



Food and Agriculture
Organization of the
United Nations

FAO's work on AMR in beekeeping with a One Health approach

Symposium on Biosecurity Measures in Beekeeping, Virtual, 10 June 2022



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Giovanni Formato (IZSLT)

Adam Newmark (Appalachian State University)

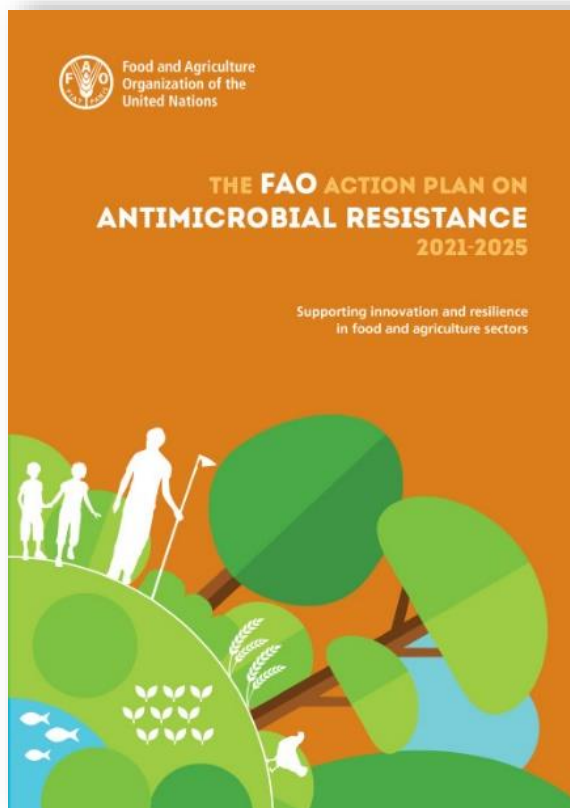
Junxia Song (FAO)



How does FAO support
countries to combat AMR?

FAO's work on AMR

FAO Action Plan on AMR 2021-2025



*Supporting innovation and resilience
in food and agriculture sectors*

**Food and agriculture sectors,
dependent livelihoods and economies
are made resilient to the impacts of AMR**

Strengthening **governance**
and allocating **resources**
to accelerate and sustain progress

Promoting **responsible use**
to keep antimicrobials working



Increasing stakeholder
awareness and **engagement**
to foster change

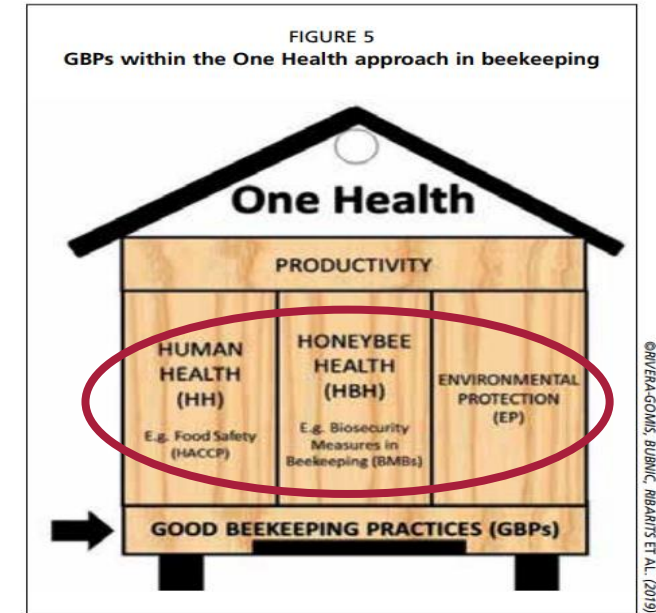
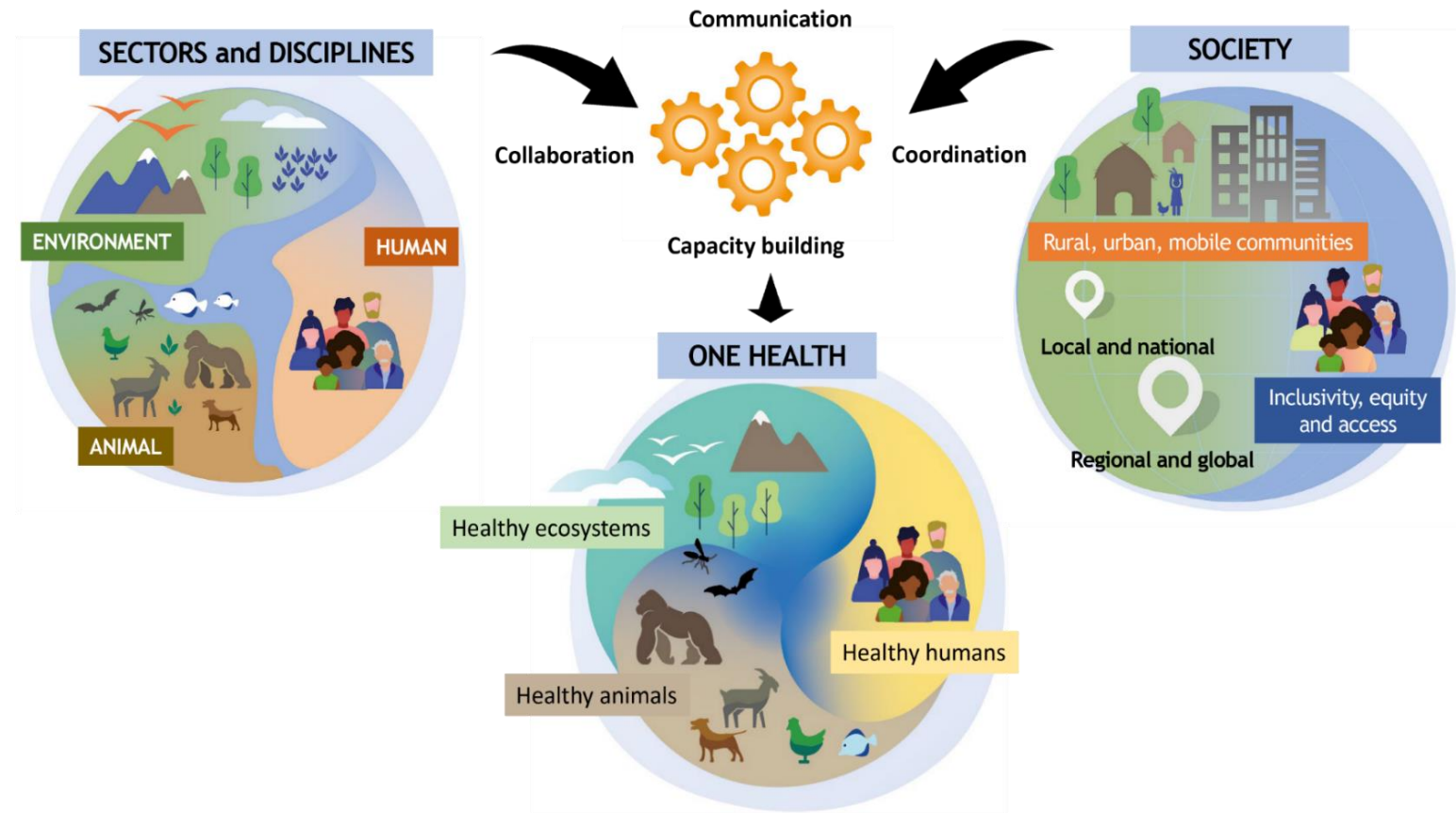
Strengthening **surveillance**
and **research** to support
evidence-based decisions

Enabling **good practices** to prevent
infections and control the spread
of resistant microbes

Food and Agriculture sectors



One Health approach to address AMR

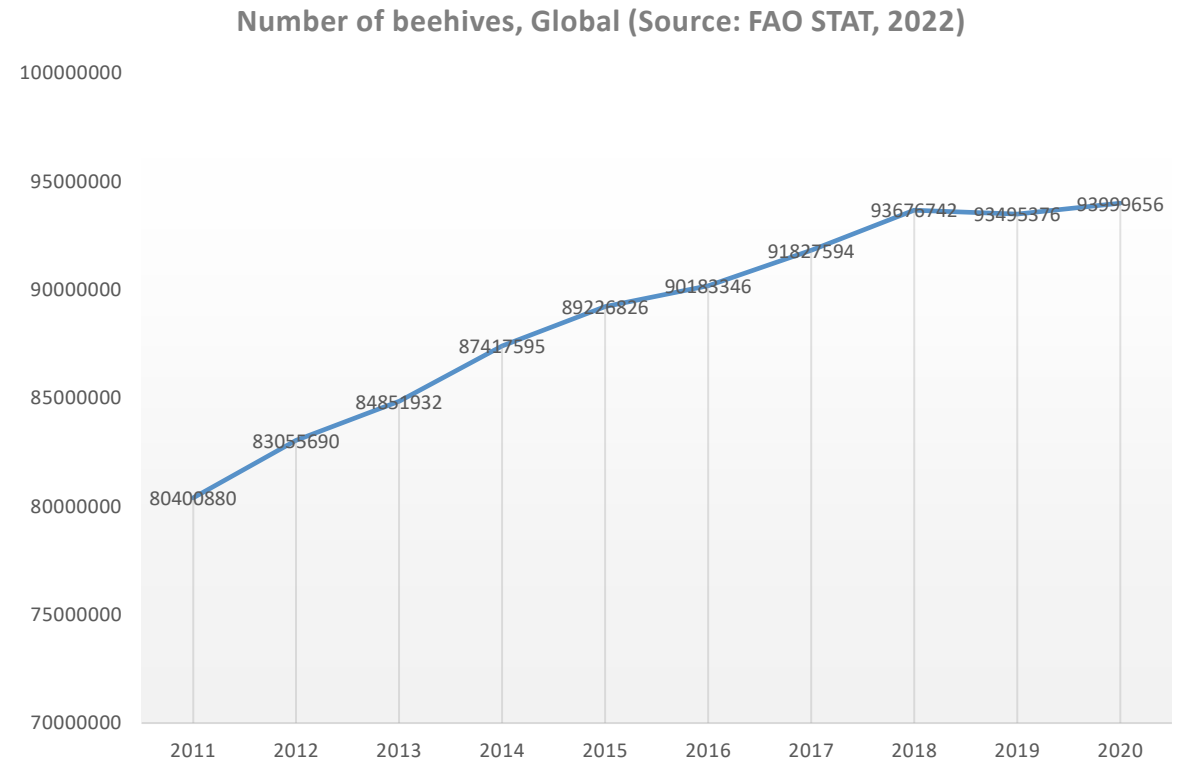


One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants and the wider environment (including ecosystems) are closely linked and interdependent.

(One Health High Level Panel [OHHLEP] One Health definition, 2021)

Current knowledge on beekeeping and AMR

- In last 10 years, the number of beehives has increased about 13 millions
- Concern on widespread bee diseases that may drive more use of veterinary medicine, including antimicrobial against Varroosis, American foulbrood, European foulbrood, Nosemosis, etc.
- A One Health approach to safeguard food system including human and bee health, and environment



FAO's work on AMR in Beekeeping

Current knowledge on beekeeping and AMR

According to survey on AMR among beekeepers in North America, United Kingdom, and European Union in 2019:

- High levels of knowledge across three regions for antimicrobial residues and drug-resistant infections
- Acknowledgement that antibiotics are used sometimes without following instructions
- Some North American beekeepers more likely to use antibiotics for disease prevention, and acquire them through internet; and had the highest percentages for having witnessed the treatment failure against bacterial honeybee diseases (i.e., American and European Foulbrood)

Awareness and practice survey as a cost-effective risk management tool to reach beekeepers worldwide



Risk Assessment Tool: FAO survey on AMR/AMU among beekeepers



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Risk assessment tools for sustainable beekeeping

International surveys among beekeepers to monitor the level of knowledge and awareness on Good Beekeeping Practices (GBPs), Antimicrobial Use (AMU) and Antimicrobial Resistance (AMR) in apiculture.

ABOUT THE SURVEY

The model survey was developed by the Food and Agriculture Organization of the United Nations (FAO), APIMONDIA, Appalachian State University and IZSLT, that is the FAO Reference Centre for Animal Health and Food Security-Discipline Apiculture, health and biosecurity. All responses and users are anonymous to protect the respondents' personal information. The survey intends to understand better beekeepers' management of *Apis mellifera* (the honey bee) around the world, to adopt specific measures (projects, training activities, roles, etc.) to identify priorities for supporting beekeepers, and to make beekeeping more sustainable worldwide. The survey will take about 8 minutes to complete. Respondents' honesty and time are greatly appreciated.

INFORMED CONSENT

I have been informed that it is my right to refuse to participate in this anonymous survey and that if I choose to refuse, there will be no negative consequences for me. I have been informed that anything I say during the discussion today will remain COMPLETELY CONFIDENTIAL: my personal information such as name will not be collected in this survey, nor any other information that could identify myself.

International survey on AMR, AMU and Good Beekeeping Practice

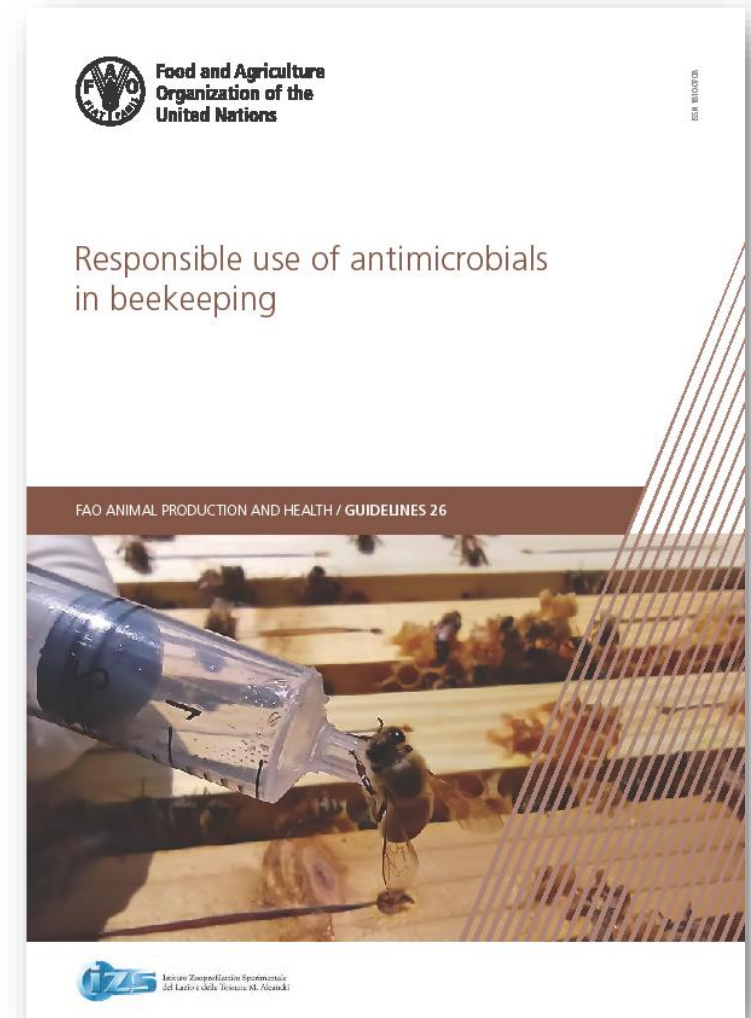
- Aim: to understand the level of knowledge and awareness on **AMR, AMU, Good Beekeeping Practice** among beekeepers
- Previous survey in 2019 completed
- Collaboration with IZSLT, Apimondia, Appalachian State University
- **Launched in all FAO languages** – English, French, Arabic, Chinese, Russian, Spanish.
- Open until 31 October 2022

Guidelines on the responsible use of antimicrobials in beekeeping

Aim: promoting responsible AMU to safeguard **sustainable livelihood** in the apiculture sector and health of human, animal including bee, and environment with a One Health approach.

These guidelines provide:

1. Good Beekeeping Practices (**GBPs**);
2. Biosecurity Measures in Beekeeping (**BMBs**);
3. Prudent and efficient **AMU** in beekeeping;
4. **Progressive Management Pathway (PMP)** approach in Beekeeping;
5. **Risk assessment tools: the surveys.**

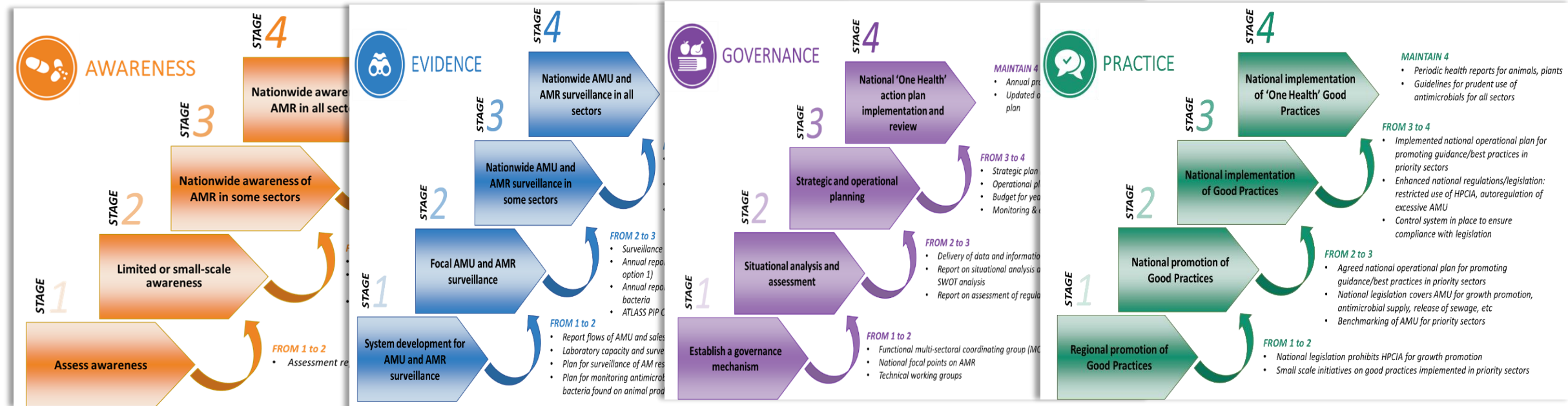
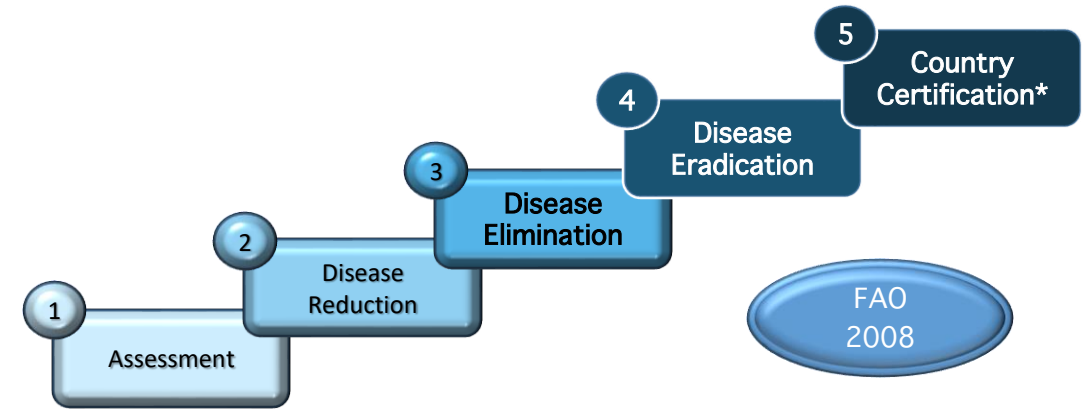


FAO's work on AMR in Beekeeping – PMP approach in Beekeeping

The Progressive approach

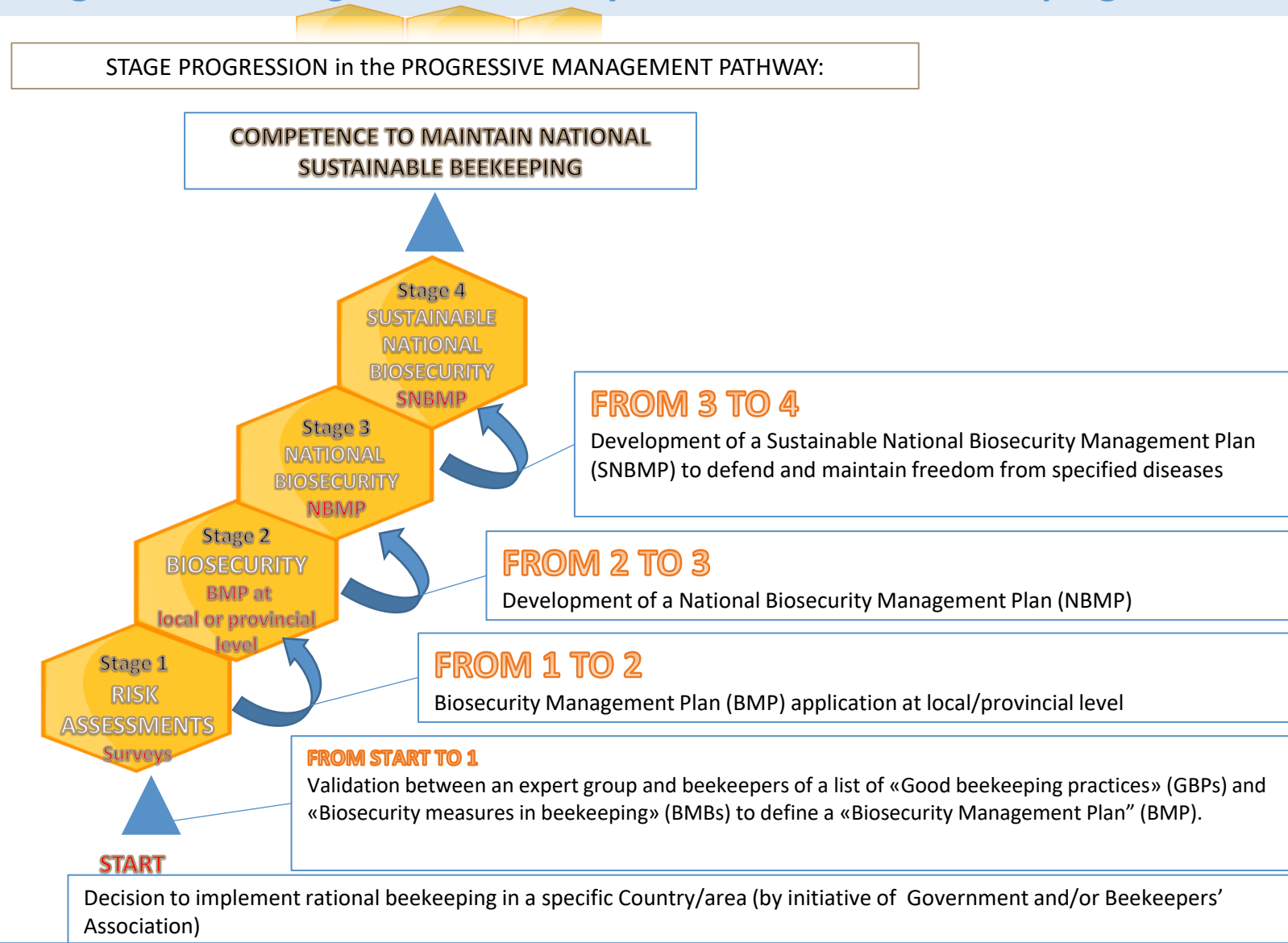
Stepwise approach for a country to reach a specific goal:

- Eliminating a disease
e.g., Progressive **Control** Pathway for FMD, AAT, Brucellosis
- Managing a threat
e.g., Progressive **Management** Pathway for AMR



FAO's work on AMR in Beekeeping – Progressive Management Pathway for Sustainable Beekeeping

Tool aims to assist countries to implement sustainable risk management with good beekeeping practice, responsible use of antimicrobials, and appropriate biosecurity measures adopted in beekeeping.



Way forward

- Promoting Responsible use of antimicrobials in beekeeping to countries and beekeepers
- The FAO Progressive Management Pathway for Sustainable Beekeeping - Tool and Manual
- Monitoring the knowledge and awareness on **AMR, AMU, Good Beekeeping Practice** among beekeepers



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Thank you!



Protecting people, animals, and the environment every day