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THE INDIAN POULTRY SECTOR

How to scale up preventive approaches to minimise antibiotic use

Global and national response to the crisis of Antimicrobial Resistance

Amit Khurana
Director
Sustainable food systems programme, CSE

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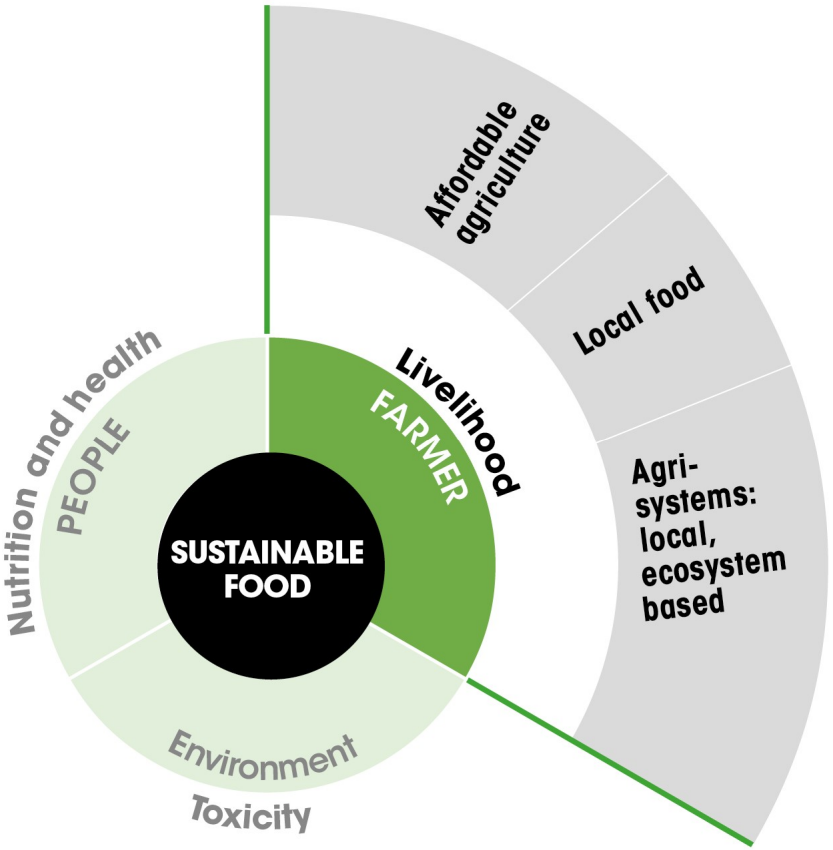
Sustainable food systems programme at CSE

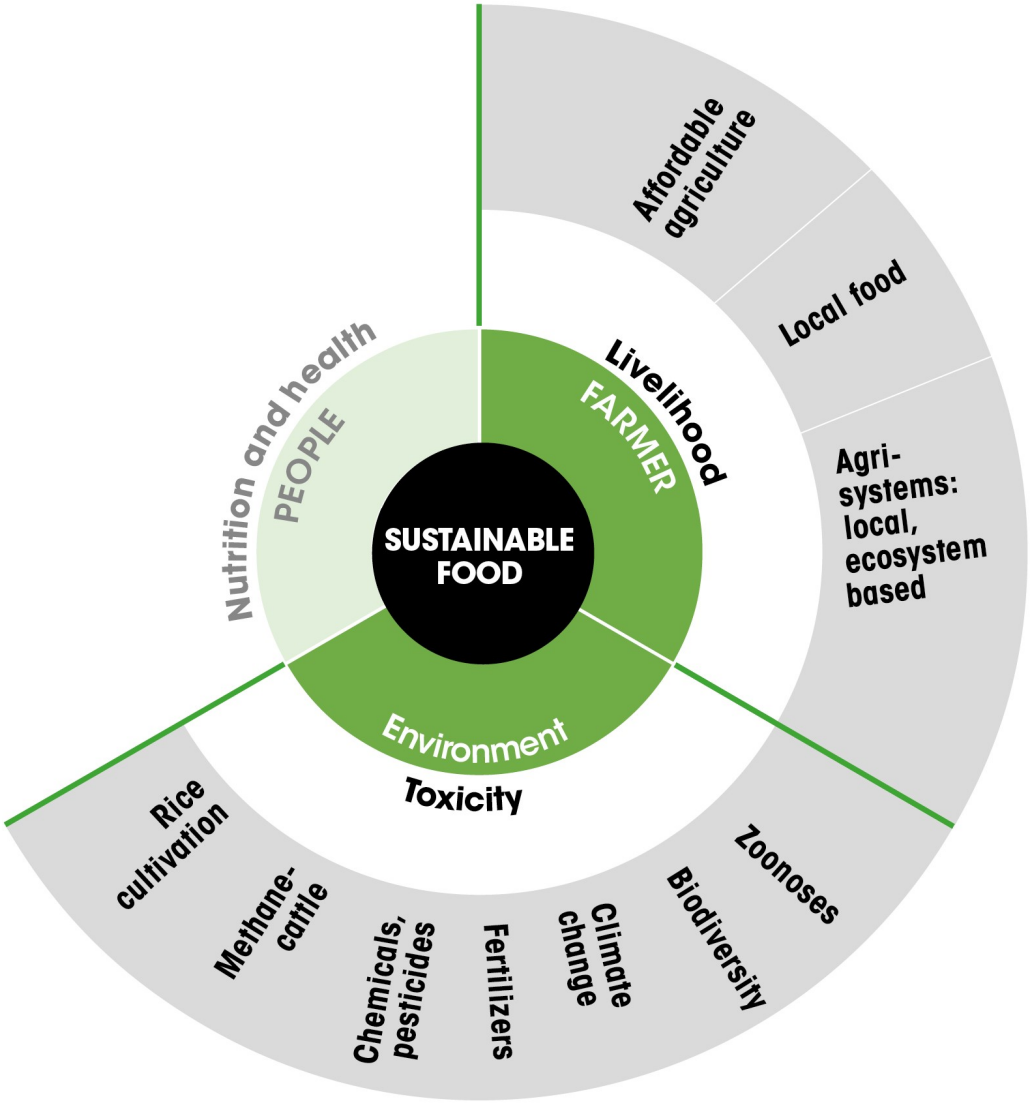
Joining the dots so we can connect and correct

Nature
Nutrition
Livelihoods

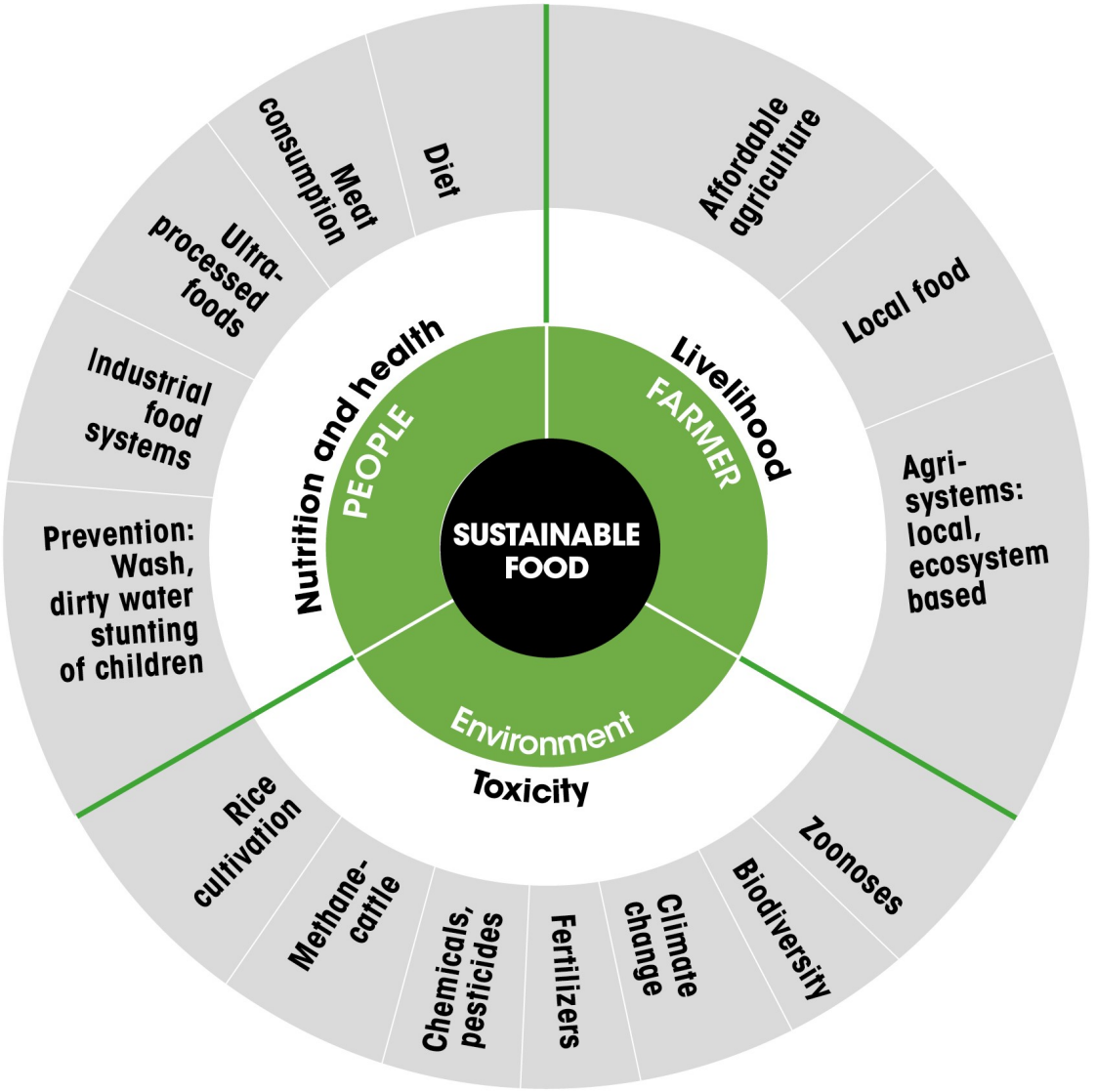
Livelihood connection



Nature connection



Connecting human health



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

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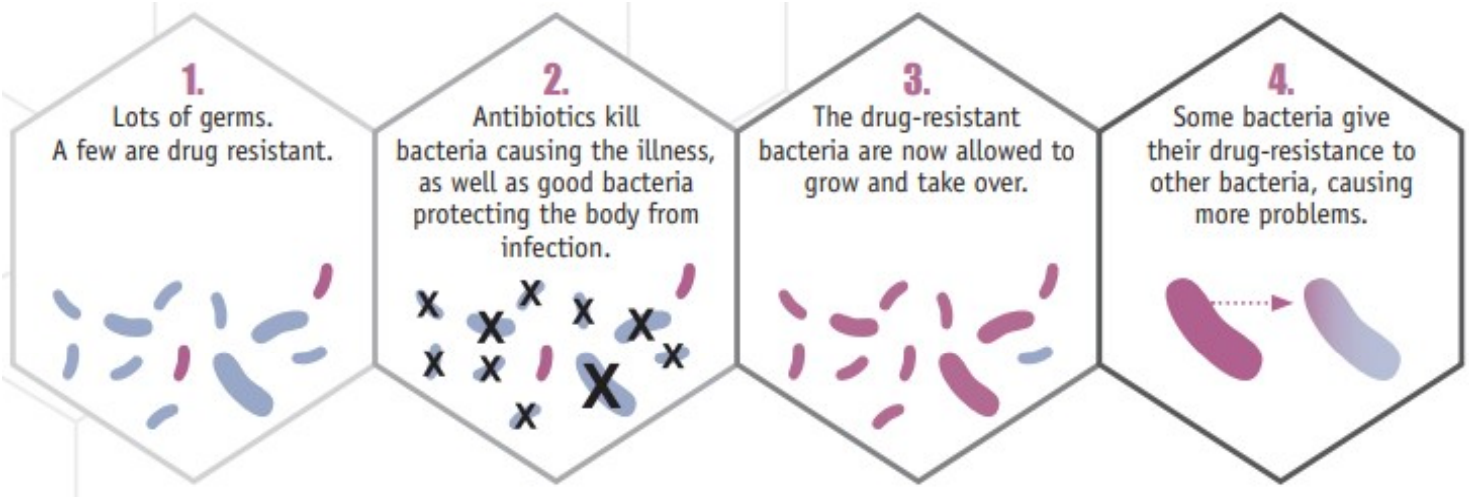
The crisis of Antimicrobial Resistance (AMR)

What is Antimicrobial Resistance (AMR)? Antibiotic resistance in particular



Natural phenomenon. Accelerates by misuse and overuse of antimicrobials.

Figure source: CDC

Scale of the problem is huge due to….

- Multiple microorganisms
- Different types of a bacteria
- Infections of multiple organ systems/body tissues
- Different sources of infection
- Impacts outcome of infectious diseases, non-communicable diseases, post-surgical infections
- Multi-drug resistance
- Resistance against almost all antibiotics
- Prevalent across globe, all age groups

The 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)

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

Can kill nearly **1.9 million** each year by 2050

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

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Why should we worry: Triple crisis of AMR?

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Crisis 1: Antibiotics are becoming ineffective

- **Critically important antibiotics** losing power to kill bacteria (e.g., fluoroquinolones, aminoglycosides, carbapenems and cephalosporins)
- **Expensive** antibiotics now needed to be used
- Ultimately, treatment options are **reducing**

Crisis 2: The antibiotic development crisis

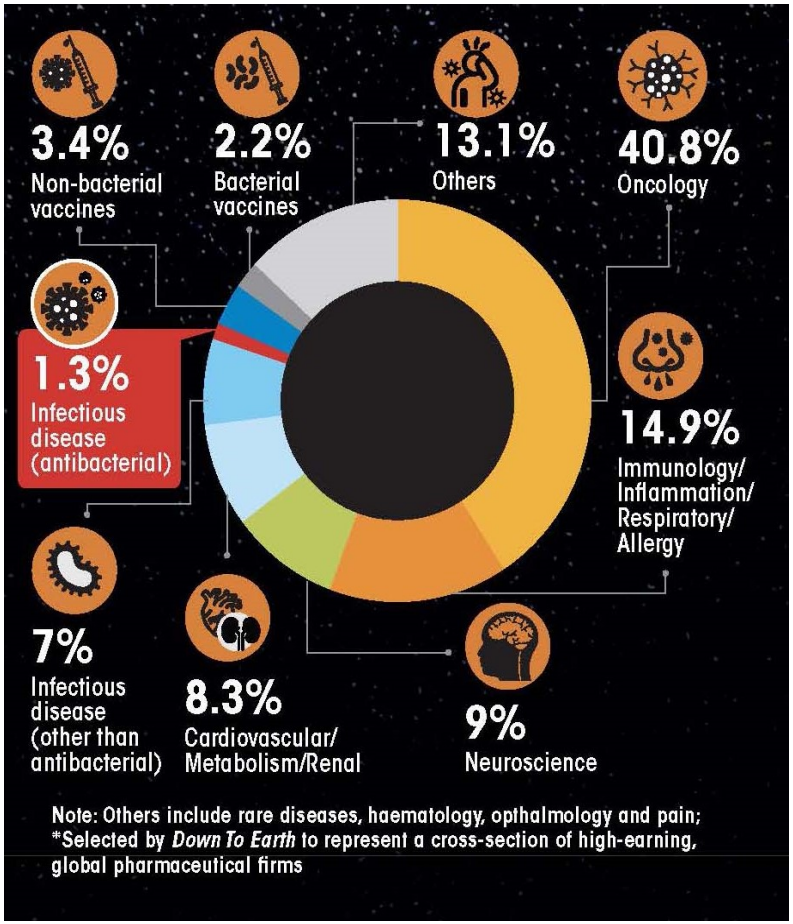
- **Golden era** for antibiotic development was during 1950-1970; **no new class of antibiotics developed since 1980s**, especially against Gram-negative bacteria.
- Those developed over last decade inadequate to treat growing **unmet need; growing resistance**

Crisis 3: The issue of antibiotic access

- Old and new antibiotics
- More so for LMICs like India

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).
  - **411** candidates were found to be developed for cancer;
  - **150** for immunology, allergy, inflammation or respiratory diseases;
  - **84** for cardiology, metabolism or renal disease areas.

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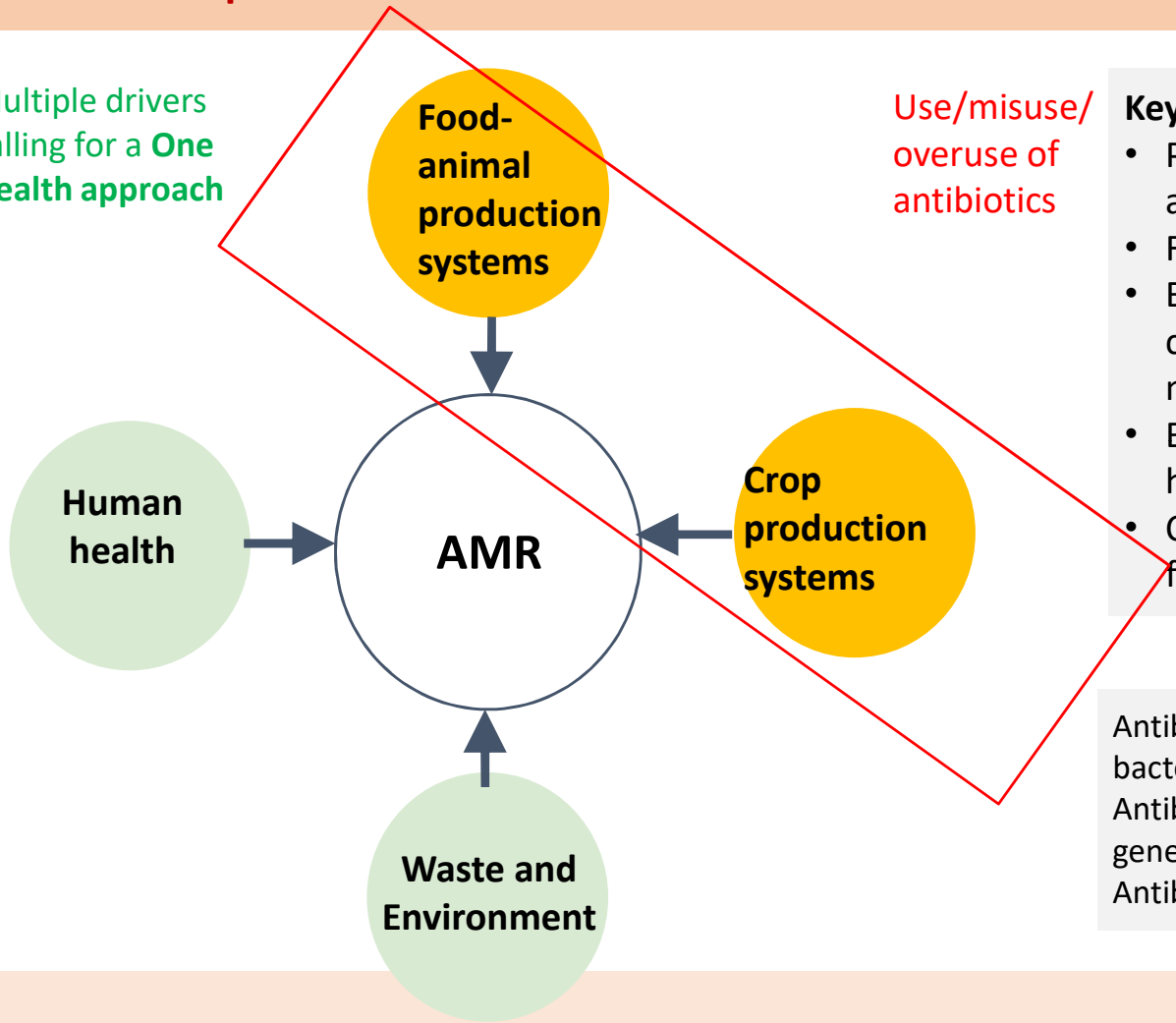
Food production systems – a key driver for AMR

One-Health nature of the AMR problem, and food systems a part of it

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



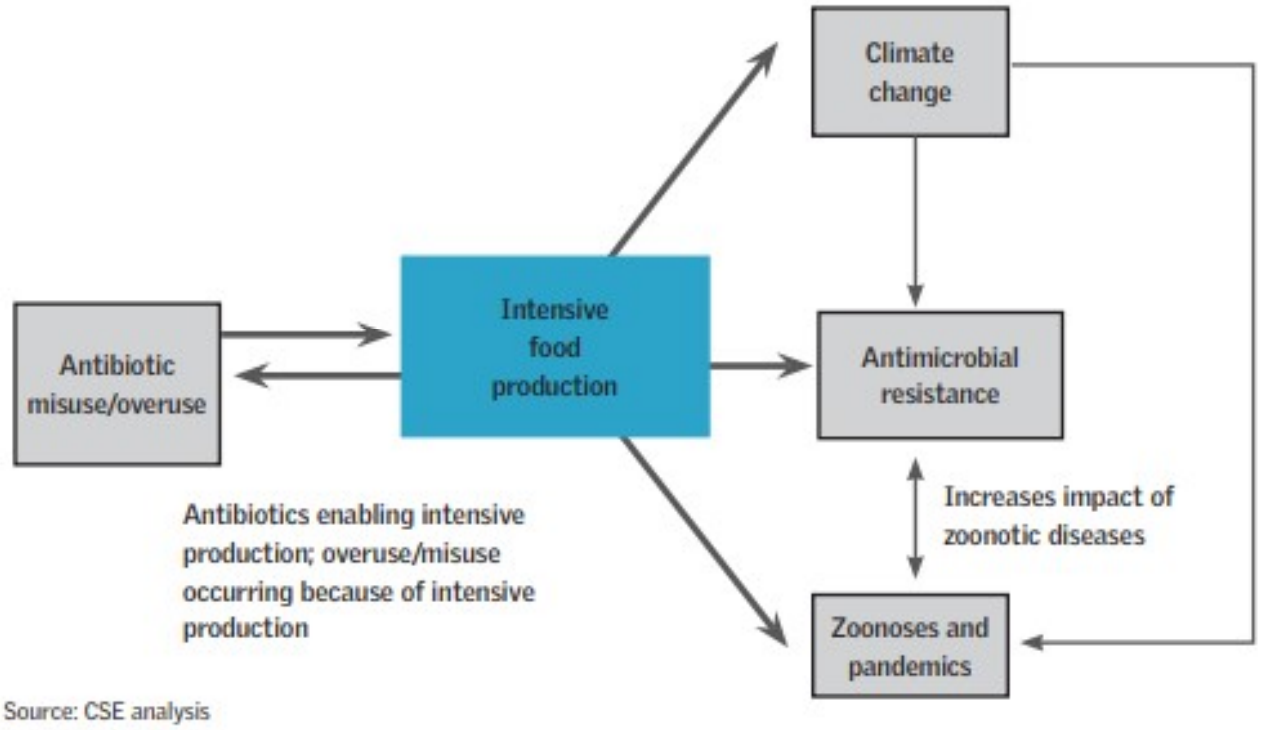
Use/misuse/ overuse of antibiotics

Key sectors

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

Antibiotic resistant bacteria
Antibiotic resistance genes
Antibiotic residues

Antibiotics fuel intensification, which can be a driver for AMR, climate change, zoonoses and pandemics

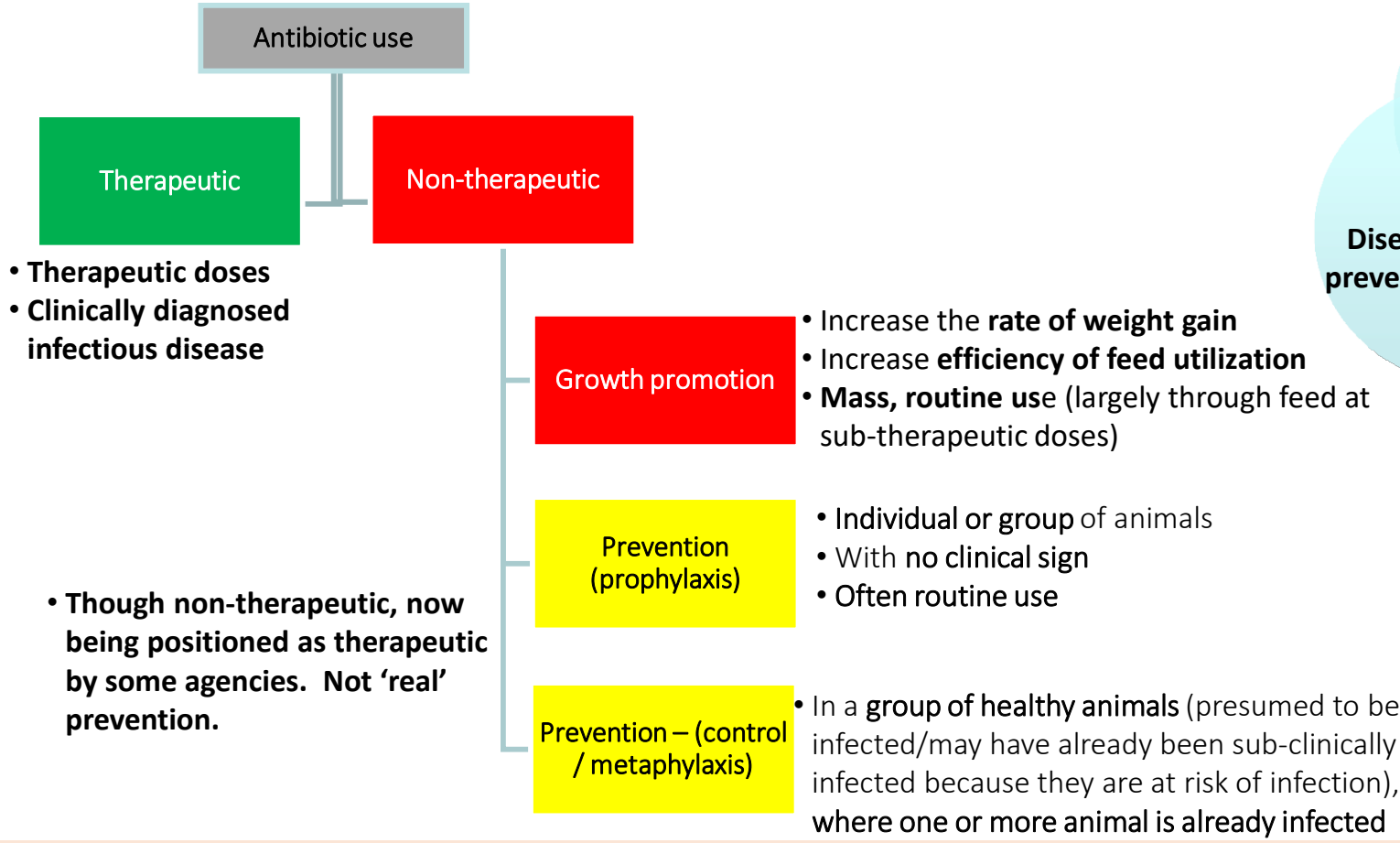


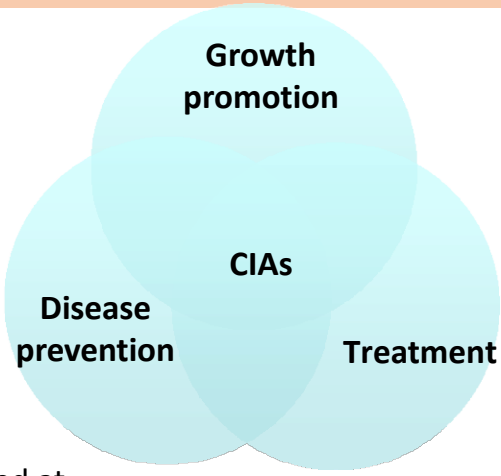
Source: CSE analysis

Characteristics of intensive farming systems

- Large-scale units with **high stocking density** of animals/birds/ fish
- Genetically selected **similar breeds for productivity** (not disease resilience)
- Kept under **confined conditions** and in close proximity; high stress
- **Limited** focus on good animal husbandry
- Dependence on **commercial feed, inputs** (also known as animal feeding operations, factory farms)
- Often **geographically concentrated**; **vertically integrated** by large players; involves contract farming
- **Industrial systems** but considered agriculture

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





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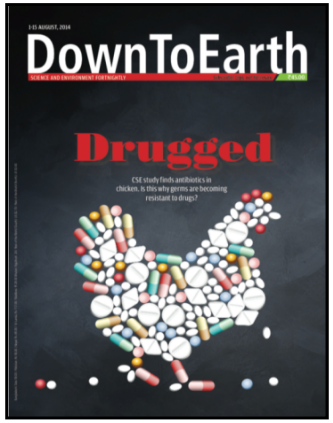
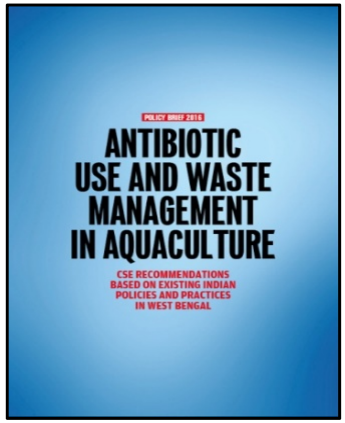
CSE's work on AMR

AMR | Food and environment aspects | India

Antibiotics in honey, 2010



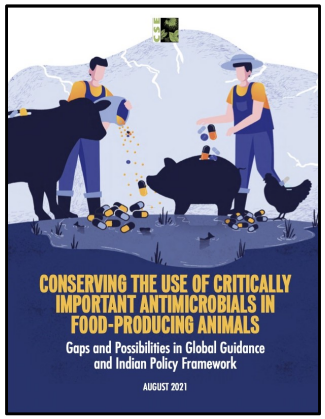
Antibiotic use in poultry, 2014



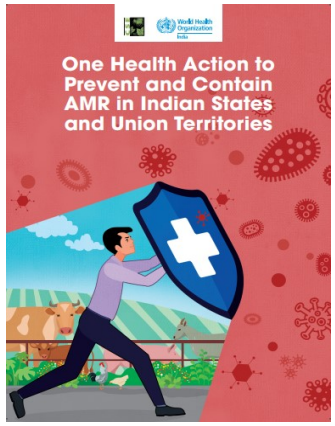
Antibiotic use in aquaculture, 2016

AMR in poultry environment, 2017

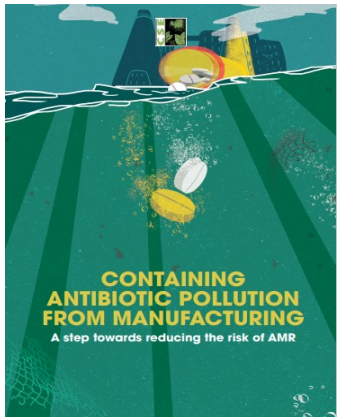
Antibiotic use in fast food supply chain, 2017



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

AMR | Food and environment aspects | India

Bitter medicine

It is time to treat pharma waste more rigorously. The waste contains active ingredients used in antibiotics and may be contributing to the spread of antimicrobial resistance

RAJESHWARI SINHA | HIMACHAL PRADESH

Disposal of pharma manufacturing waste, 2017

INVESTIGATION/ANTIBIOTICS

Too much too often

Indiscriminate use of antibiotics on food crops in several parts of the country could be making them ineffective on humans

BHAVYA KHULLAR, RAJESHWARI SINHA, AMIT KHURANA NEW DELHI

Antibiotic use in crops, 2019

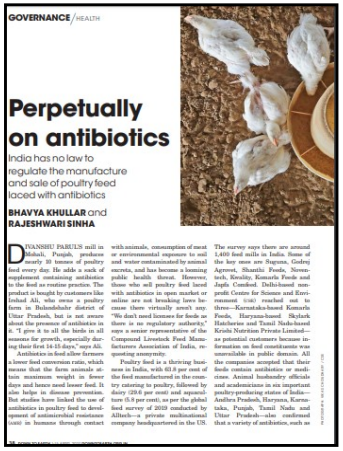
HEALTH/POLICY

Breaking resistance

Government must introduce stringent rules as unused antibiotics continue to be dumped in the open, adding to India's burden of antimicrobial resistance

DIVYA KHATTER, RAJESHWARI SINHA AND AMIT KHURANA NEW DELHI

Disposal of unwanted drugs, 2019



GOVERNANCE/HEALTH

Perpetually on antibiotics

India has no law to regulate the manufacture and sale of poultry feed laced with antibiotics

BHAVYA KHULLAR and RAJESHWARI SINHA

Antibiotic use in feed, 2020

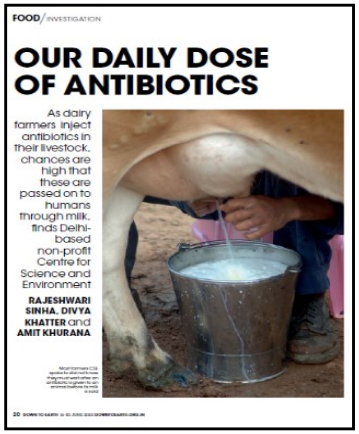
FOOD/EXPOSE

Reluctant game-changers

Fast-food industry has been playing a critical role in the fight against drug resistance in developed countries. Why is it dragging its feet over ending antibiotic misuse in chicken in India?

RAJESHWARI SINHA, AMIT KHURANA NEW DELHI

Antibiotic use in fast food supply chain, 2020



FOOD/INVESTIGATION

OUR DAILY DOSE OF ANTIBIOTICS

As dairy farmers inject antibiotics in their livestock, chances are high that these are passed on to humans through milk, finds Delhi-based non-profit Centre for Science and Environment

RAJESHWARI SINHA, DIVYA KHATTER and AMIT KHURANA

Antibiotic use in dairy, 2020

EASY TO SWITCH

Ethnoveterinary medicine is a low-cost alternative to reduce antibiotic use in Indian dairy sector

DEEPAK BHATI, RAJESHWARI SINHA AND AMIT KHURANA NEW DELHI

Use of ethno medicines in dairy sector, 2022

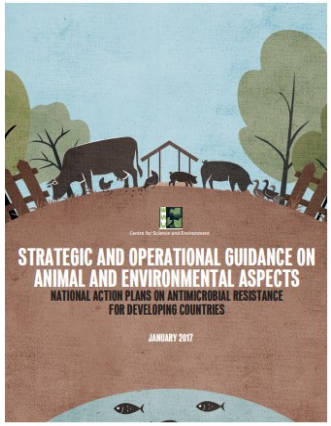
No fowl play

A food service company works with poultry farms to eliminate antibiotic use by focusing on bird health, farm management

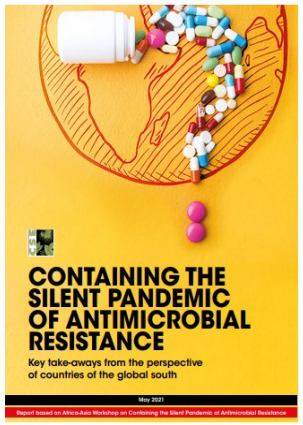
RASHMI MINOCHA AND RAJESHWARI SINHA

Reducing antibiotic use in poultry sector, 2024

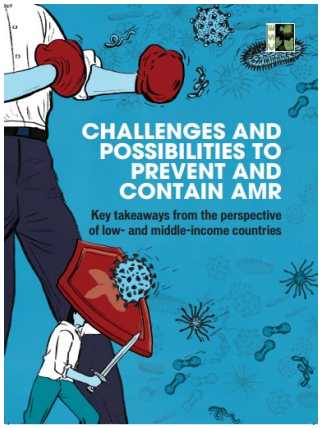
AMR containment | LMICs, global, Zambia



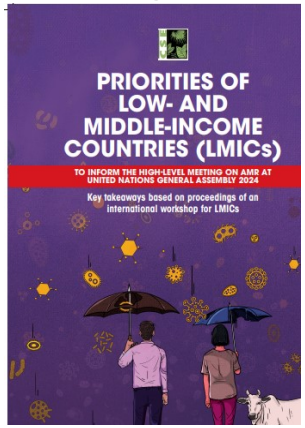
2017



2021



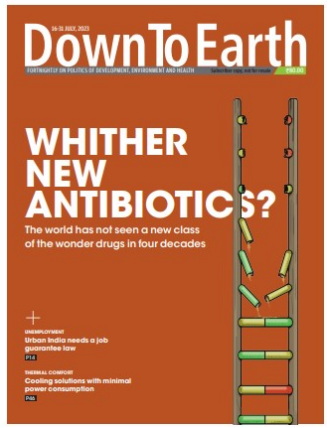
2024

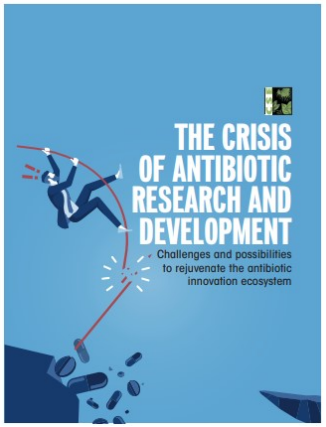


2024

LMIC priorities to contain AMR

Supporting Zambia's NAP-AMR 2019-20





The global crisis of antibiotic R&D, 2023

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Global response to AMR – towards prevention

Governance mechanism to fight AMR: countries working together at global platforms

Global

- **United Nations** (UNGA high level meetings in 2016 and in 2024)
- **G7 and G20 nations**
- **Global Leaders Group** on AMR - advocating for political momentum
- **Quadripartite**
  - World Health Organization
  - Food and Agriculture Organization
  - World Organisation for Animal Health
  - United Nations Environment Programme

National

- National and state **governments**
- **Ministries/departments** of animal husbandry, agriculture, fisheries, pollution control, human health etc.

….along with civil society, industry, scientific community, professional associations, media

Member states called upon for stronger action by global AMR governance structure – GLG

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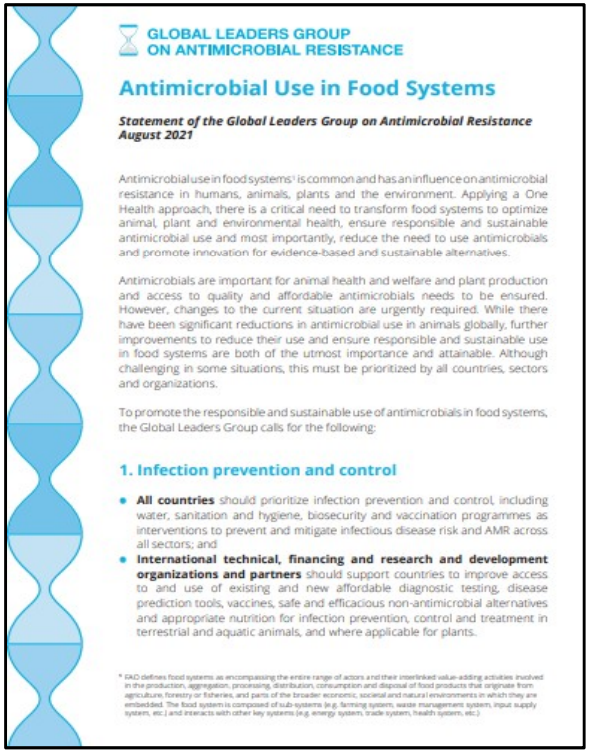
GLG statement on antimicrobial use in food systems, 2021



GLOBAL LEADERS GROUP
ON ANTIMICROBIAL RESISTANCE

Antimicrobial Use in Food Systems

Statement of the Global Leaders Group on Antimicrobial Resistance
August 2021

Antimicrobial use in food systems* is common and has an influence on antimicrobial resistance in humans, animals, plants and the environment. Applying a One Health approach, there is a critical need to transform food systems to optimize animal, plant and environmental health, ensure responsible and sustainable antimicrobial use and most importantly, reduce the need to use antimicrobials and promote innovation for evidence-based and sustainable alternatives.

Antimicrobials are important for animal health and welfare and plant production and access to quality and affordable antimicrobials needs to be ensured. However, changes to the current situation are urgently required. While there have been significant reductions in antimicrobial use in animals globally, further improvements to reduce their use and ensure responsible and sustainable use in food systems are both of the utmost importance and attainable. Although challenging in some situations, this must be prioritized by all countries, sectors and organizations.

To promote the responsible and sustainable use of antimicrobials in food systems, the Global Leaders Group calls for the following:

1. Infection prevention and control

- **All countries** should prioritize infection prevention and control, including water, sanitation and hygiene, biosecurity and vaccination programmes as interventions to prevent and mitigate infectious disease risk and AMR across all sectors; and
- **International technical, financing and research and development organizations and partners** should support countries to improve access to and use of existing and new affordable diagnostic testing, disease prediction tools, vaccines, safe and efficacious non-antimicrobial alternatives and appropriate nutrition for infection prevention, control and treatment in terrestrial and aquatic animals, and where applicable for plants.

* FAO defines food systems as encompassing the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded. The food system is composed of sub-systems (e.g. farming system, waste management system, input supply system, etc.) and interacts with other key systems (e.g. energy system, trade system, health system, etc.)

- Reduce **overall use of antimicrobials**, **particularly HPCIAs** for terrestrial and aquatic animals and plants
- End the use of **medically important antimicrobials** for growth promotion, starting immediately with the HPCIAs
- **Limit antimicrobial prophylaxis and metaphylaxis** in animals and plants to **well-defined situations**, with a goal of markedly reducing use

Countries committed to reduce antibiotic use in agri-food systems by 2030

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Muscat Ministerial Manifesto on AMR, 2022

المؤتمر الوزاري الثالث لمقاومة مضادات الميكروبات
Third Global High-Level Ministerial Conference on Antimicrobial Resistance
24 - 25 Nov, Muscat - Oman

سلطنة عمان
وزارة الثروة الزراعية والسمكية وموارد المياه

Third Global High-level Ministerial Conference on Antimicrobial Resistance (AMR) in Muscat, Oman

24-25 November 2022

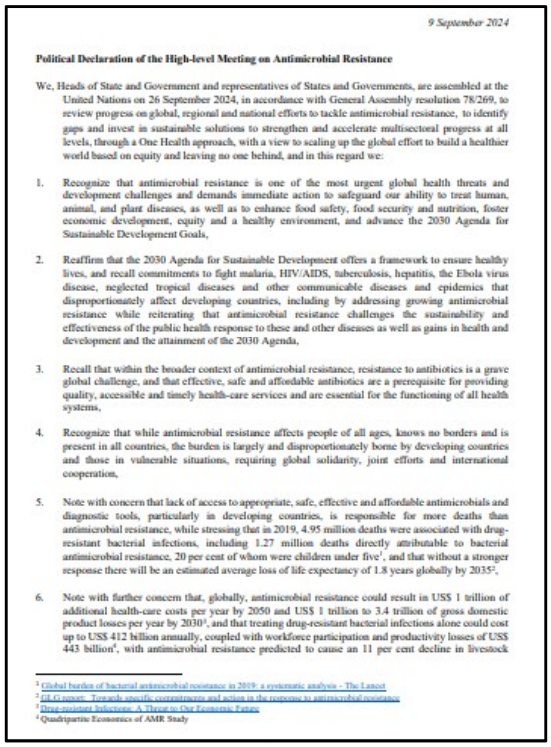
Paving the way for bold and specific political commitments at the 2024 United Nations General Assembly High Level Meeting on AMR

THE MUSCAT MINISTERIAL MANIFESTO ON AMR

Endorsing Countries: Algeria, Andorra, Argentina, Bahrain, Bangladesh, Barbados, Brunei, Cyprus, Egypt, France, India, Indonesia, Ireland, Italy, Jordan, KSA, Kuwait, Lebanon, Libya, Malaysia, Malta, Morocco, Mauritania, Netherlands, Nigeria, Oman, Palestine, Philippine, Portugal, Qatar, Russia, Somalia, Spain, South Africa, St. Vincent and the Grenadines, Sudan, Suriname, Syria, Sweden, Switzerland, Thailand, Tunisia, UAE, Uganda, United Kingdom, Yemen, Zimbabwe

- **47 countries, including India, committed to Muscat Manifesto targets:**
  - **Reduce total amount of antimicrobials used in agri-food system by 30-50% by 2030** from current level
  - **Zero use of medically important antimicrobials for human medicine** in animals for non-veterinary medical purposes or in crop production and agri-food systems for non-phytosanitary purposes

Political Declaration of the High-level Meeting on AMR adopted at UNGA 2024



9 September 2024

Political Declaration of the High-level Meeting on Antimicrobial Resistance

We, Heads of State and Government and representatives of States and Governments, are assembled at the United Nations on 26 September 2024, in accordance with General Assembly resolution 78/269, to review progress on global, regional and national efforts to tackle antimicrobial resistance, to identify gaps and invest in sustainable solutions to strengthen and accelerate multisectoral progress at all levels, through a One Health approach, with a view to scaling up the global effort to build a healthier world based on equity and leaving no one behind, and in this regard we:

1. Recognize that antimicrobial resistance is one of the most urgent global health threats and development challenges and demands immediate action to safeguard our ability to treat human, animal, and plant diseases, as well as to enhance food safety, food security and nutrition, foster economic development, equity and a healthy environment, and advance the 2030 Agenda for Sustainable Development Goals,

2. Reaffirm that the 2030 Agenda for Sustainable Development offers a framework to ensure healthy lives, and recall commitments to fight malaria, HIV/AIDS, tuberculosis, hepatitis, the Ebola virus disease, neglected tropical diseases and other communicable diseases and epidemics that disproportionately affect developing countries, including by addressing growing antimicrobial resistance while reiterating that antimicrobial resistance challenges the sustainability and effectiveness of the public health response to these and other diseases as well as gains in health and development and the attainment of the 2030 Agenda,

3. Recall that within the broader context of antimicrobial resistance, resistance to antibiotics is a grave global challenge, and that effective, safe and affordable antibiotics are a prerequisite for providing quality, accessible and timely health-care services and are essential for the functioning of all health systems,

4. Recognize that while antimicrobial resistance affects people of all ages, knows no borders and is present in all countries, the burden is largely and disproportionately borne by developing countries and those in vulnerable situations, requiring global solidarity, joint efforts and international cooperation,

5. Note with concern that lack of access to appropriate, safe, effective and affordable antimicrobials and diagnostic tools, particularly in developing countries, is responsible for more deaths than antimicrobial resistance, while stressing that in 2019, 4.95 million deaths were associated with drug-resistant bacterial infections, including 1.27 million deaths directly attributable to bacterial antimicrobial resistance, 20 per cent of whom were children under five[1], and that without a stronger response there will be an estimated average loss of life expectancy of 1.8 years globally by 2035[2],

6. Note with further concern that, globally, antimicrobial resistance could result in US$ 1 trillion of additional health-care costs per year by 2050 and US$ 1 trillion to 3.4 trillion of gross domestic product losses per year by 2030[3], and that treating drug-resistant bacterial infections alone could cost up to US$ 412 billion annually, coupled with workforce participation and productivity losses of US$ 443 billion[4], with antimicrobial resistance predicted to cause an 11 per cent decline in livestock

[1] Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis - The Lancet
[2] OLG report: Towards specific commitments and action in the response to antimicrobial resistance
[3] Drug-resistant Infections: A Threat to Our Economic Future
[4] Quadripartite Economics of AMR Study

Emphasis on prevention first

Recognises/Takes note/Acknowledges	Commitment
Agriculture and animal health • Need to prioritize and fund the implementation of measures for IPC and ensure prudent use of AMs in animal health through various approaches	• By 2030, strive to meaningfully reduce global AM use in agri-food system from current level, ensure defined animal vaccination strategies with implementation plans • Invest in animal health systems for equitable access to essential veterinary services, improve animal health and appropriate management practices to prevent infections

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National response to AMR

Current status of policies and guidelines, and their implementation…

- **National Action Plan on AMR (2017-2021):** ambitious but *limited progress*; NAP 2.0 is still not out
- **DAHD:** Standard veterinary treatment guidelines, Poultry Action Plan, Crisis Management Plan; ***recently released-impact yet to be seen***
- **FSSAI:** Standards for residual antibiotics in food from animals; ***no data in public domain other than milk survey***
- **MoHFW** ban on colistin use in food animals in 2019**; *impact not known in public domain***
    - Several other critically important antibiotics banned from use in food animal production by MOHFW and FSSAI in 2024-2025 in view of AMR risks and trade concerns; ***impact yet to be seen***
- **BIS:** recommends no use of medically important antimicrobials in poultry feed (*voluntary*); better labelling

Current status of policies and guidelines, and their implementation…

- **NIVEDI:** Online portal to monitor antibiotic use in food animals; *data yet to be out in public domain*
- **AYUSH:** MoU with DAHD on integrating ethoveterinary practices in veterinary curriculum; necessary awareness and training
- **CPCB:** Guidelines on poultry waste management: ***not AMR centric***; ***uptake concerns***
- **CPDO:** Biosecurity guidelines; ***uptake concerns***
- **State action plans to contain AMR - Kerala, Delhi, Madhya Pradesh, Andhra Pradesh**
  - Focus on limiting antibiotic use, antimicrobial stewardship, AMR surveillance in food animals
  - Feed Act of Andhra Pradesh focusing on antibiotic use in feed and labelling

BIG GAPS…!

- No data on antibiotics used in food-animals in public domain (total, sector-specific, antibiotic types etc.)
- No law to regulate feed and use of antibiotic growth promoters continue
- Not much recognition of the need to address disease preventative use of antibiotics
- No audit/check on use of antibiotics which are restricted/prohibited
- Stakeholder awareness/capacity needs to promote/adopt sustainable rearing practices
- Incentives/subsidies/support for farmers to adopt sustainable poultry practices (alternatives, vaccines, biosecurity etc.)
- The larger issue of productivity/growth versus sustainability

Thank you!

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