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Addressing antibiotic-use in plant agriculture: a review of National Action Plans (NAPs) on antimicrobial resistance (AMR) in India, China and Indonesia

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Background

- The actual amount and types of antibiotics used in plant agriculture are unclear (Haynes et al., 2020)
- Only 3% of 158 countries reported having any regulation system (WHO and FAO,2020)
- AMR can represent a concern in achieving the UN Sustainable Development Goals (SDGs 1,2,3,6,8 and 12)

AGRICULTURE

Too much too often: Antibiotics in Indian crops can make them ineffective

Antibiotics are indiscriminately used on food crops in several parts of the country, adding to the burden of antibiotic resistance

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By Bhavya Khullar, Rajeshwari Sinha, Amit Khurana
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The Trust Project

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'Alarming' use of critical human antibiotics on crops

Foods systems and impact on public health

- Trade: import of antimicrobial-resistant genes (ARGs) on crops (Haynes et al., 2020)
- Possible allergic reactions (ACAAI, 2014)
- Risk of AMR bacteria and genes being transferred to consumers (Haynes et al., 2020)
- Gut as a potential reservoir for ARGs (Binkakc et al., 2017)

International regulatory framework and governance

In May 2015, the World Health Assembly adopted the global action plan on antimicrobial resistance. Countries were invited to develop their own **National Action Plan**

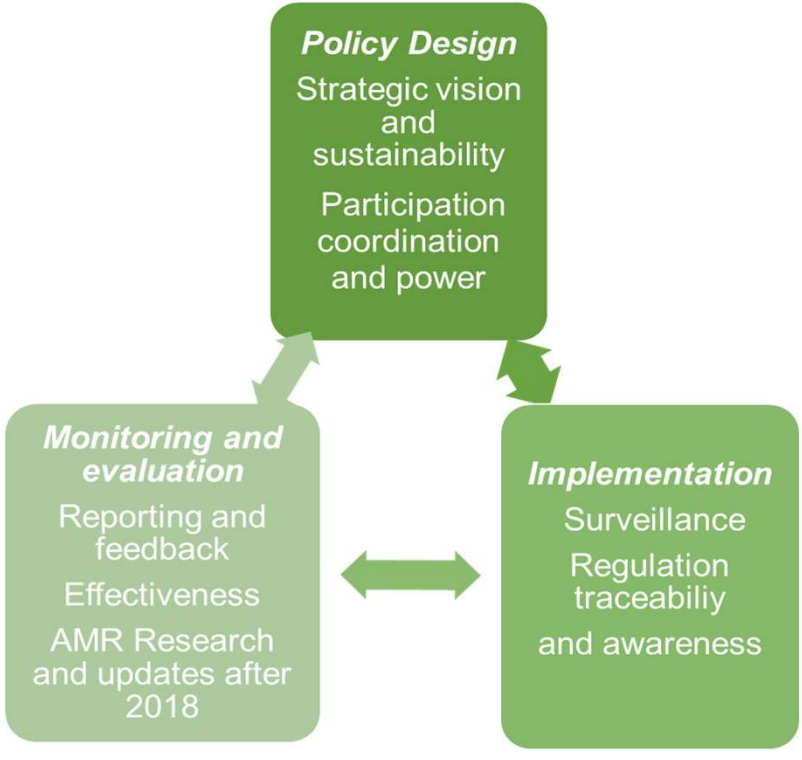
In 2018 FAO developed the Integrated Pest Management (IPM)

By 2021, 163 countries reported developed their NAPs including **China, India and Indonesia**

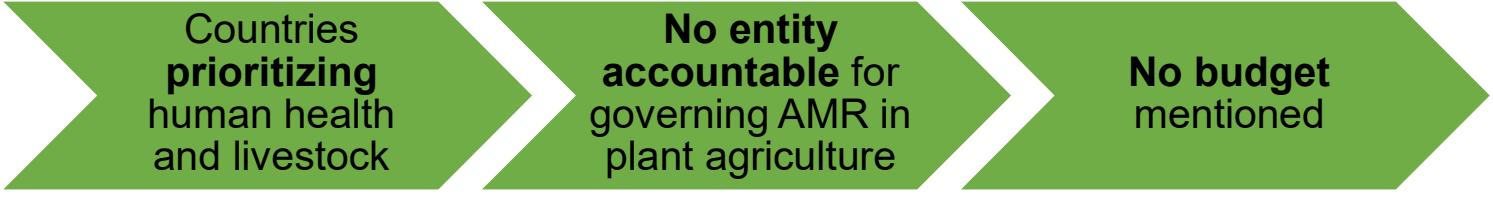
Methodology and theorical framework

1.Policy content analysis using an theoretical adapted governance framework from Anderson et al.(2020) and Keith (2007)

2. Investigation of ground realities of antibiotic use in plant agriculture of each country



Policy Design

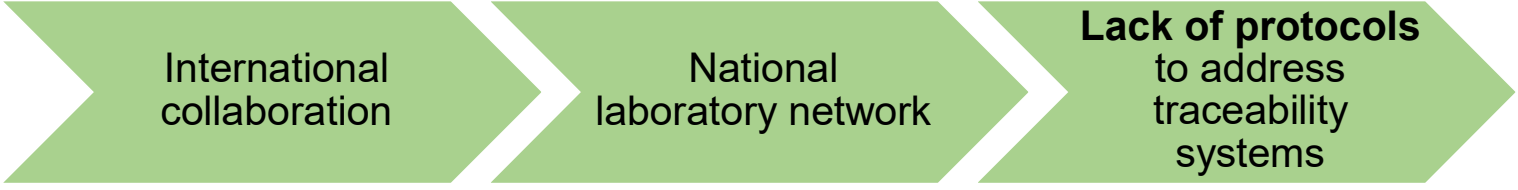


India: awareness of the pharmaceutical industry's influence

Indonesia: Ministry of Environment and Forestry was **NOT** an active stakeholder

China: reinforcement of antibiotics research, development and production

Implementation

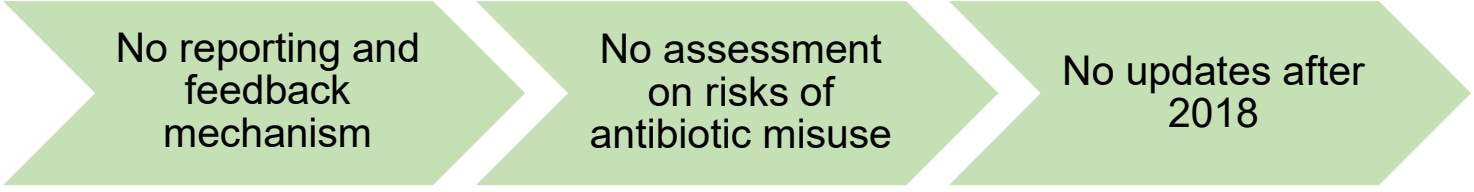


India:“**Streptocycline** ” incorrectly registered as a fungicide and labelled **under low toxicity category** (Khullar, Sinha and Khurana, 2019)

Indonesia:importance of monitoring antimicrobial use in the food chain and testing food products

China: certain antibiotics are considered to be a type of **biopesticide** under the category of “**least toxic**/residual synthetic pesticides” (Wei et al.,2019)

Monitoring and evaluation



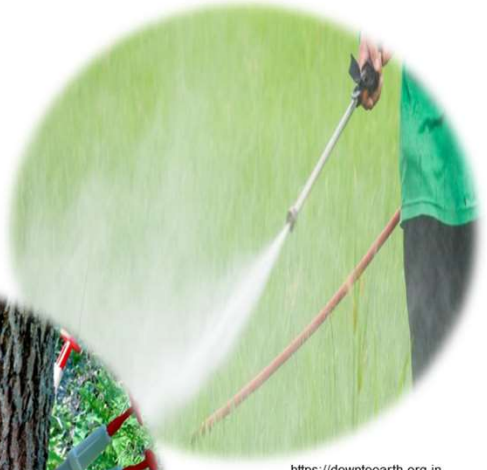
India: revision curricula for target professional groups

Indonesia: behaviour change through education programmes in rural areas

China: surveys and interactive reporting platforms among multiple sectors

Discussion

- Lack of interconnectedness
- Environmental contradiction
- Inconsistent nomenclature



Key messages

- ✓ Urgency for **standardise** normative regulation and a potential **“trace and track "system**
- ✓ Robust **governing institution** at national/sub-national level
- ✓ Expand **farmers outreach programmes**
- ✓ Set up **realistic goals**
- ✓ Focus on **nutrition security** and **the right to food**

Thank you

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