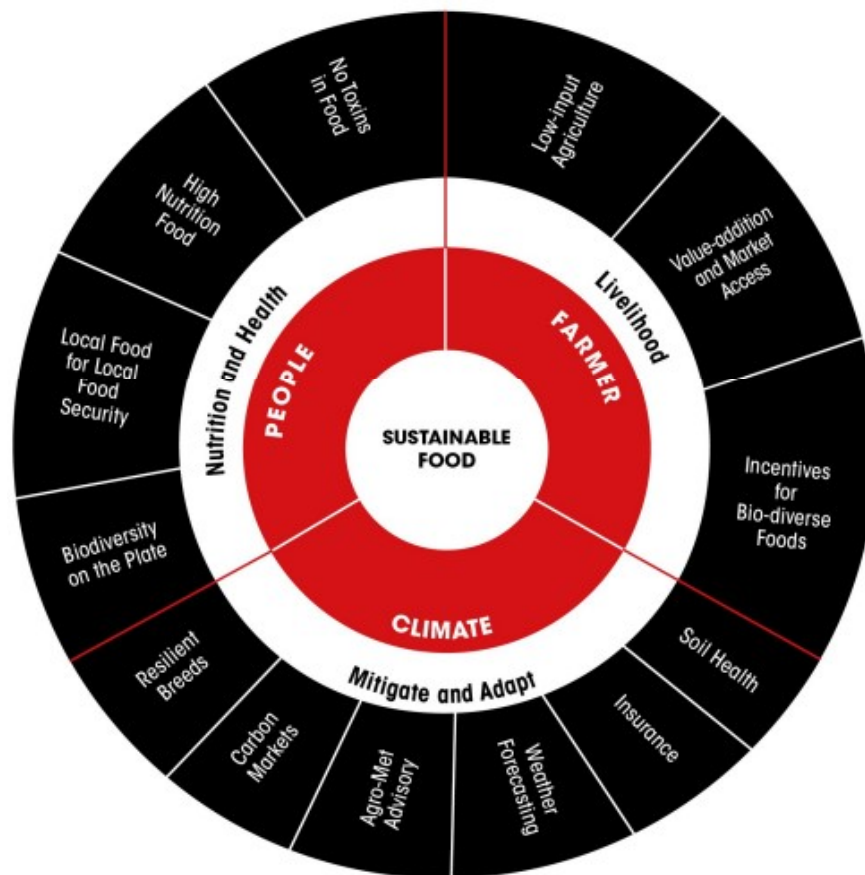


The People Connect

- **What we eat determines our health.** Food is about nutrition food is about medicine. Toxins used for producing food add to our health burden
- **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



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Sustainable Food Systems

AGENDA 1: Soil Health and Carbon Credit: Improving Productivity and Farmers' Incomes

- Soil health
- Voluntary carbon market for agriculture

AGENDA 2: Adaptation through Weather-crop Information

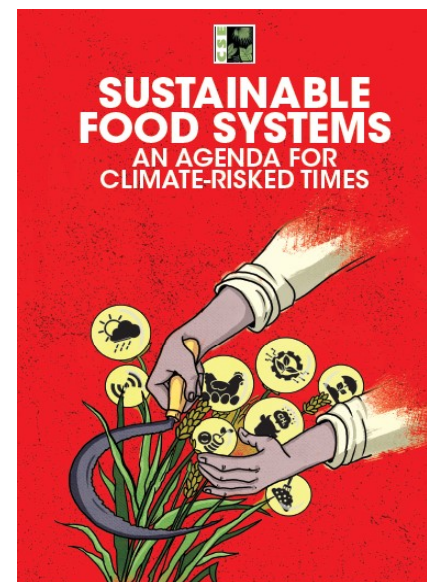
- Weather forecasting
- Agrometeorological advisory services in India

AGENDA 3: Resilience through Insurance to Cover Risks and Losses

- Crop insurance in India
- Technology and agriculture insurance

AGENDA 4: Livestock – an Agenda for Mitigation and Adaptation

- GHG emissions from the Indian livestock sector
- Backyard and rural poultry systems



[Link to download](#)



Focus 1:

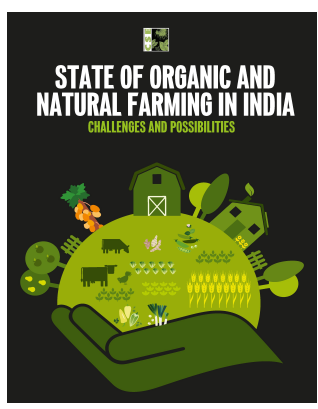
Agro-ecology, agri-climate connections, resilience and livelihoods

Focus 2:

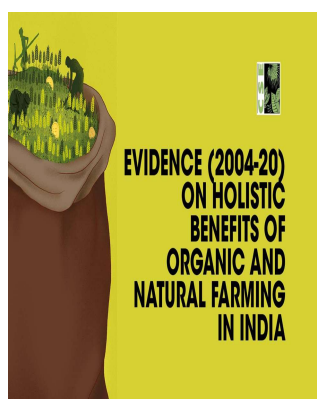
Animal and environmental dimensions of antimicrobial resistance



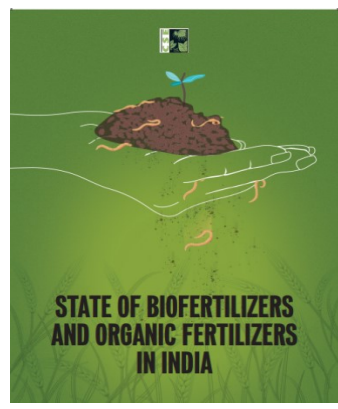
Reports and Down To Earth Publications



2020



2021-22



2022



2023

ANALYSIS/INDIGENOUS CATTLE

Homegrown benefit

A shift from exotic and crossbred cattle back to indigenous breeds that can better adapt to changing climate will help the dairy sector stay sustainable

ANAMIKA YADAV
ETAHAN, UTTAR PRADESH

In an era when indigenous cows and breeds have been almost entirely replaced by exotic and crossbred cattle, a shift back to indigenous breeds could be a game-changer for the dairy sector. Indigenous breeds are better adapted to the local climate and have a higher resistance to diseases. They also require less feed and water, making them more sustainable. The government has been promoting indigenous breeds through various schemes, but the adoption has been slow. Anamika Yadav, a researcher in Etahan, Uttar Pradesh, says that indigenous breeds are not just a relic of the past but a key to the future of sustainable dairy farming in India.

2023

AGRICULTURE

AGRICULTURE'S EMISSION STORY

India's farming sub-sectors generate greenhouse gases like methane and nitrous oxide, but there is mitigation potential

AMIT KHURANA, ANAMIKA YADAV & VINET KUMAR

Agriculture is a major source of greenhouse gas emissions in India. The main contributors are methane from rice cultivation and nitrous oxide from fertiliser use. However, there are several ways to reduce these emissions. For example, using organic fertilisers and adopting water-saving techniques in rice cultivation can significantly reduce methane emissions. Vinet Kumar, a researcher, says that farmers need to be educated about these practices and provided with the necessary support. The government also needs to incentivise farmers to adopt sustainable practices. Amit Khurana, a policy expert, adds that India has a huge potential to reduce its agricultural emissions while maintaining its food security.

2023

The chosen few

A vast majority of funds under Mahatma Jyoti Basu's project on climate-resilient agriculture have gone to just a few districts and types of interventions

VINET KUMAR
BUDHMANA, MAHARASHTRA

The Mahatma Jyoti Basu project, which aims to promote climate-resilient agriculture, has been implemented in several districts across India. However, a recent analysis shows that the vast majority of funds have been allocated to a few districts and specific types of interventions. Vinet Kumar, a researcher, says that this is a major concern because it leaves many farmers and regions without the support they need. He calls for a more equitable distribution of funds and a focus on a wider range of agricultural practices. The government needs to ensure that the benefits of the project reach all farmers, not just the lucky few.

2023

AGRICULTURE

STRENGTHEN SAFETY NET

In districts at high or very high climate risk, farmers pay a hefty premium for crop insurance with a faint hope of claim settlement

AMIT KHURANA AND CHHAVI MAHAUR

Crop insurance is a critical safety net for farmers, especially in districts with high climate risk. However, many farmers find it difficult to get claims settled, which makes the insurance less attractive. Amit Khurana and Chhavi Mahaur, researchers, say that the insurance companies often use complex procedures to deny claims. They call for a reform of the crop insurance system to make it more transparent and farmer-friendly. The government needs to ensure that farmers can actually benefit from the insurance when they need it most.

2024

1-15 AUGUST 2024

Down To Earth

FOR JUSTICE ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH

Can we make India's agriculture climate resilient?

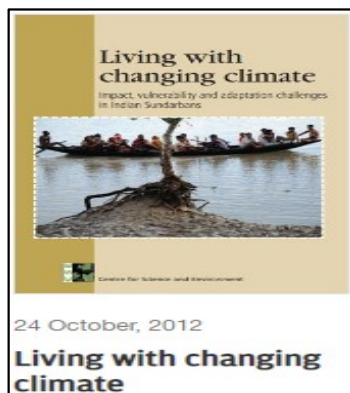
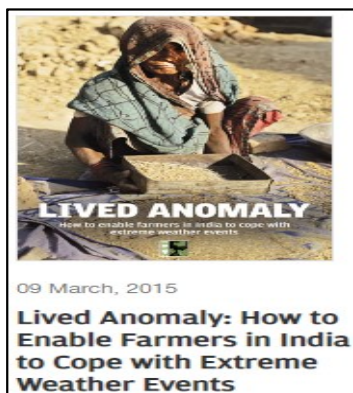
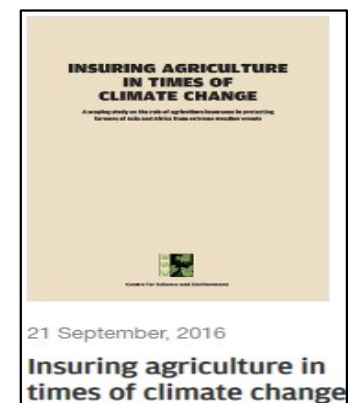
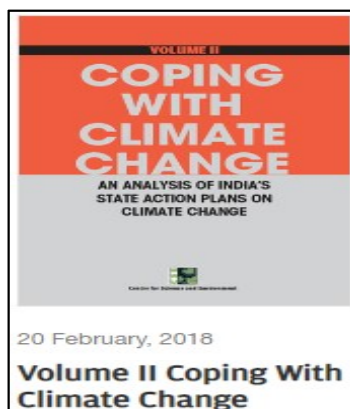
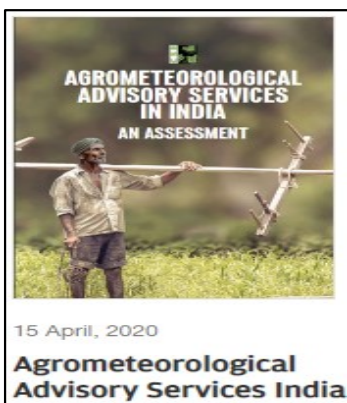
ANAMIKA YADAV
ETAHAN, UTTAR PRADESH

This issue of Down To Earth focuses on the challenges of making Indian agriculture climate-resilient. It features a special report by Anamika Yadav on indigenous cattle breeds, which are better adapted to the local climate. The issue also includes articles on crop insurance, agricultural emissions, and the need for a safety net for farmers. It is a must-read for anyone interested in sustainable agriculture and rural development in India.

2024

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Publications



National conclave on sustainable food systems at AAETI (2025)



Agro Weather Advisories by Dr Sheshakumar Goroshi | National Conclave on Sustainable Food Systems

Video interviews with experts



What is a #healthy #soil
? The importance of 1...

YouTube shorts



Quote cards



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Agri-climate discussions | Climate Week at AAETI - 2024



YouTube Shorts

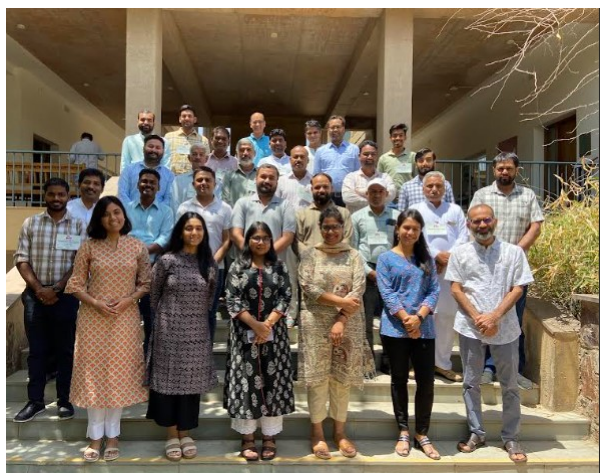


Quote cards



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Capacity building/trainings (2022-25)



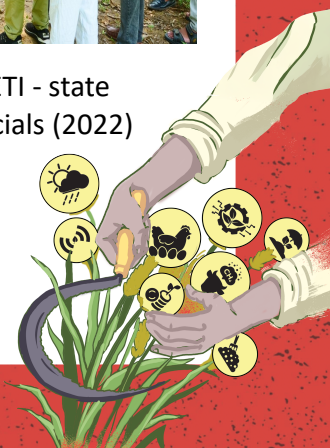
Training of civil society colleagues at AAETI – scaling up agroecology practices (2025)



Training of civil society colleagues at AAETI – agri-climate connections (2024)



Training of trainers at AAETI - state agriculture extension officials (2022)



Focus 1:

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

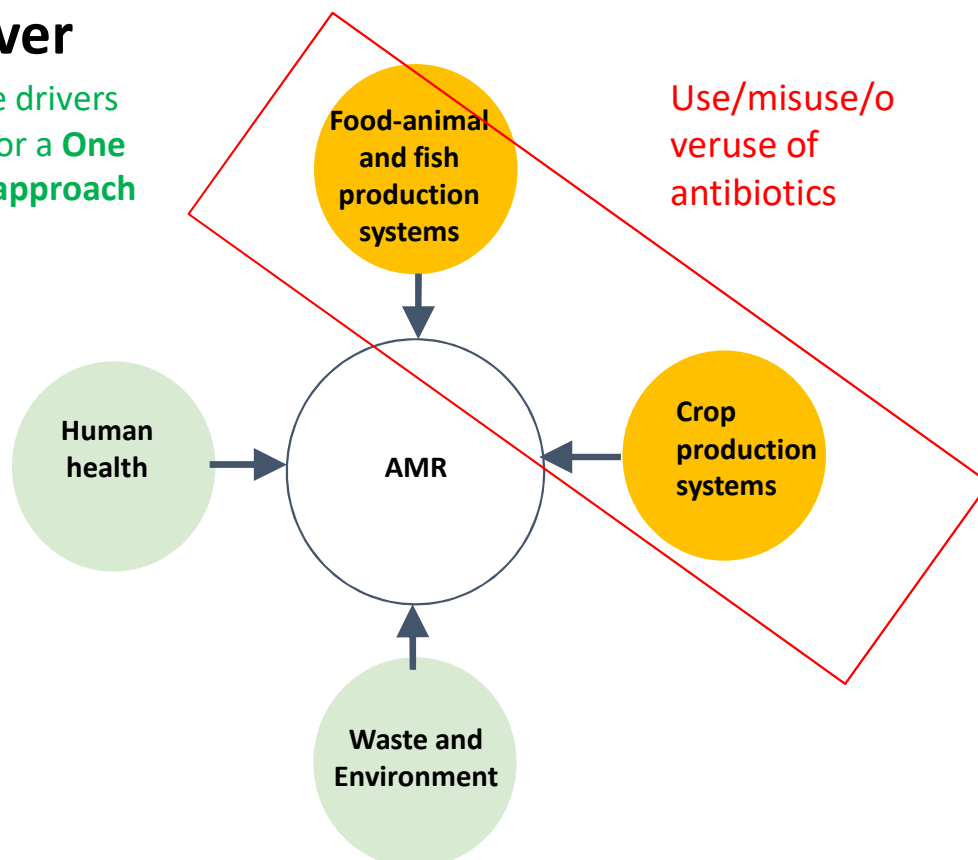
Focus 2:

Animal and environmental dimensions of antimicrobial resistance



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)

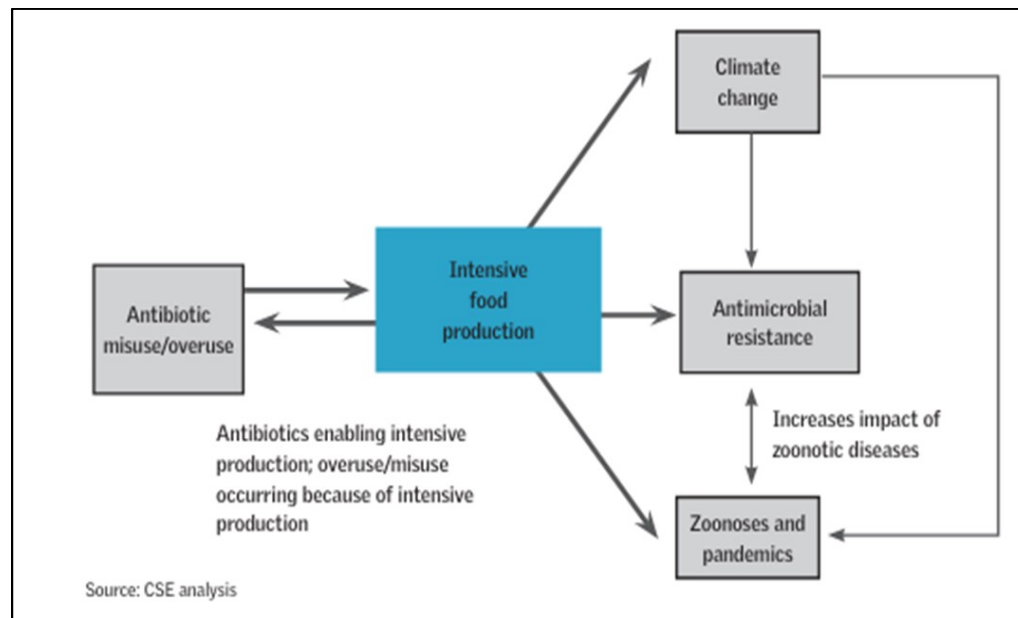
AMR determinants

- Antibiotic resistant bacteria
- Antibiotic resistance genes
- Antibiotic residues

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Antibiotics making food systems unsustainable!

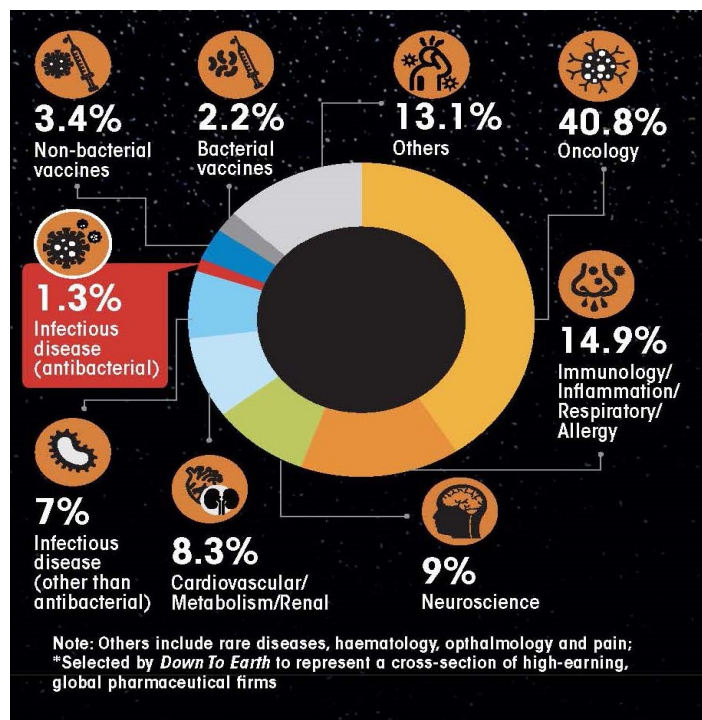


Fueled by cheap and unregulated antibiotics, intensive systems are breeding ground for zoonotic diseases, resistant pathogens; impact biodiversity, source of GHG emissions.



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 of 13 are by one company (GSK).

As on 2022



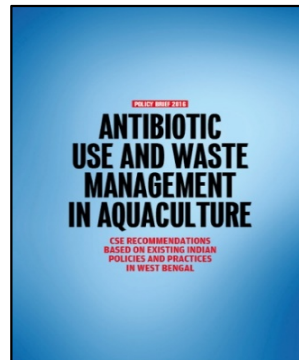
Publications | India



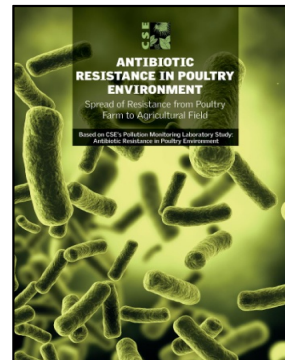
Antibiotics in honey, 2010



Antibiotic use in poultry, 2014



Antibiotic use in aquaculture, 2016



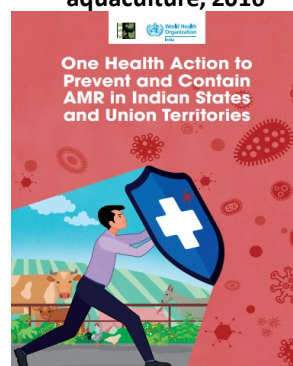
AMR in poultry environment, 2017



Antibiotic use in fast food supply chain, 2017



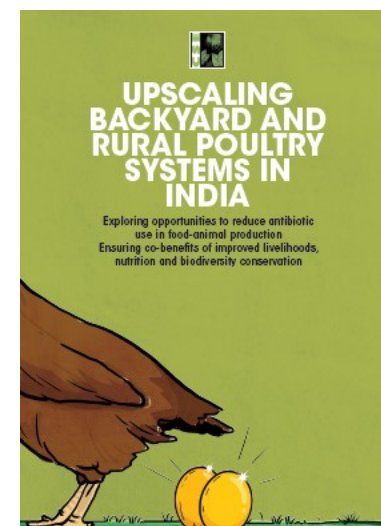
Conserve the use of critically important antimicrobial, 2021



One health action to prevent and contain AMR, 2023



Containing antibiotic pollution from manufacturing to reduce the risk of AMR, 2023



Upscaling backyard and rural poultry systems in India, 2025



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Publications | Down to Earth



Disposal of pharma manufacturing waste, 2017



Antibiotic use in crops, 2019



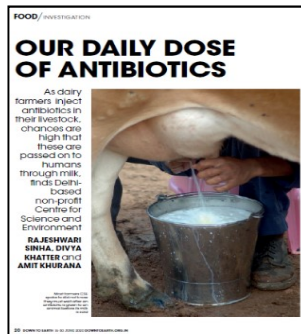
Disposal of unwanted drugs,



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

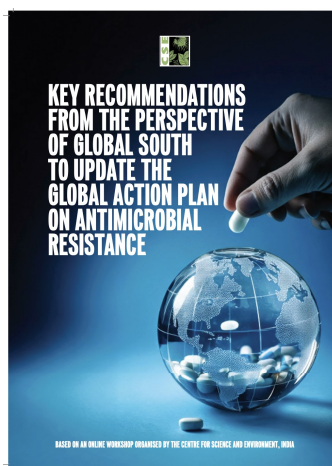


Reducing antibiotic use in poultry sector, 2024

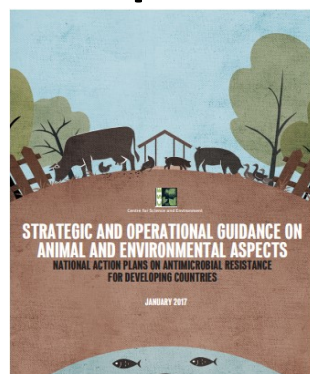
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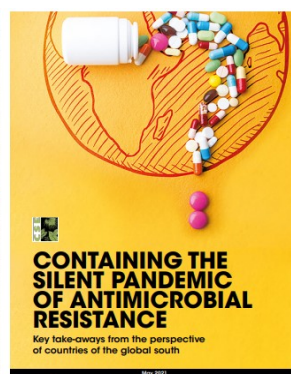
Publications | Global



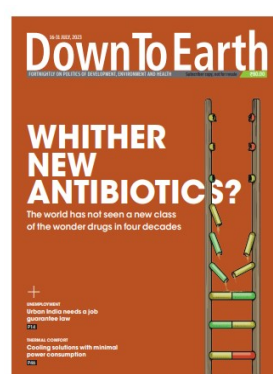
2025



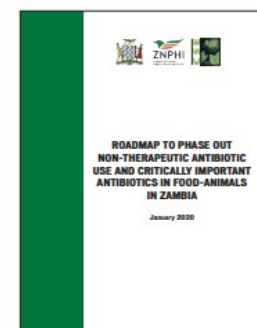
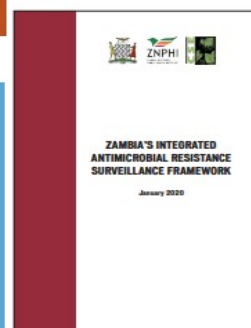
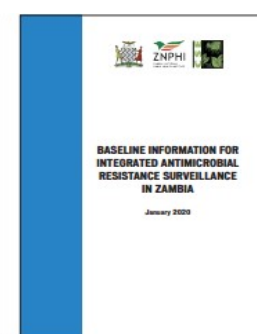
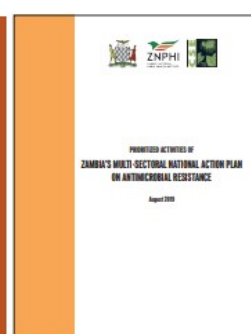
2017



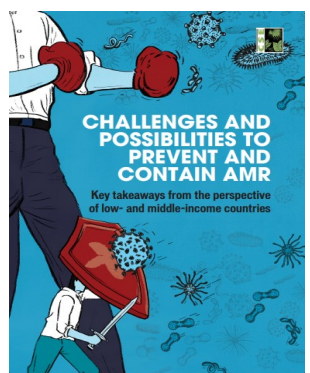
2021



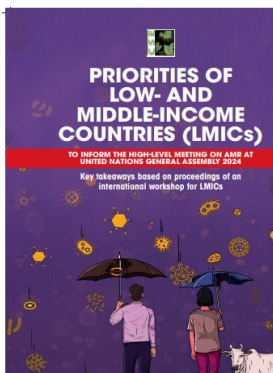
The global crisis of antibiotic R&D, 2023



Supporting Zambia's NAP-AMR (2019-20)



2024



2024



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Convenings | stakeholders - global, LMICs, India



Panel discussion – resilient animal breeds, 2025



International workshop on LMIC priorities for HLM-AMR, 2024



National workshop on state AMR action plans, 2022



National consultation on preventive approaches in poultry sector (2024)



Meeting on antibiotic pollution from manufacturing, Maharashtra, 2024



Meeting on antibiotic pollution from manufacturing, Telangana, 2025



Training on poultry, 2025



Training on aquaculture, 2026

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Thank you

For more information, contact

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