



Antimicrobial resistance II: Situation and strategies in Korea

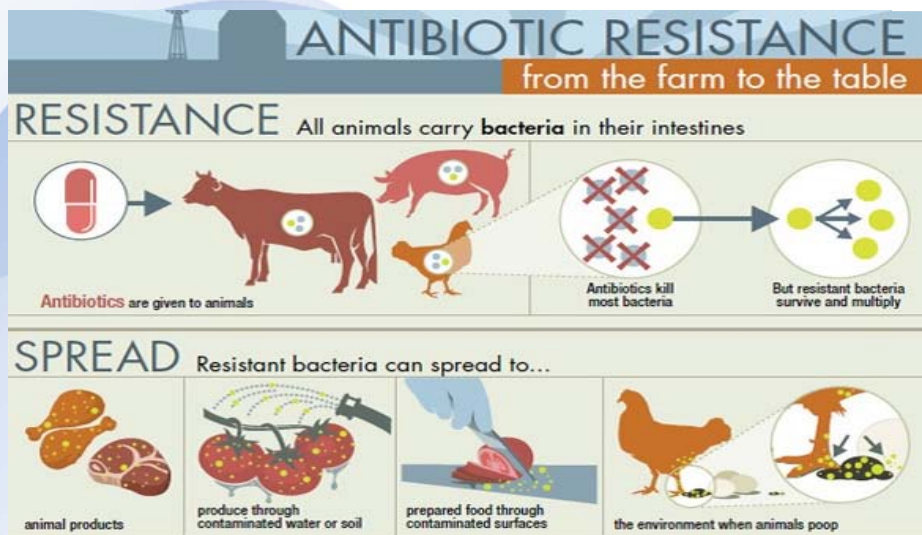
Food Microbiology division, NIFDS, MFDS

Soohwan Suh

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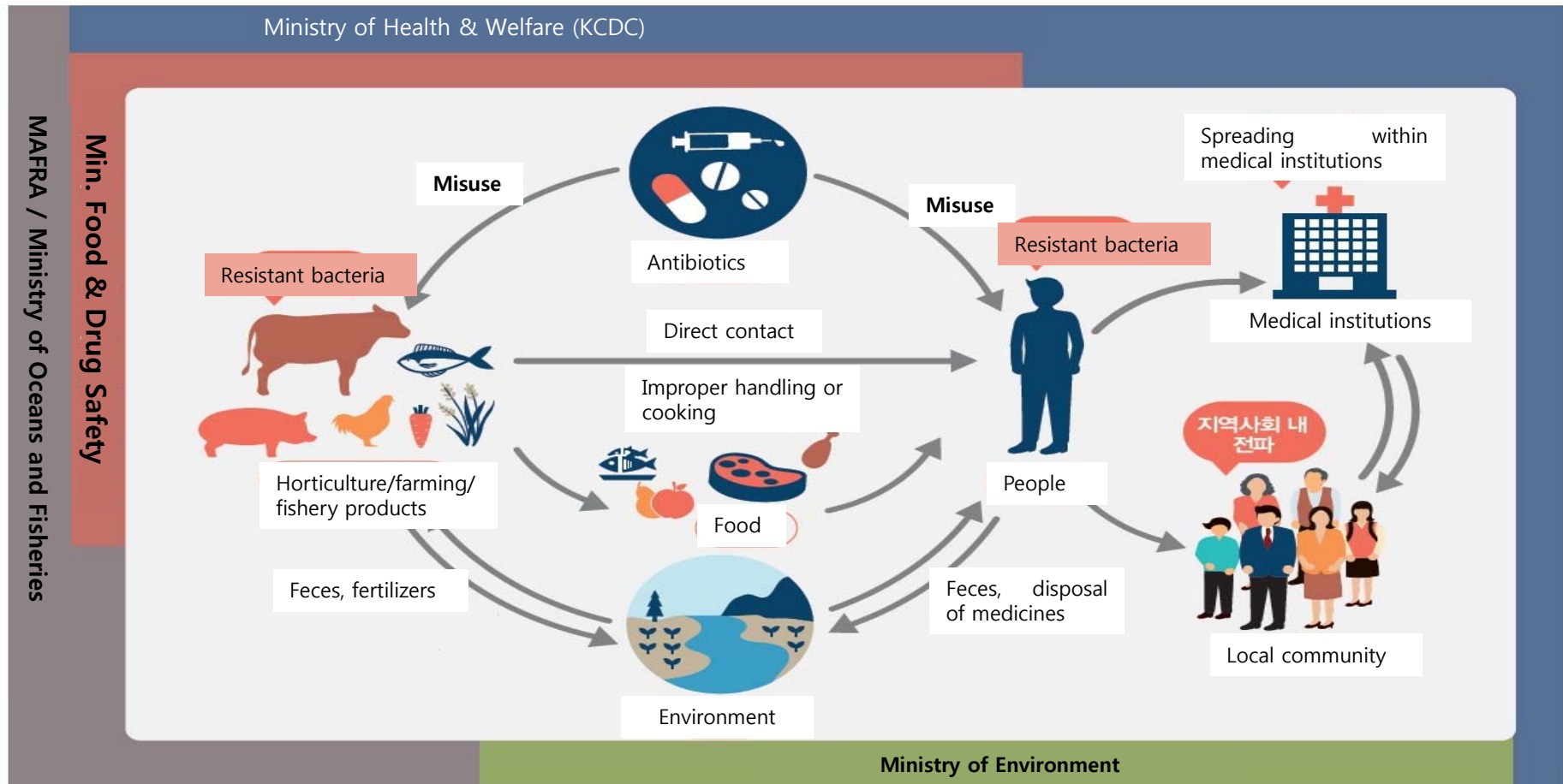
- I. Status of antimicrobial-resistance management in South Korea
 - 1. History of the national AMR management program
 - 2. Major outcomes of national AMR programs
 - 3. Future directions
- II. Resistance rate in retail meats
 - 1. Resistance in domestic and imported meats

Threats of antimicrobial-resistance



Threats of antimicrobial-resistance

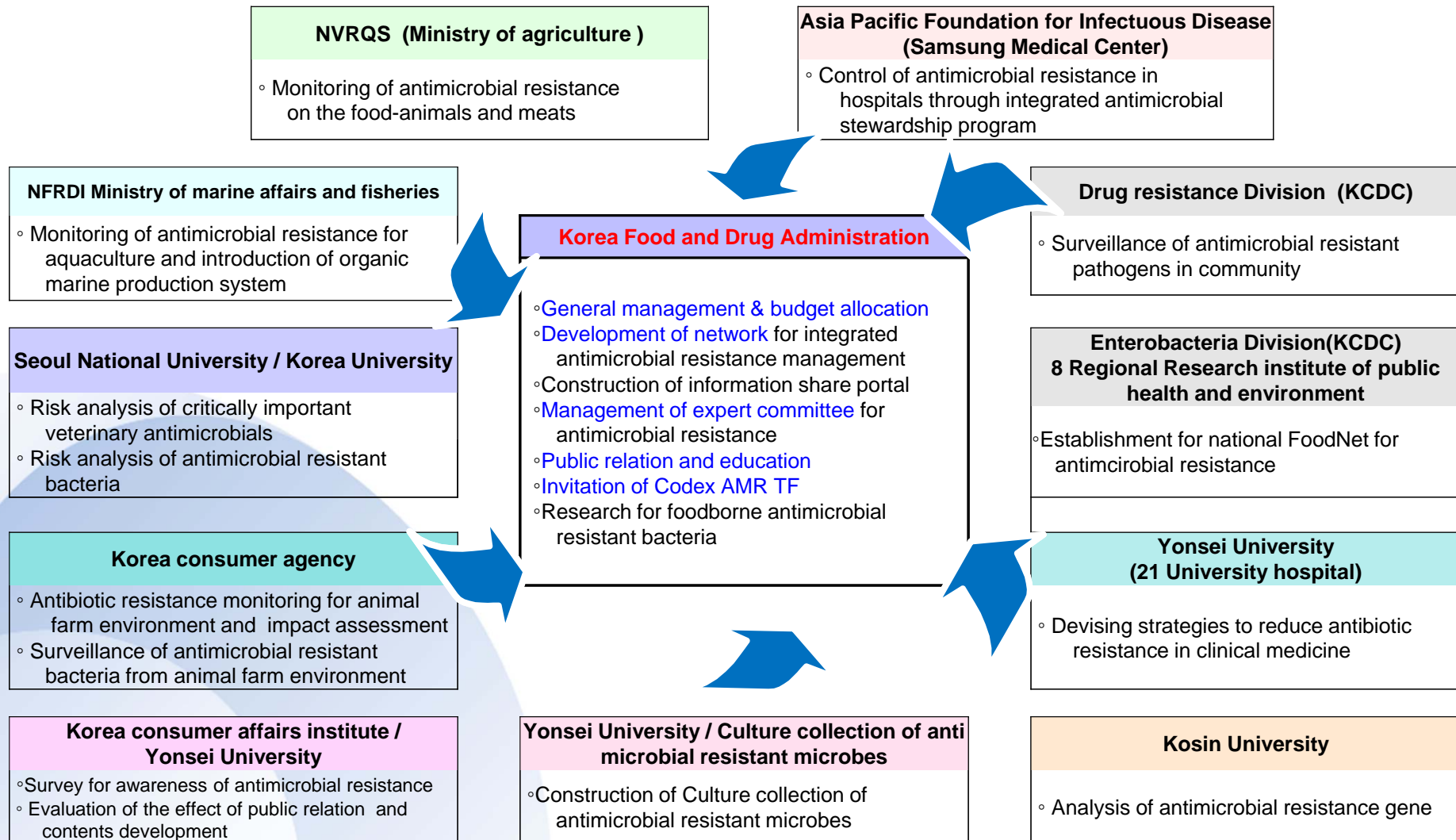
Origins and channels of contaigion



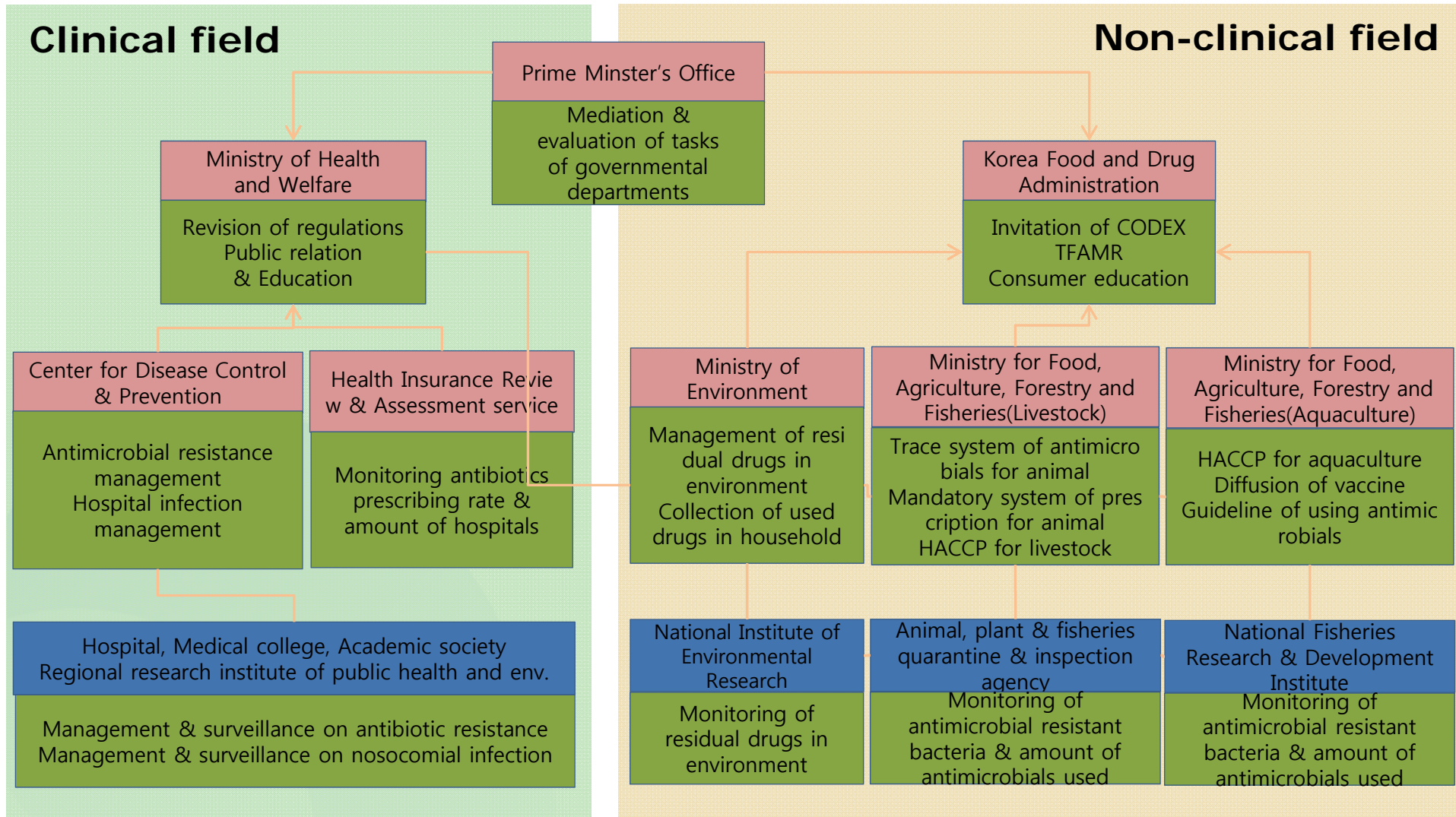


History of the national AMR management program

National Antimicrobial-resistance Management Program (2003-2007)

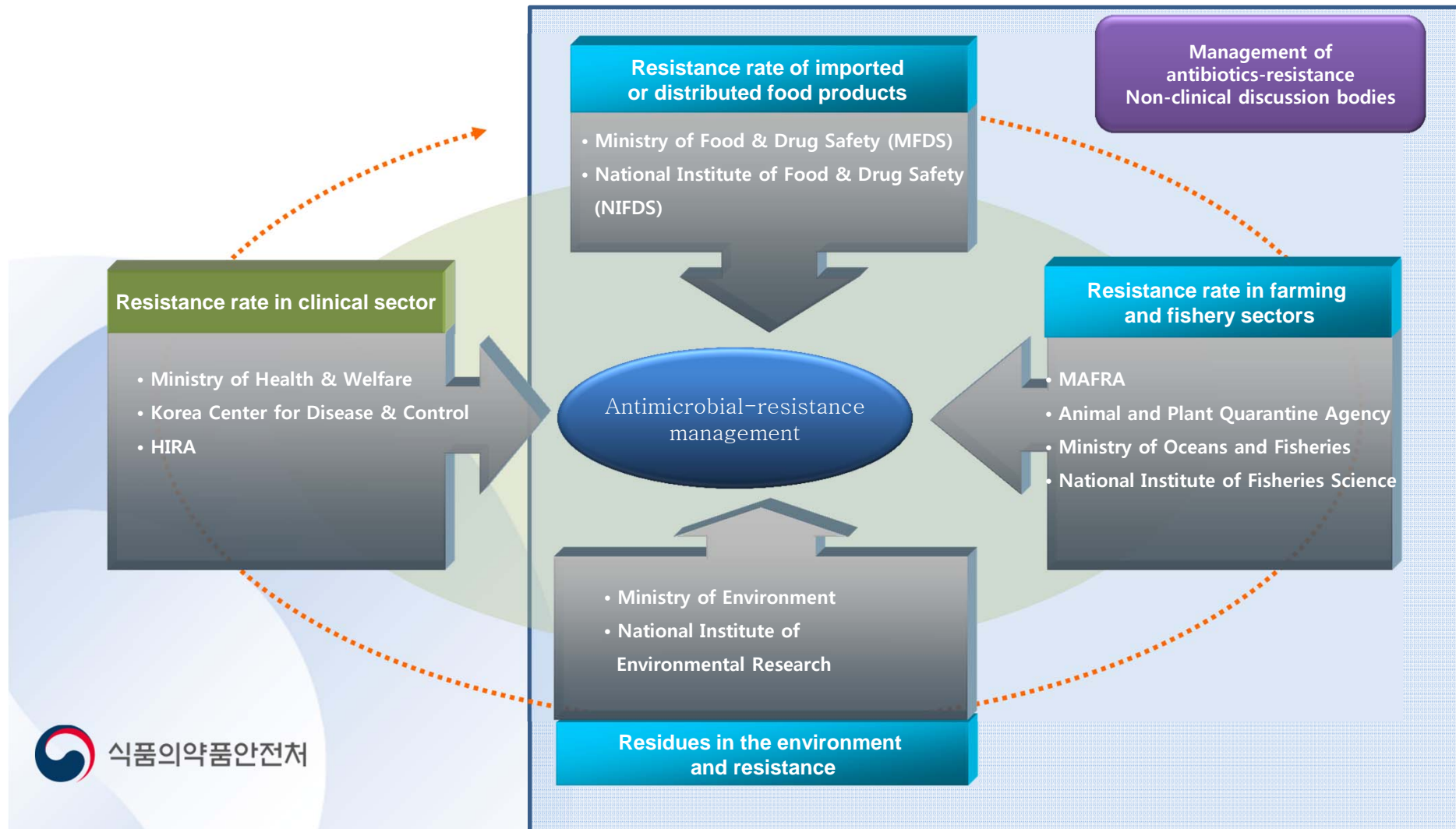


National Antimicrobial-resistance Management Program (2008-2012)



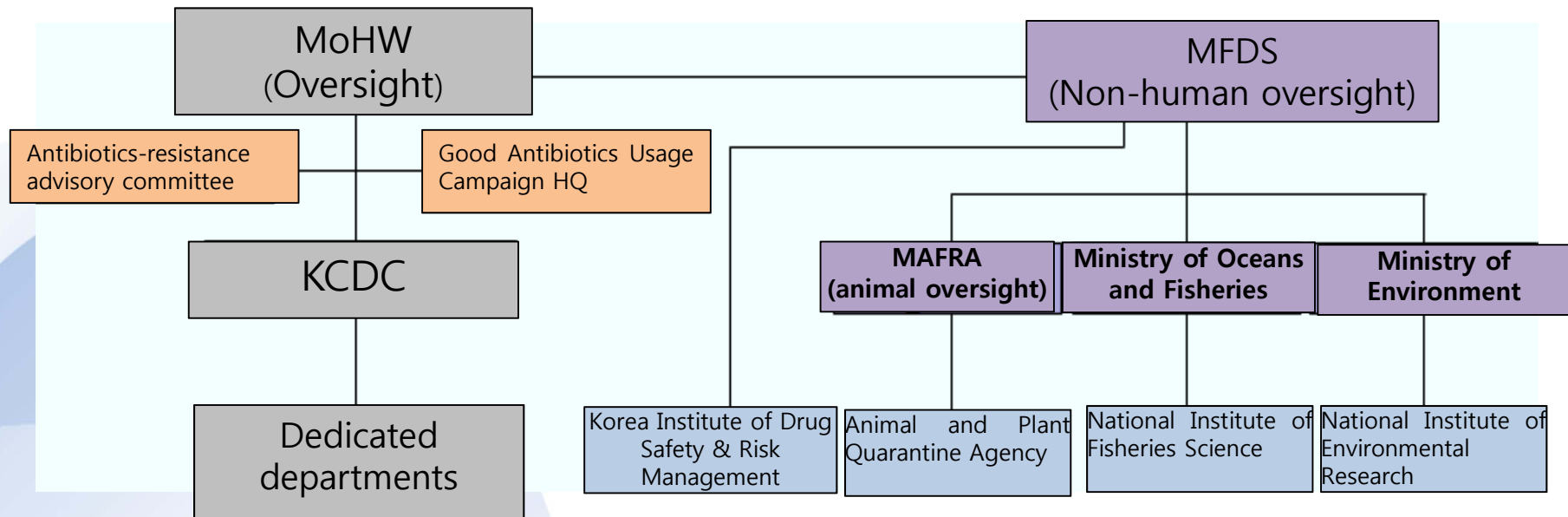
Non-clinical discussion bodies (2013~2016)

- **Monitoring of antimicrobial-resistance in each sector**
after the end of “National Antibiotics-resistance Safety Management Program”

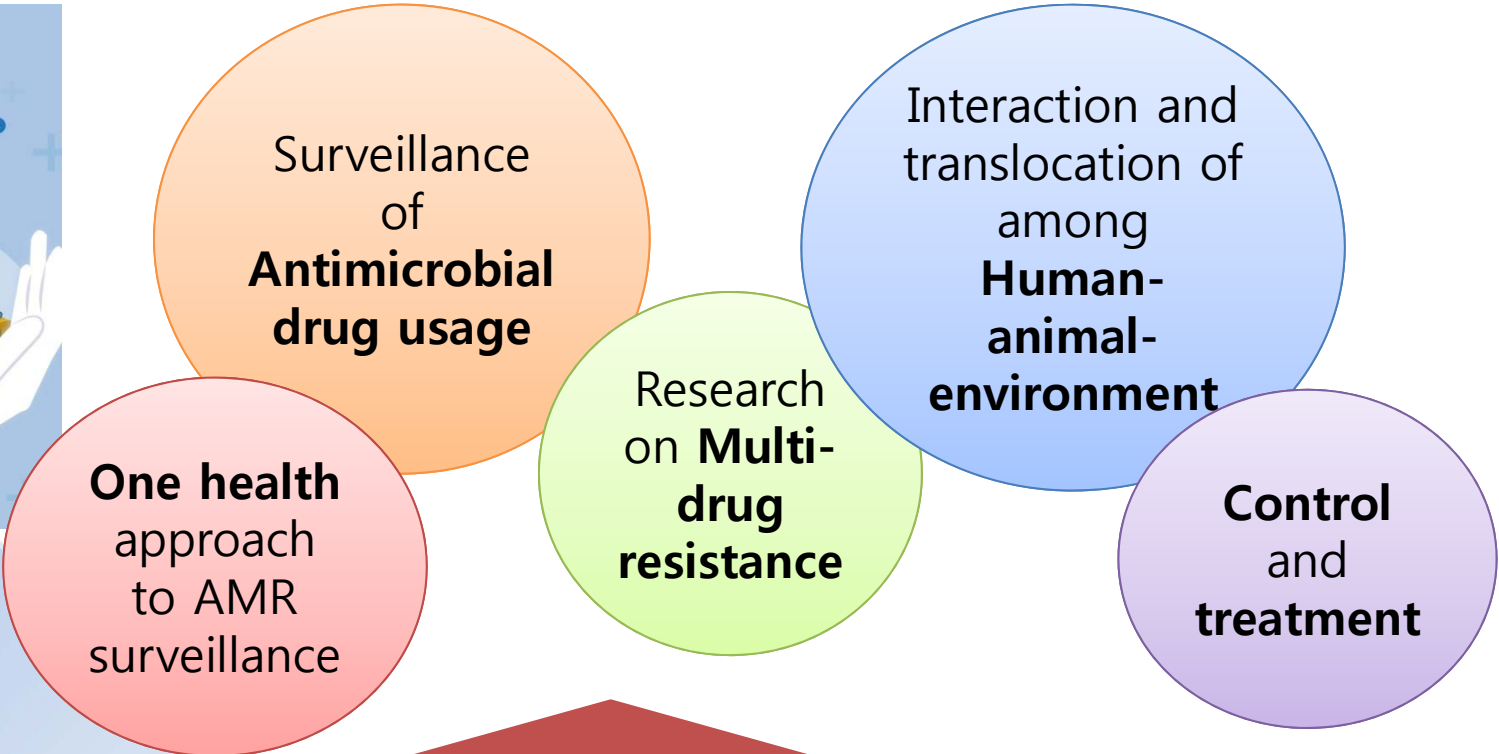
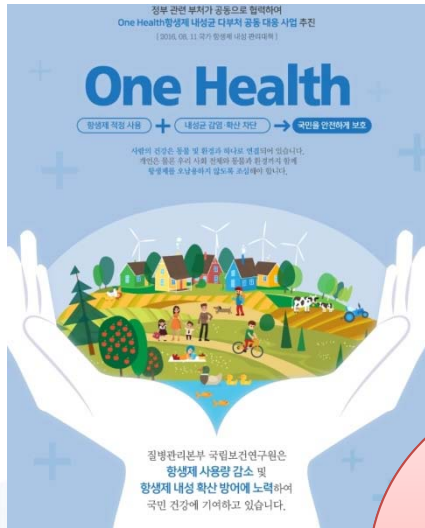


National action plan of Korea (2016~)

- WHO presented a **global action plan** and urged national-level actions (2015).
- Developed and implemented the **National Action Plan on AMR**



One health approach fight AMR (2017~)



Ministry of Environment

Ministry of Health & Welfare

Ministry of Science & ICT

Ministry of Oceans & Fisheries

Ministry of Food & Drug Safety

Ministry of Agriculture, Food & Rural Affairs

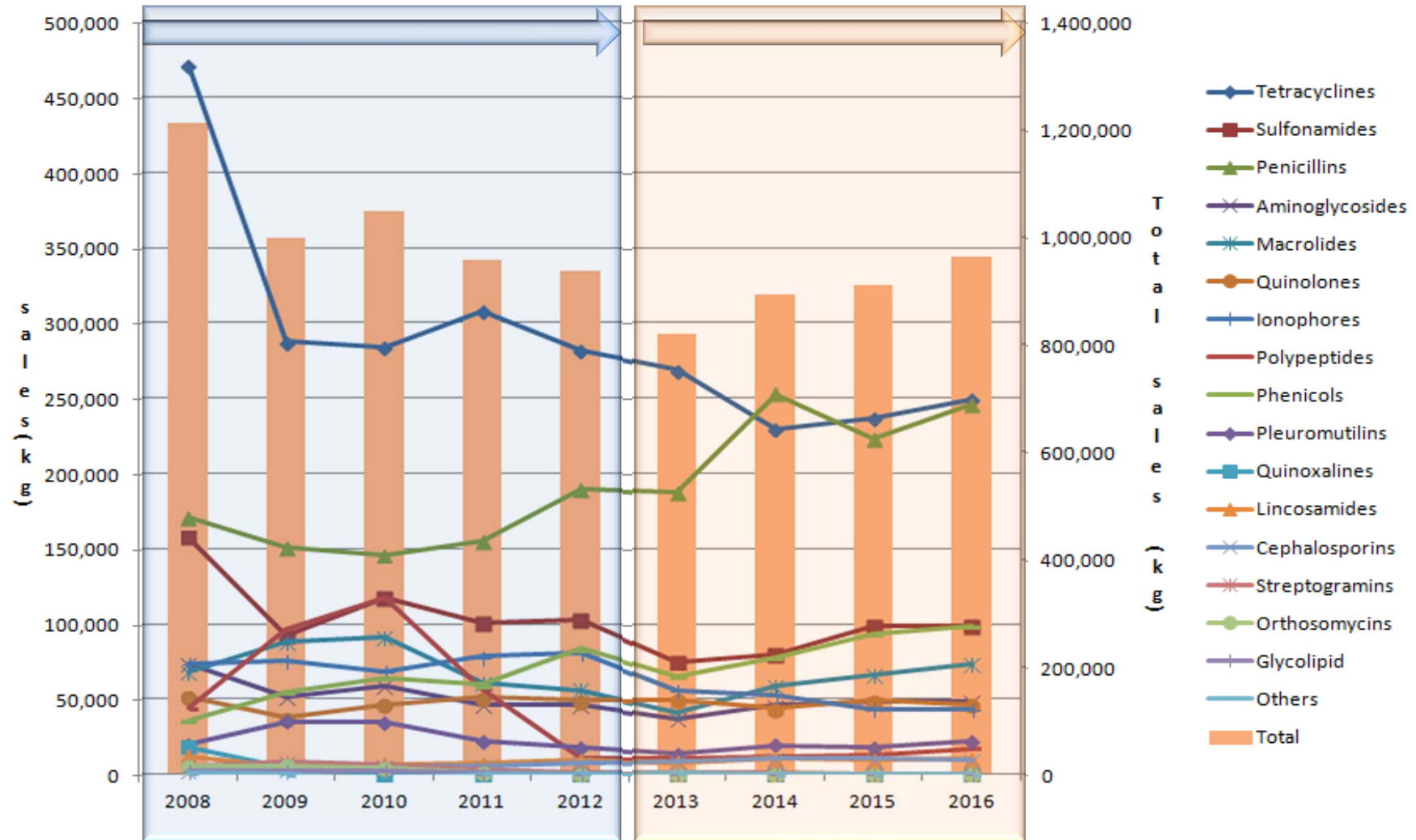


**Major outcomes
of national AMR
management programs**

Major outcomes of National programs

- **Ban** of adding antimicrobials in **animal feed** (MAFRA, 2011)
- Provide **government subsidies** for **organic** live stock farms (2008)
- Expansion of **HACCP** certified farms
- Adoption of **seafood traceability** system
(*Ministry of Oceans and Fisheries, 2008*)
- Adoption of **mandatory prescription by veterinarians** (MAFRA, 2013)
- **Public relation and education** (2003~)
- Medicinal waste recovery system (*MoE, 2010*)

Major outcomes of National projects



Major outcomes of public relation & education

- Guidelines for public education

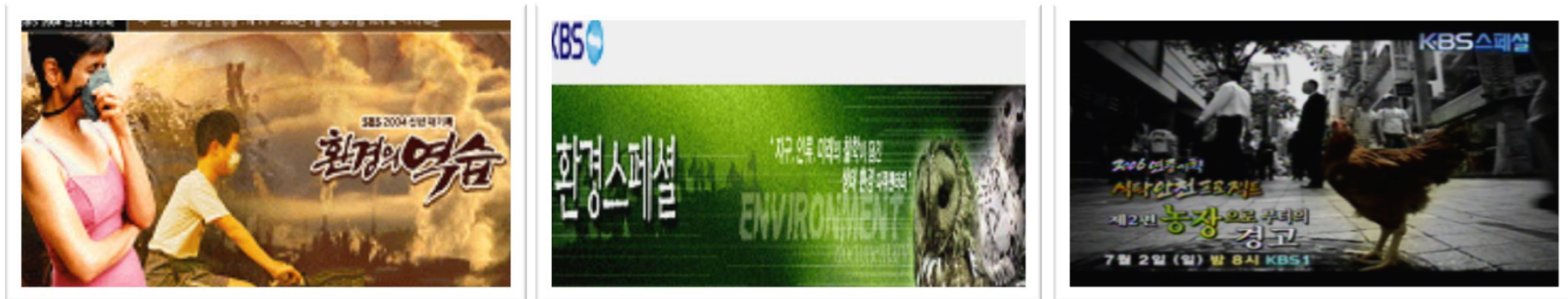


- Educations on animal and aqua farms for prudent use of antimicrobials



Major outcomes of public relation & education

- Public educations (TV shows)

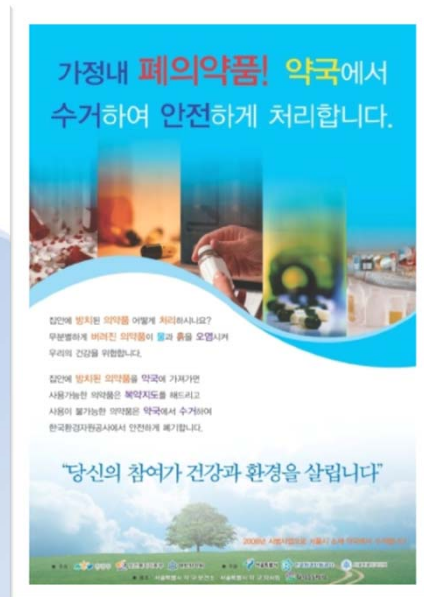


- Public educations (leaflets)



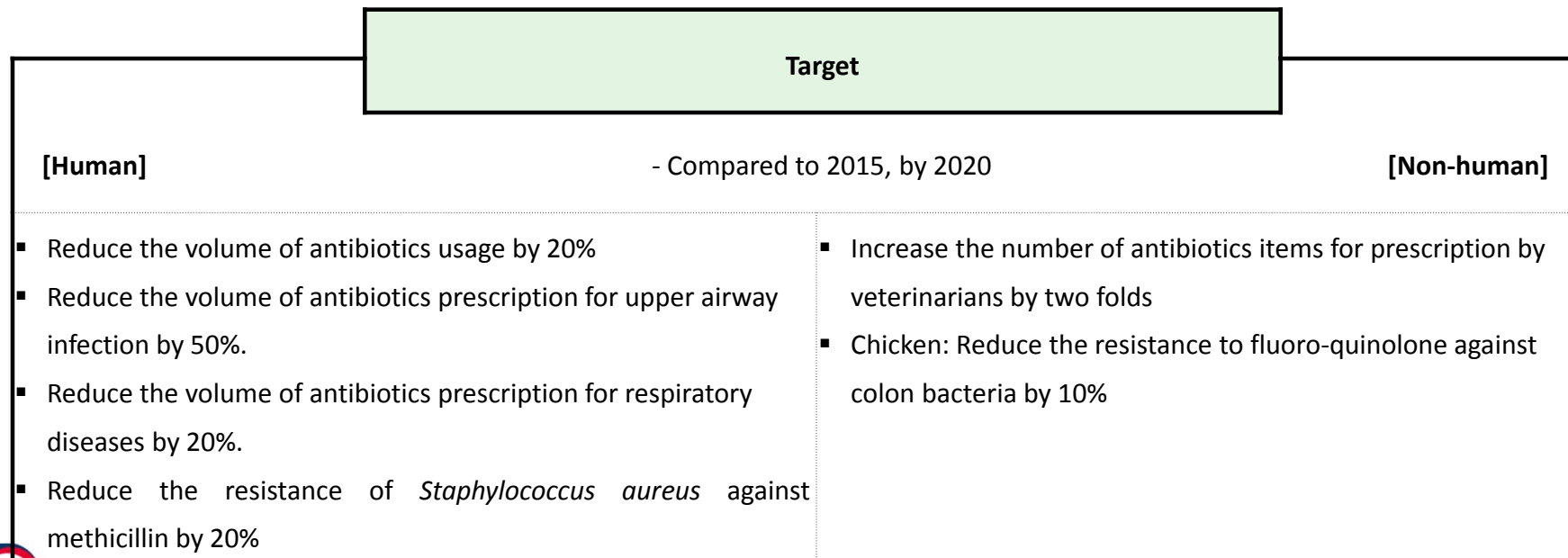
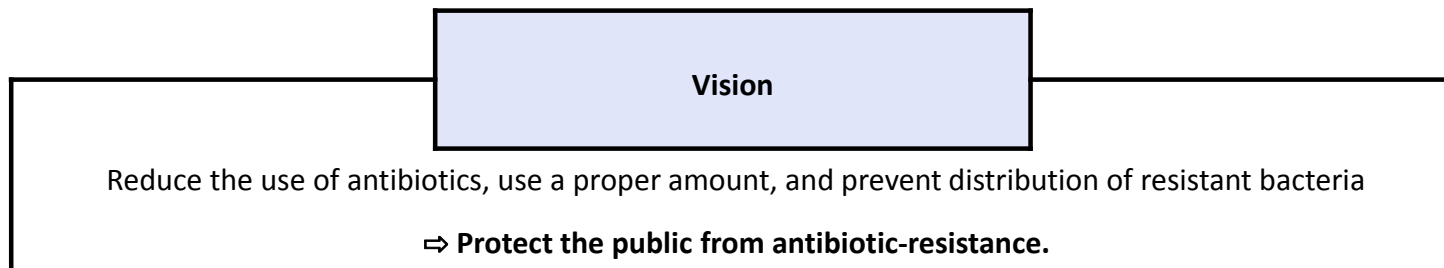
Major outcomes of public relation & education

- Collection and dispose of unused drugs



Future directions

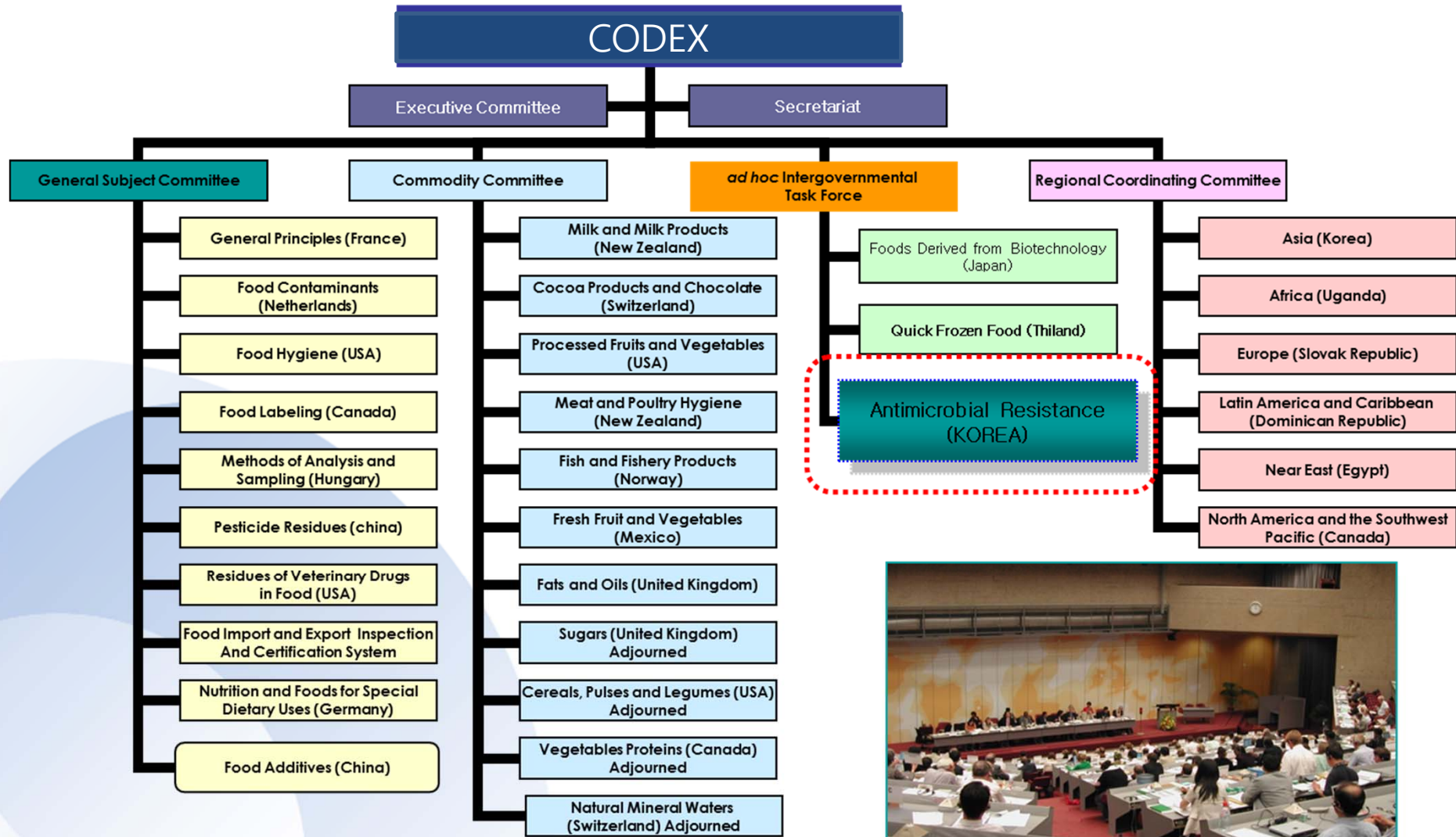
- Establish and implement national antibiotics- resistance management action plan(2016~)



CODEX *ad hoc* TF AMR

- The Codex *ad hoc* Intergovernmental Task Force on **Antimicrobial Resistance (TFAMR)** established in the Codex Alimentarius Commission (CAC) in 2006
- The **1st through 4th Codex TFAMR** held in Korea (2007~2010)
 - Guidelines on **risk assessment of foodborne antimicrobial resistance**
- The **5th Codex TFAMR** holding in Jeju, Korea in 2017
 - Revision of **the Code of Practice to Minimize and Contain Antimicrobial Resistance** (CAC-PCP 61-2005)
 - Propose draft **Guidelines on integrated surveillance of antimicrobial resistance**

CODEX *ad hoc* TF AMR



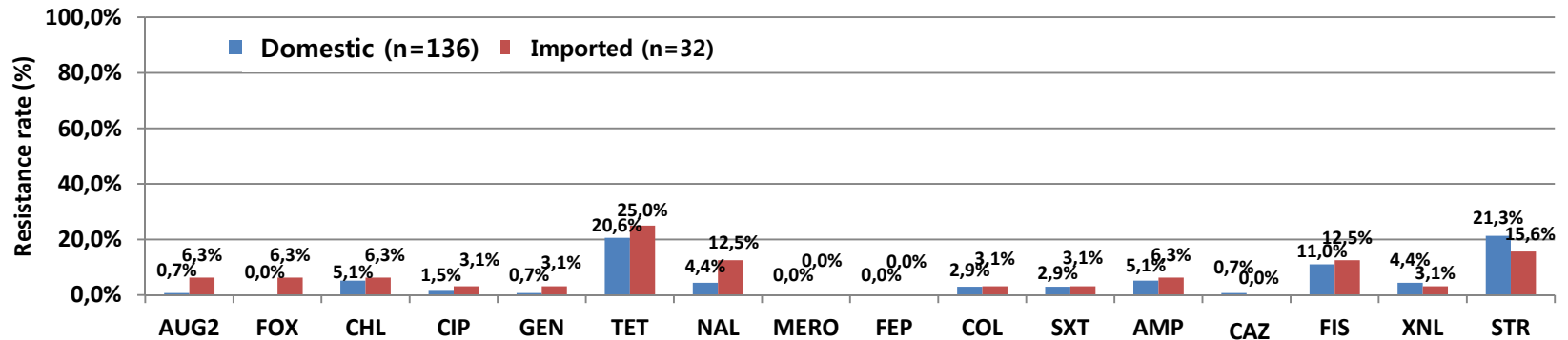


Resistance rate in retail meats

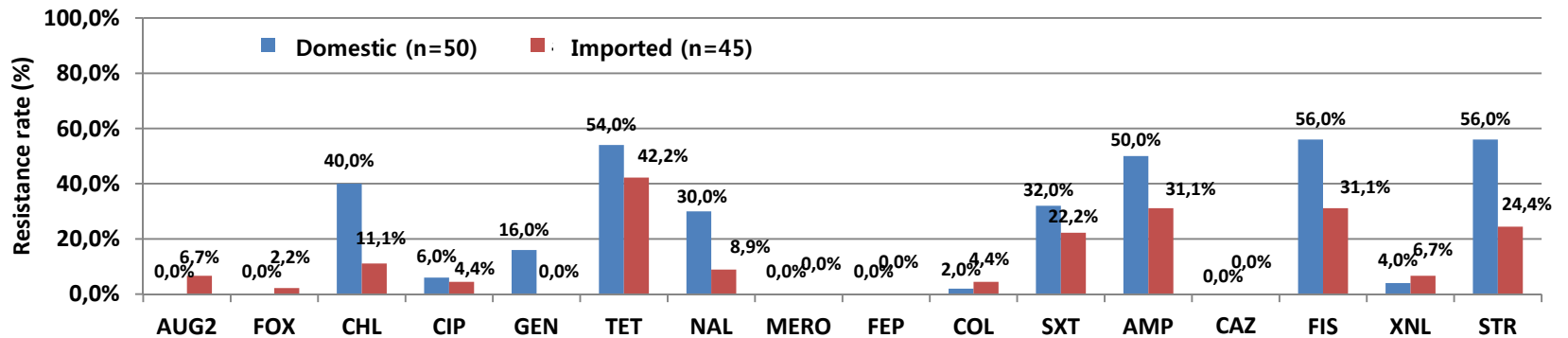
Domestic vs. Imported (y2017)

E. coli

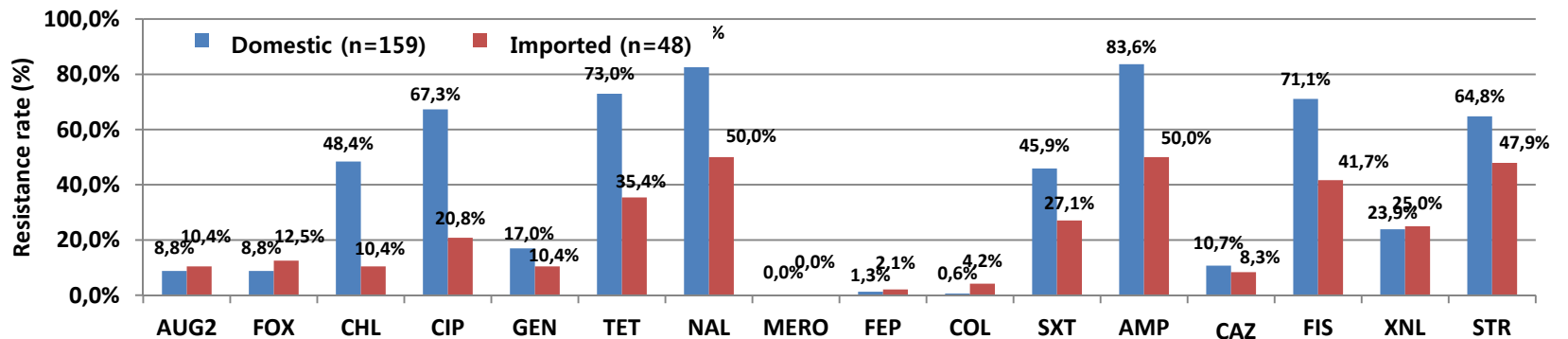
Beef



Pork



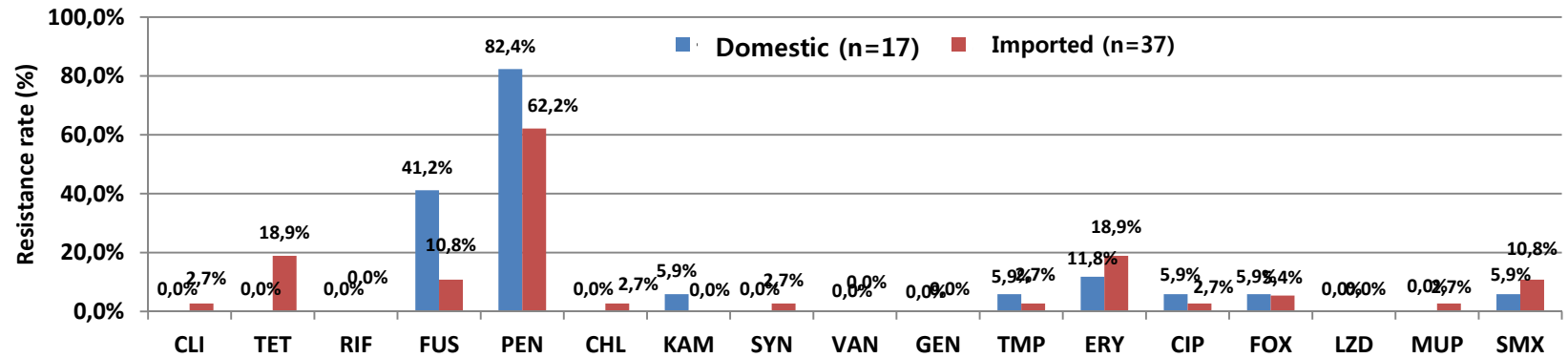
Chicken



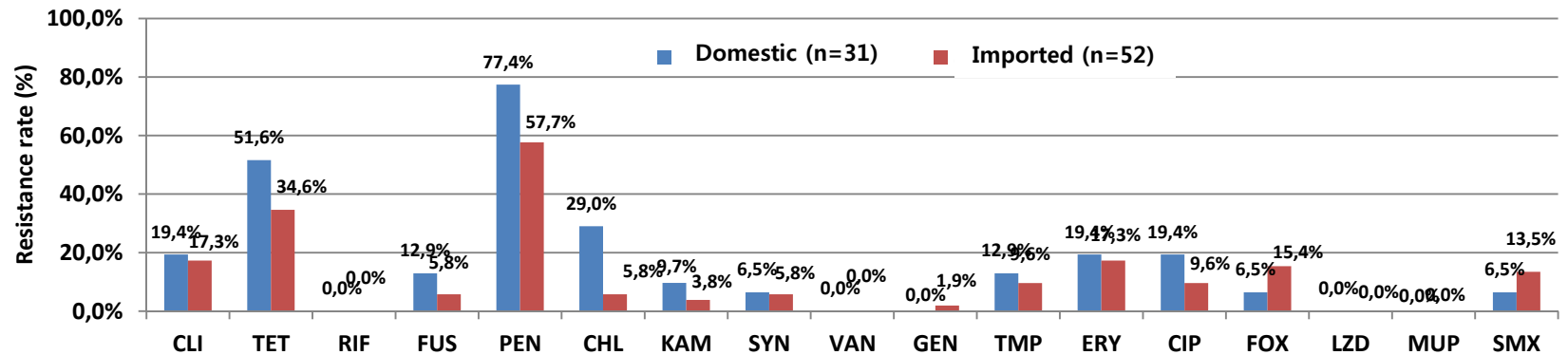
Domestic vs. Imported (y2017)

S. aureus

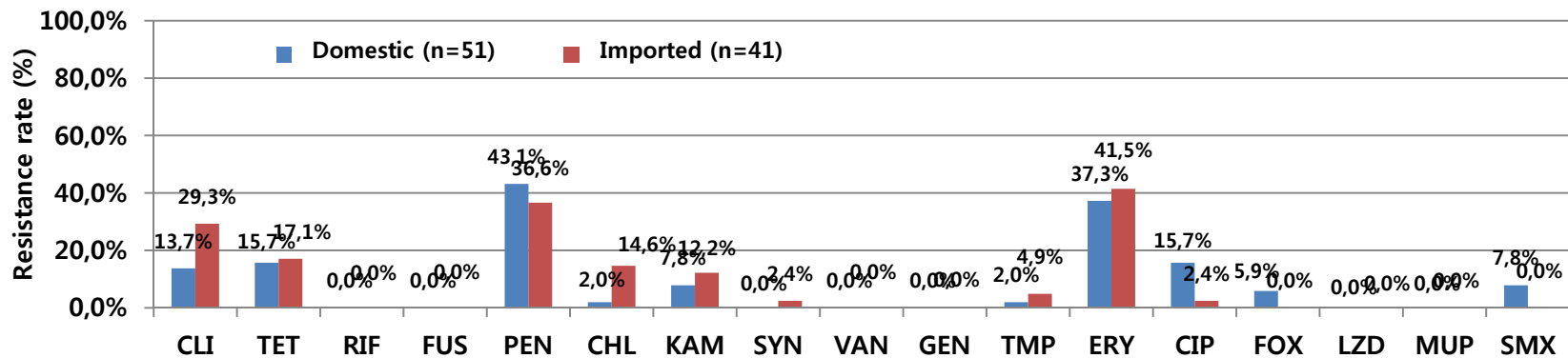
Beef



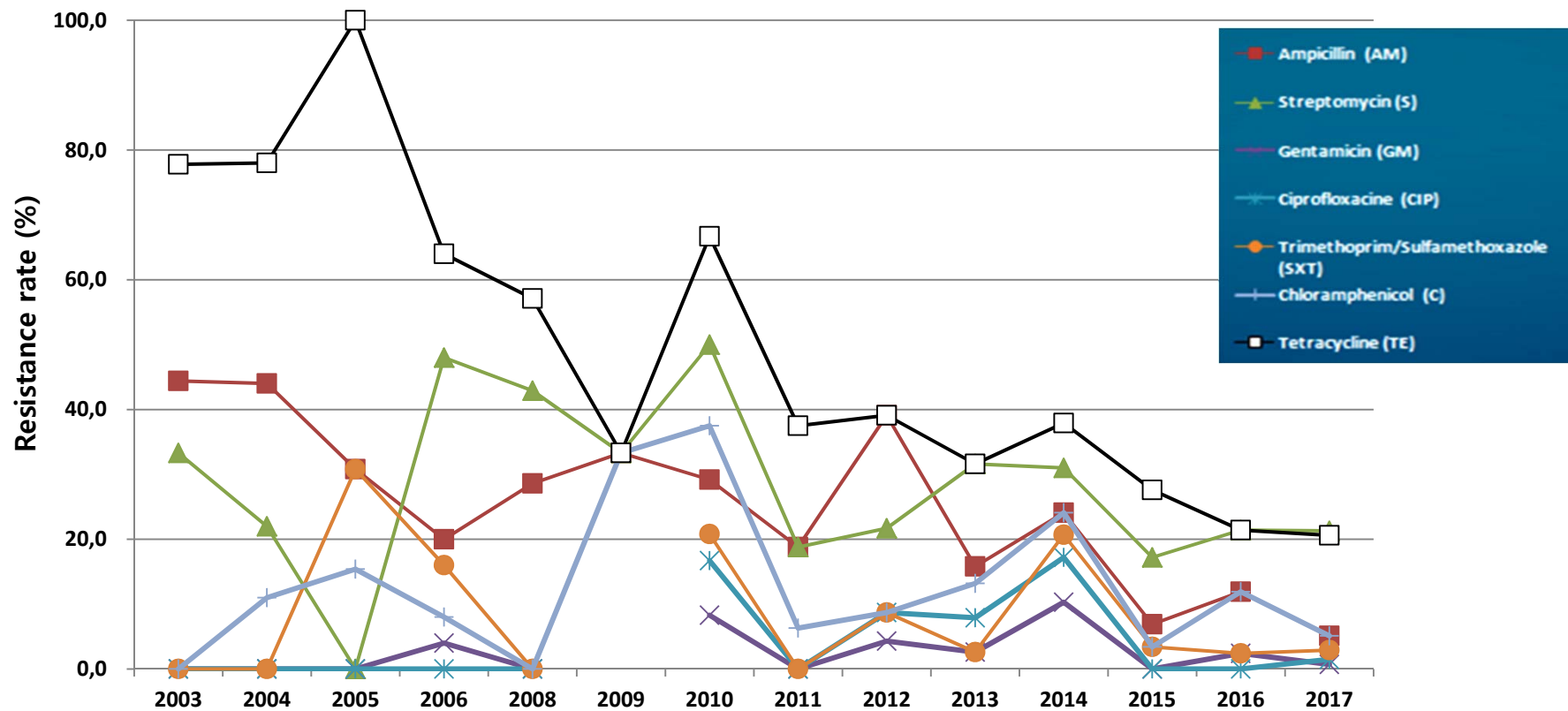
Pork



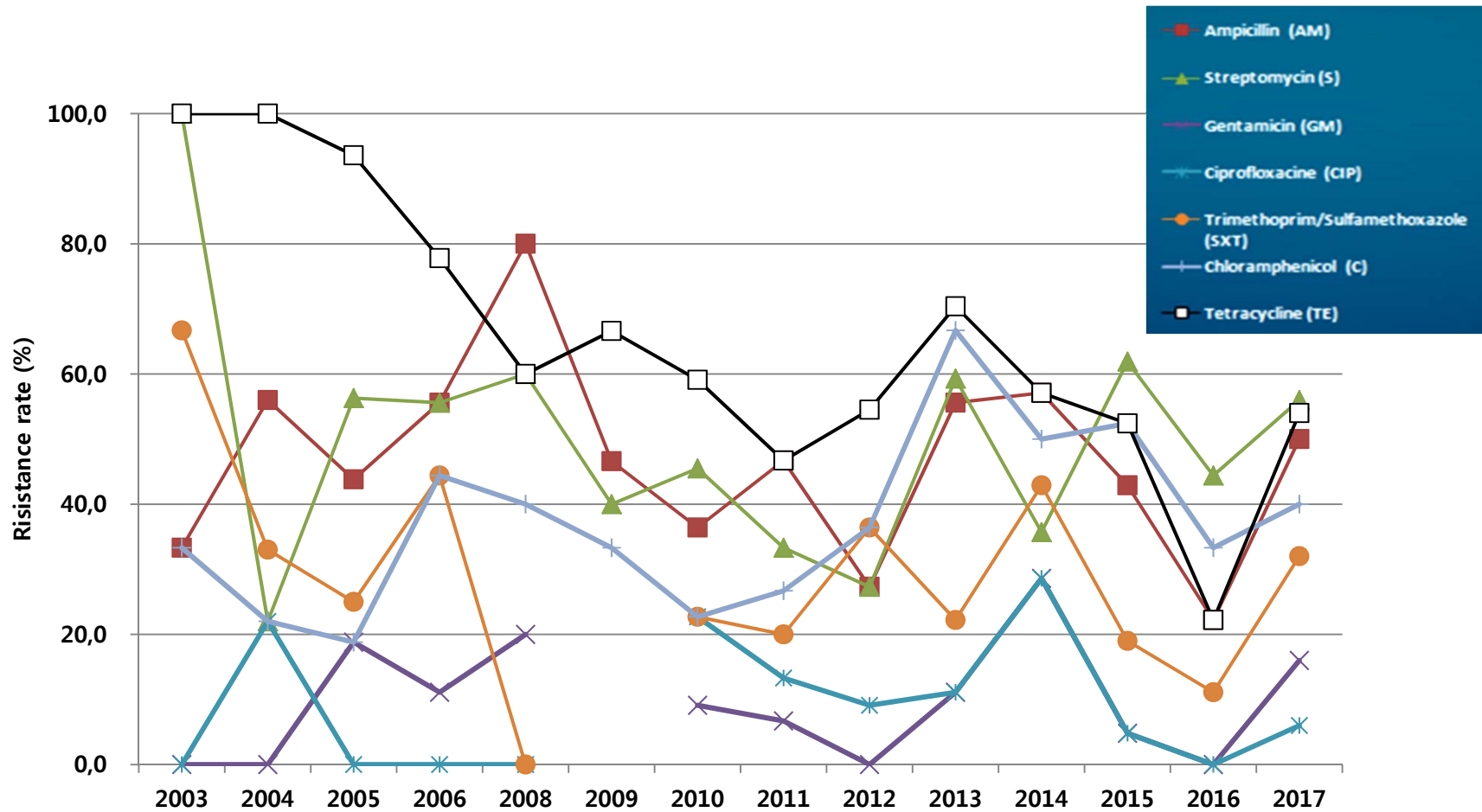
Chicken



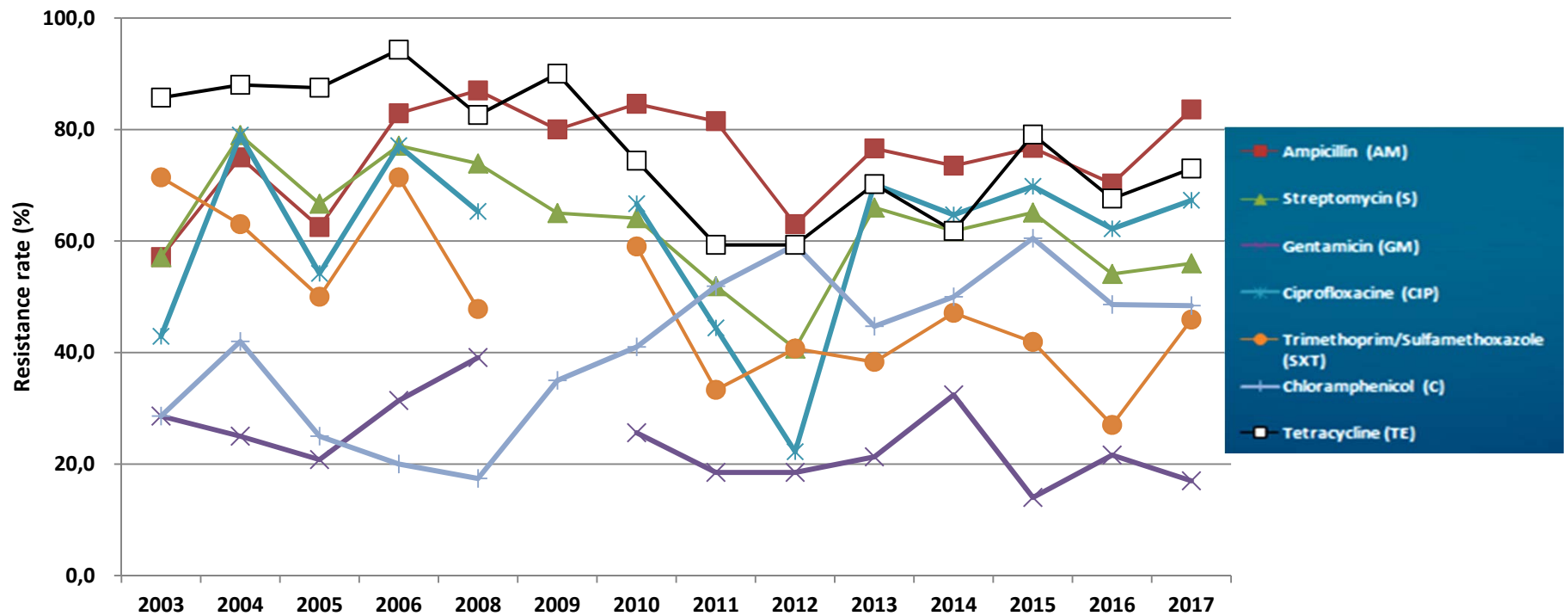
Resistance in *E. coli* (domestic beef)



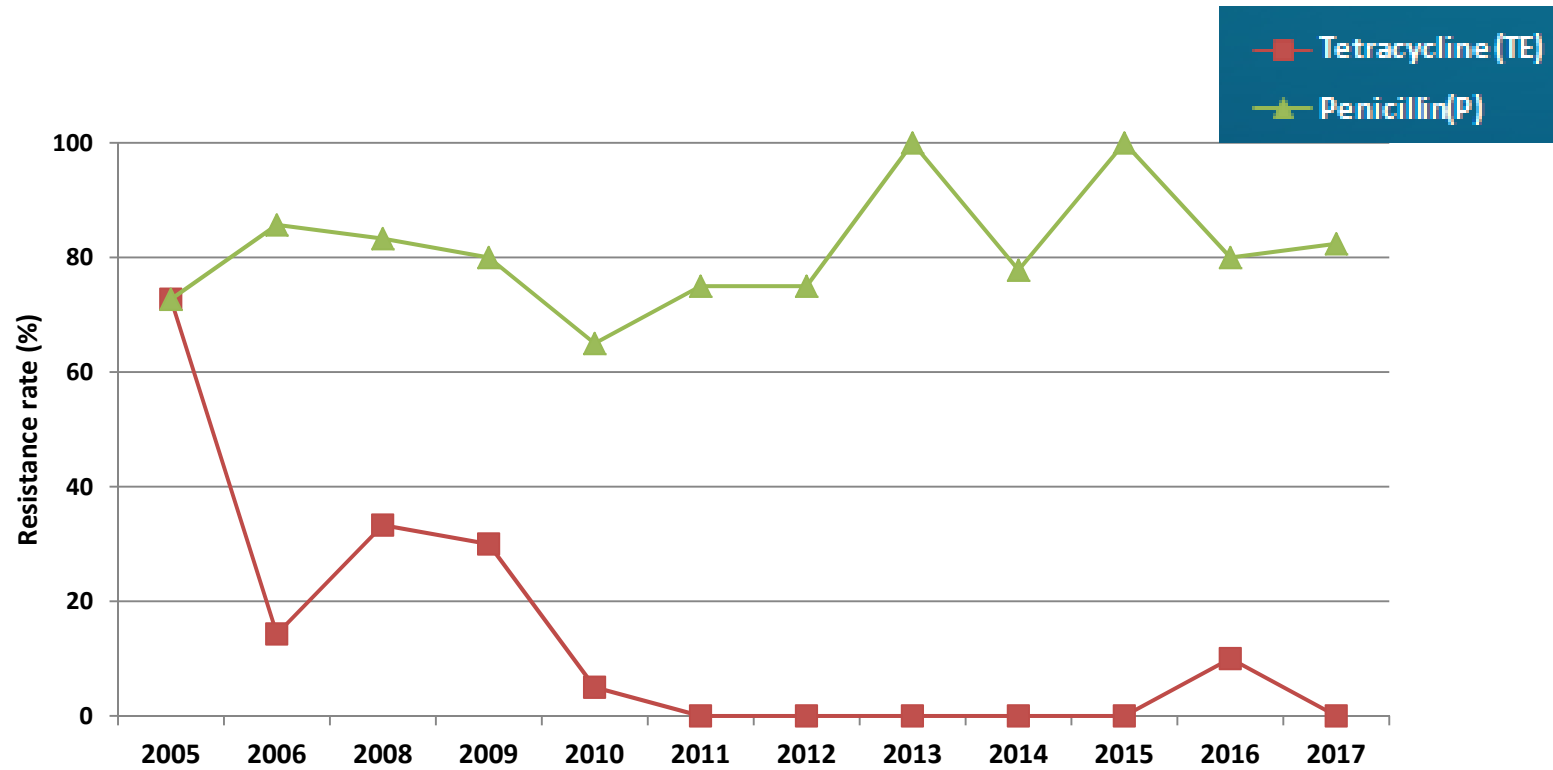
Resistance in *E. coli* (domestic pork)



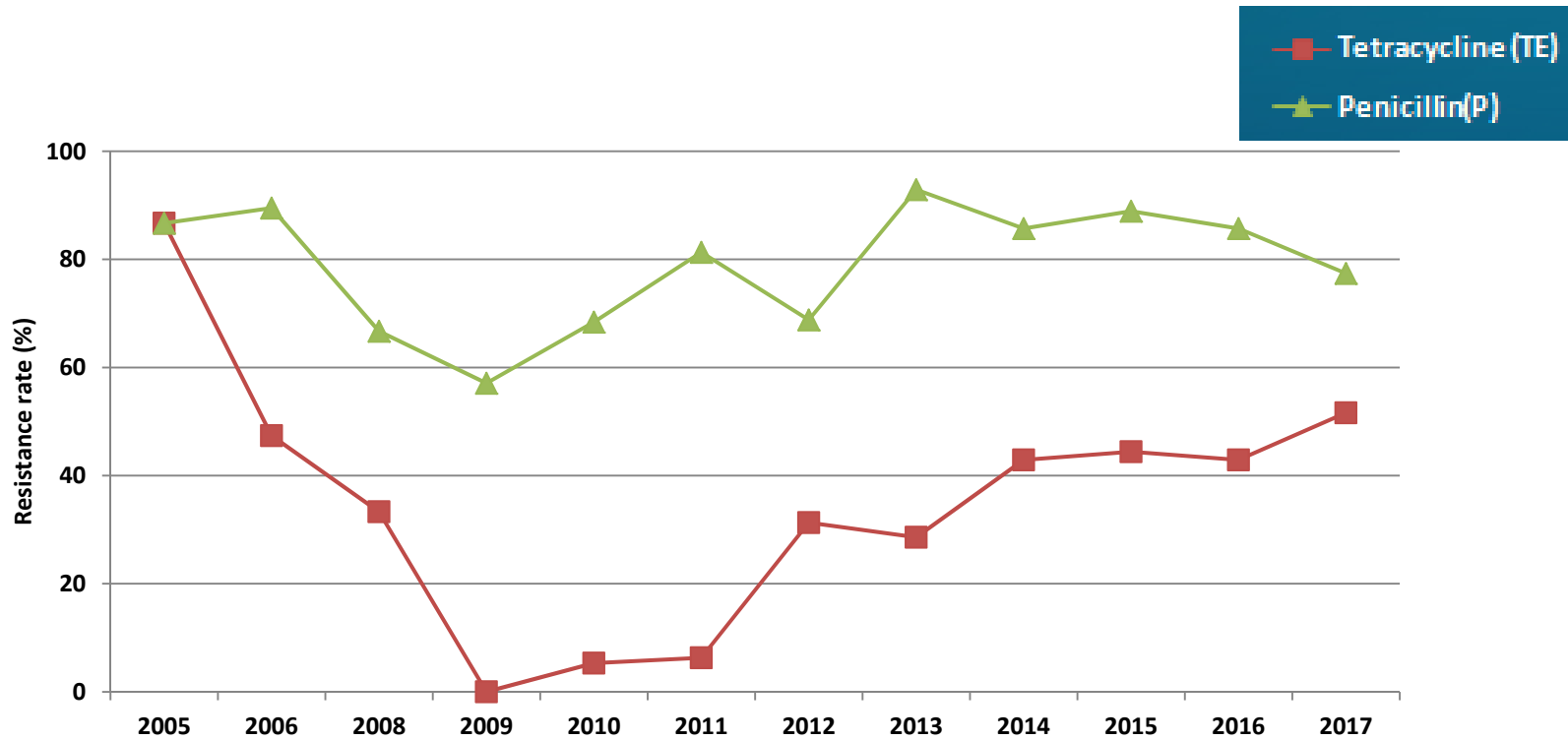
Resistance in *E. coli* (domestic chicken)



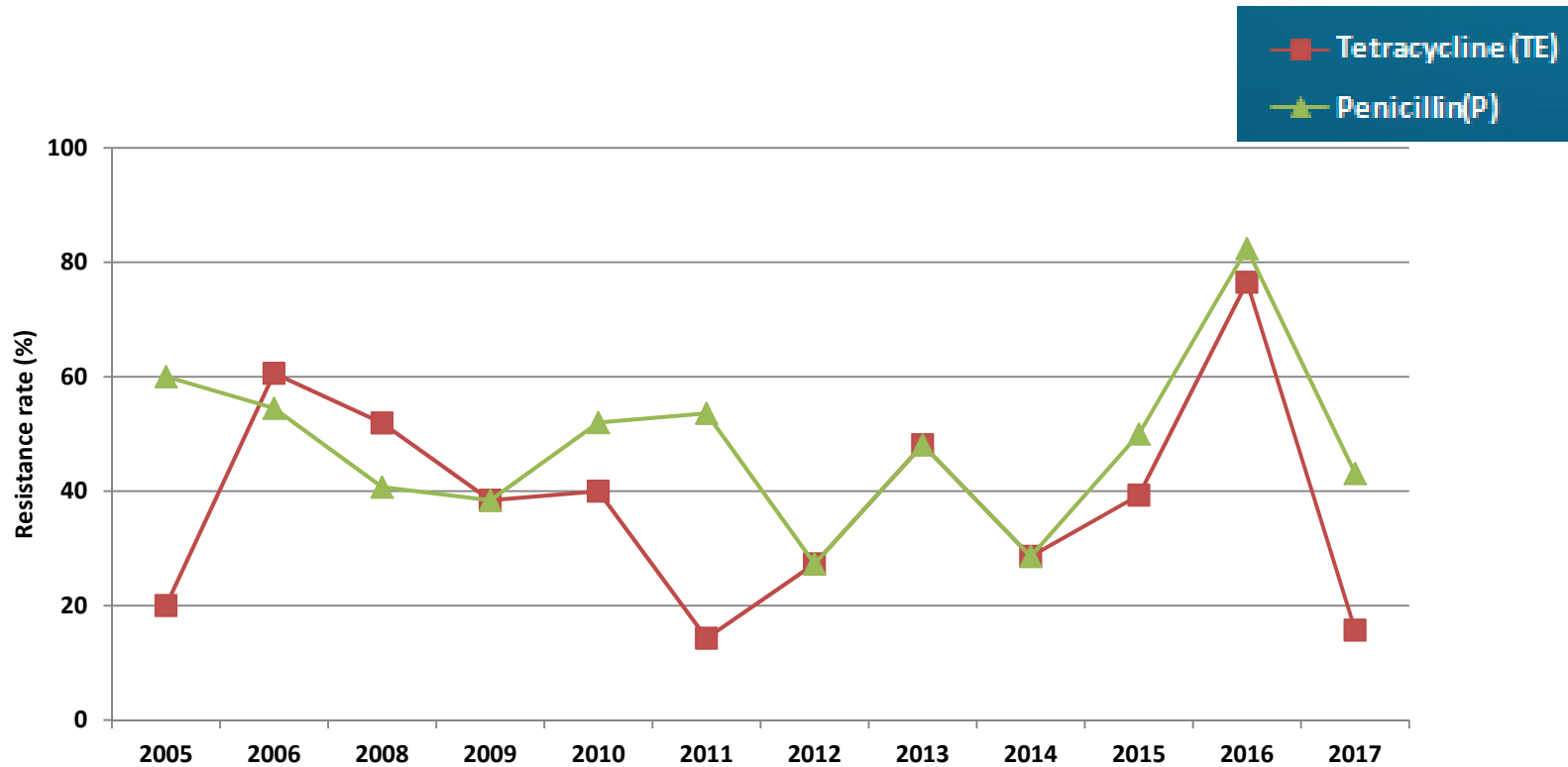
Resistance in *S. aureus* (domestic beef)



Resistance in *S. aureus* (domestic pork)



Resistance in *S. aureus* (domestic chicken)



Monitoring outcome reporting

- Published integrated, non-clinical national antibiotics usage and resistance statistics report (livestock, farm products, and fishery products)
- Published *via* the website (www.mfds.go.kr)



Conclusion

- Korean government tried to slow down the spread of resistance by “**national antimicrobial-resistance management program**” started since 2003.
- **National Action Plan on Antimicrobial Resistance** in accordance with **WHO’s global action plan** propositions since 2016 engaged in clinical and non-clinical national programs as part of the **ONE-HEALTH** approach
- Major outcomes of last 15 yrs of National AMR management Programs include **banning addition of antibiotics to animal feeds** and introduction of **mandatory prescription by vets.**
- Due to the ban on mixing in the feed, which resulted in a significant reduction in the usage of **tetracycline**, it turned out that the resistance against this drug reduced significantly.
- MFDS (NIFDS) is planning to continue its role of AMR management, including overseeing non-clinical areas such as **livestock, fishery, environment, and foods**, to reduce the AMR and ensure proper use of antibiotics.



Thank you!

