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Reflection on the economic impact of animal diseases

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Working for  **#ZeroHunger**



Outline

- Background
- Institutions and disease control
- Key actors
- Socioeconomic impacts of animal diseases
- Example of FMD SAT2 in NE & WE
- The GF-TADs context
- Public-private partnership applied to disease control
- Concluding remarks



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Background: continued risk of TADs

Despite ongoing efforts, TADs such as ASF, FMD, HPAI, LSD, PPR, RVF, CBPP, etc. are still important biothreats and cause substantial socioeconomic losses in affected countries



Source: <https://www.bloomberg.com/>



Source: <https://sentientmedia.org/>



Source: <https://www.gao.gov/>



Source: <https://theconversation.com/>



Institutions and disease control

Disease risks and outbreaks can be characterized and controlled by institutional structures

Institutions: national governments and supranational/multilateral bodies: FAO/WOAH /WHO/WTO/EU/EuFMD

Communities of practice: farmers/producers/vets/labs /consultants

Laws and codes of practice: domestic & international

Customs and uncoded practices including traditional beliefs

The market including insurance



Institutional theory

- An approach to understanding organizations and management practices as the product of social rather than economic pressures
- It is shared across social sciences – provides vital context for evaluating the effectiveness of veterinary interventions, they can be formal and informal in nature
- Context (e.g., developed versus developing country or endemic versus free settings) can have an important effect on the nature and effectiveness of institutions



Key actors in disease control

- Farmers, animal owners and animal keepers
- Veterinarians (private vets, clinics & labs) and consultants
- Governments: local, regional, provincial and national
- International institutes such as FAO, WOHA, WHO, etc.
- Research institutes and academics
- Farmers' unions and associations
- Insurance industry and levy boards
- Vaccine and drug manufacturers
- Veterinary authorities
- ...
- Wider society?

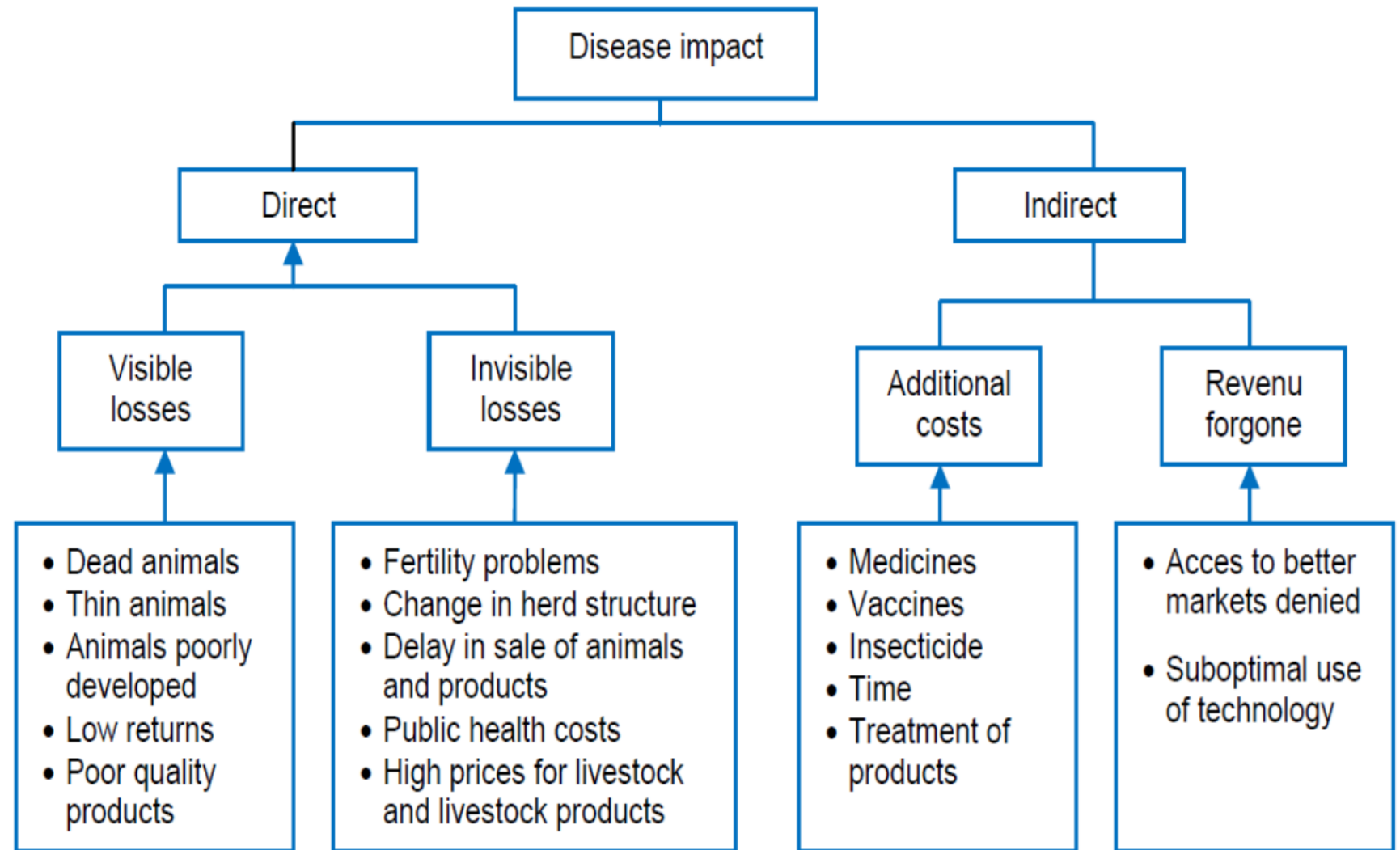


Socioeconomic impacts of livestock diseases & control

- Direct financial losses
- Indirect consequential losses mainly due to national/international control policies
- Impact on international trade
- Impact on consumers' purchasing behaviour and hence on market
- Psychological and (mental) well-being of animal owners/ handlers
- Animal welfare consequences
- Impact on other industries such as food processing and tourism
- Cost of surveillance and control measures



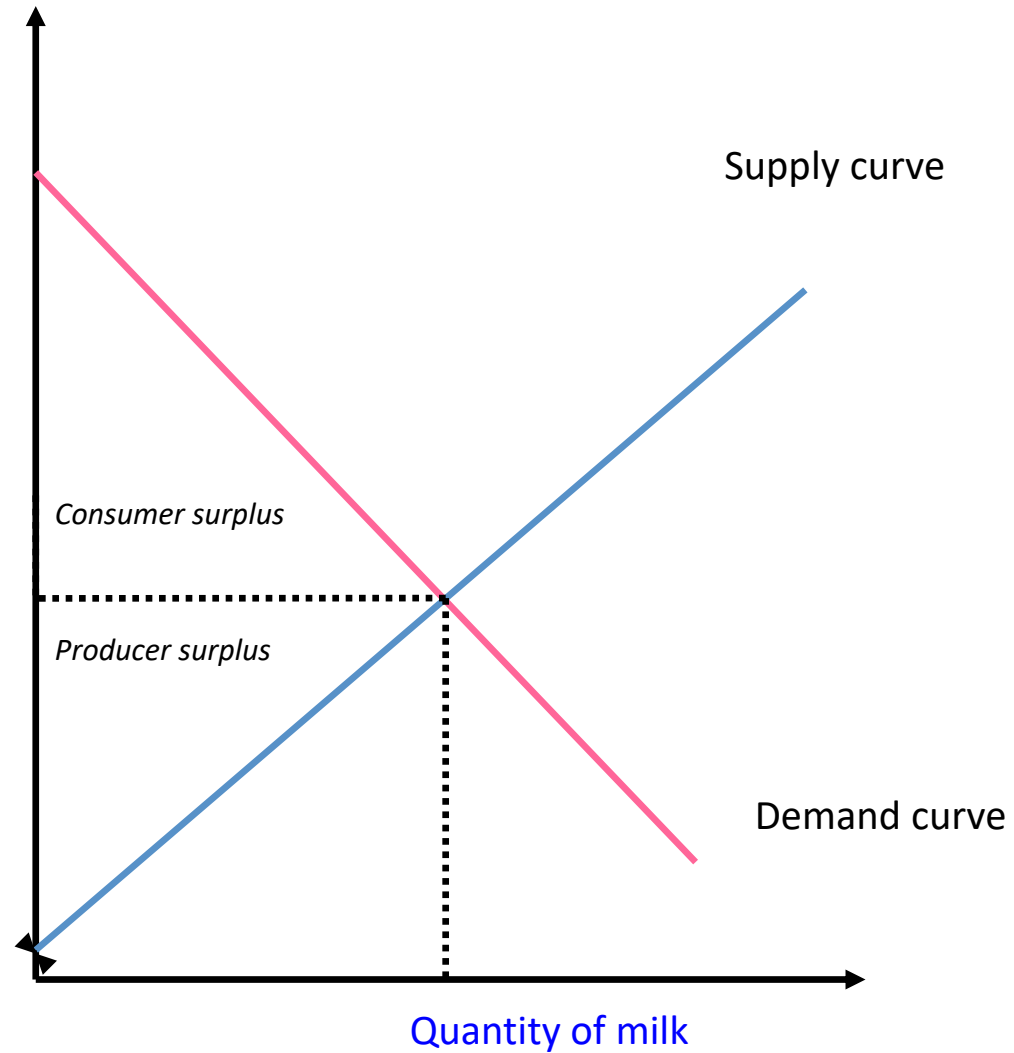
How does disease 'reveal' itself



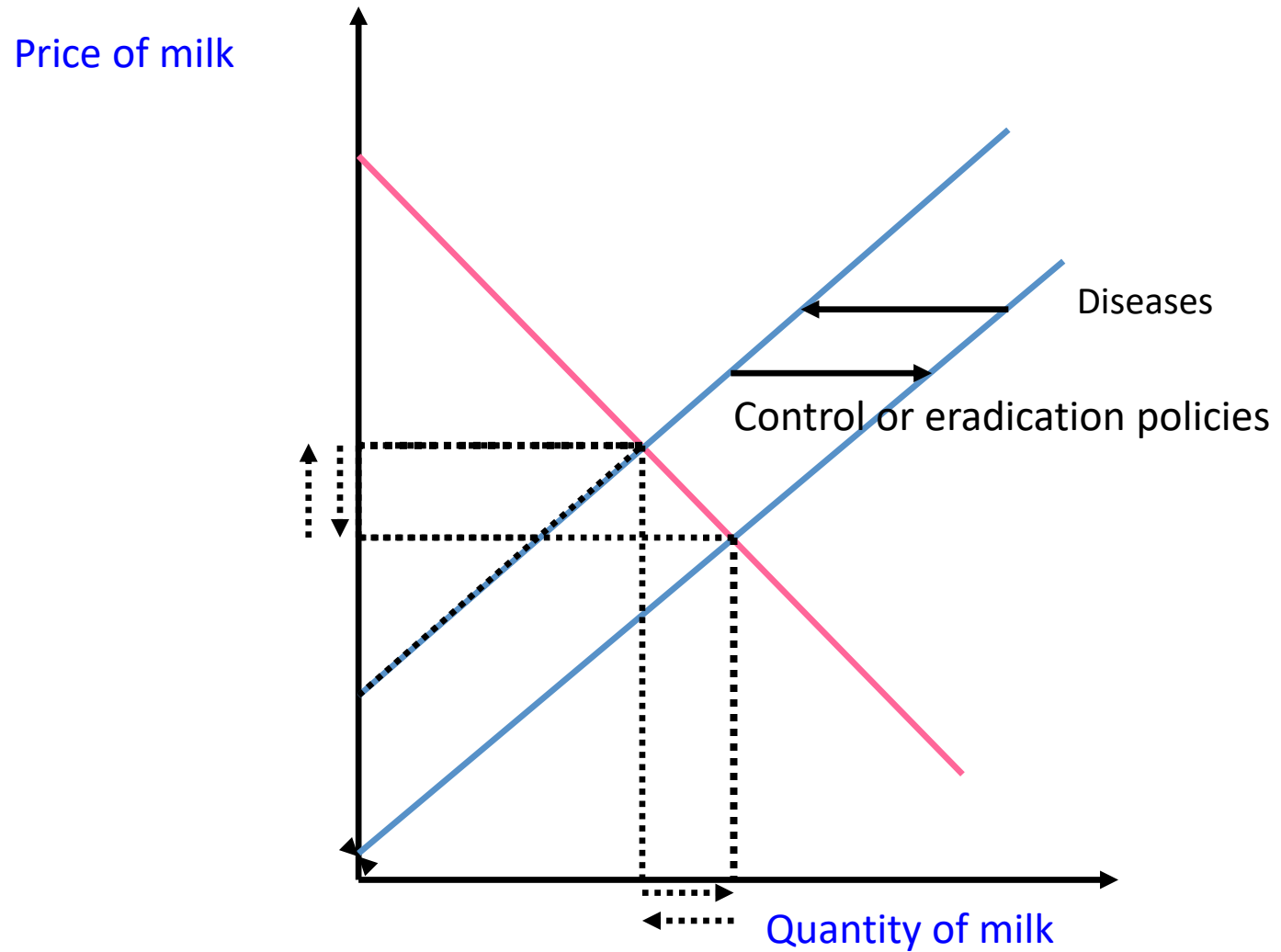
Source: (adapted from Rushton et al., 1999).

Market and animal diseases

Price of milk

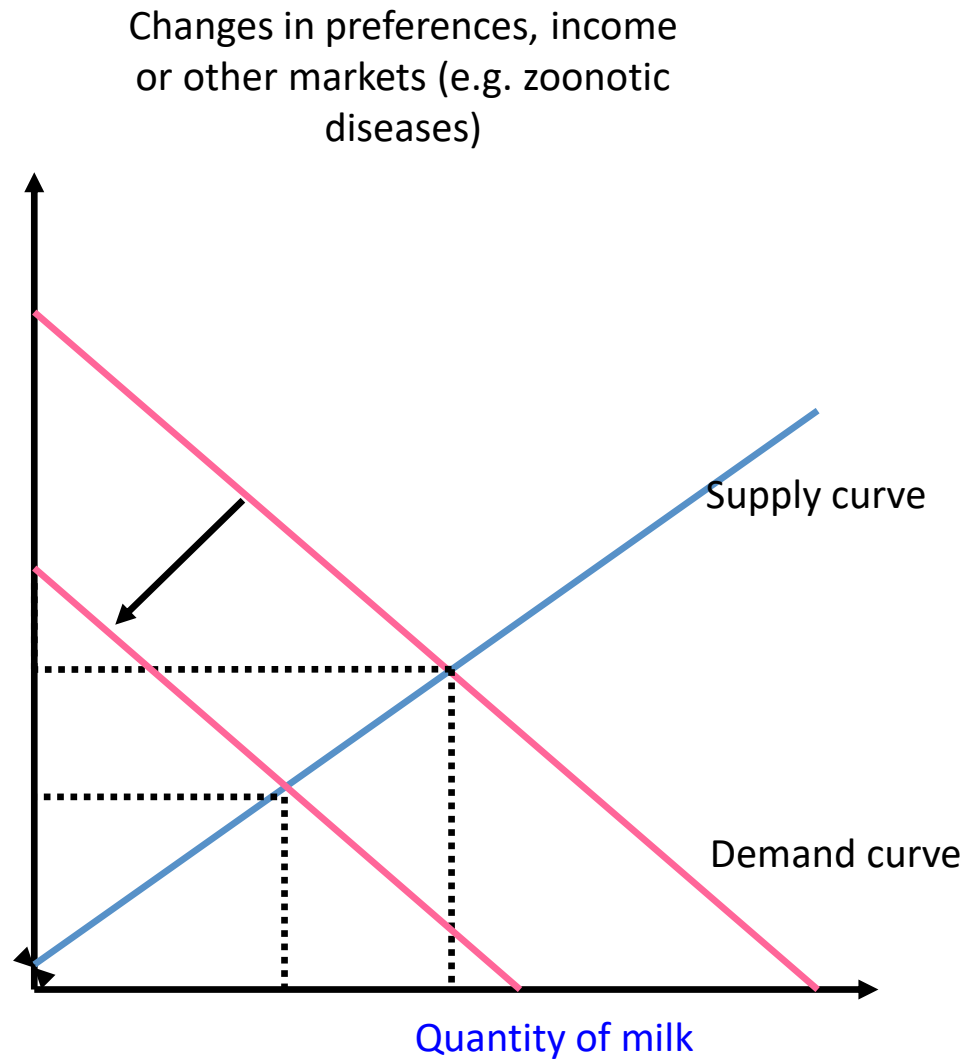


Shift of supply curve

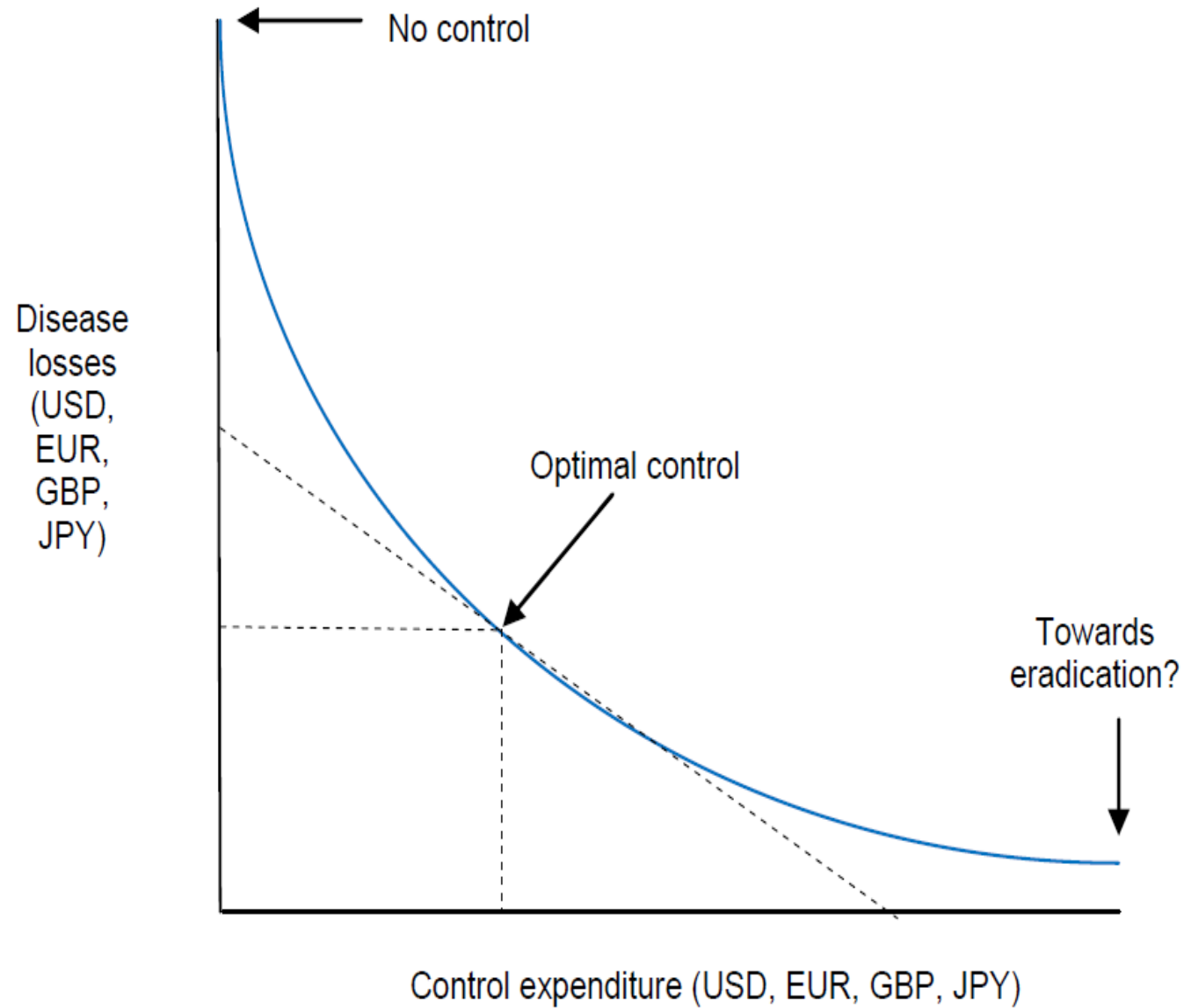


Shift of demand curve

Price of milk

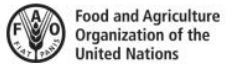


Optimal control



FMD SAT2 risk assessment for Near East & WE (2023)

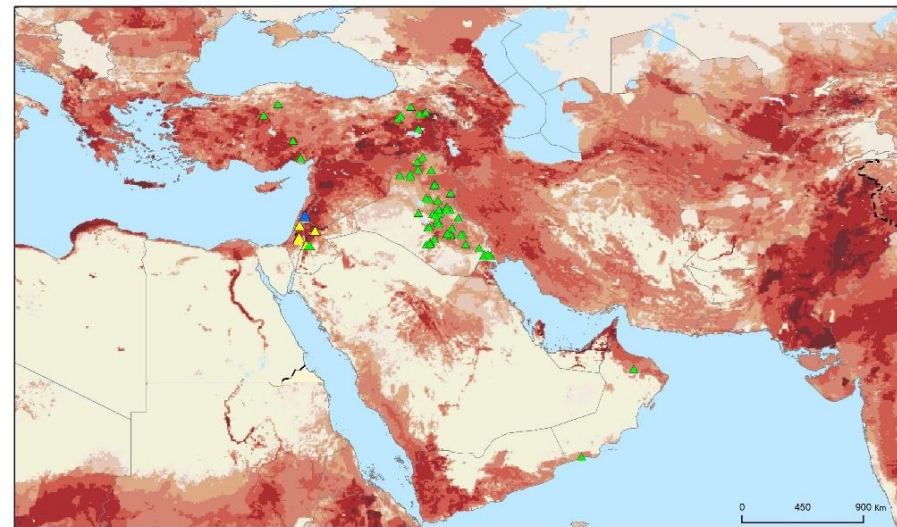
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Risk of foot-and-mouth disease SAT2 introduction and spread in countries in the Near East and West Eurasia

FAO QUALITATIVE RISK ASSESSMENT

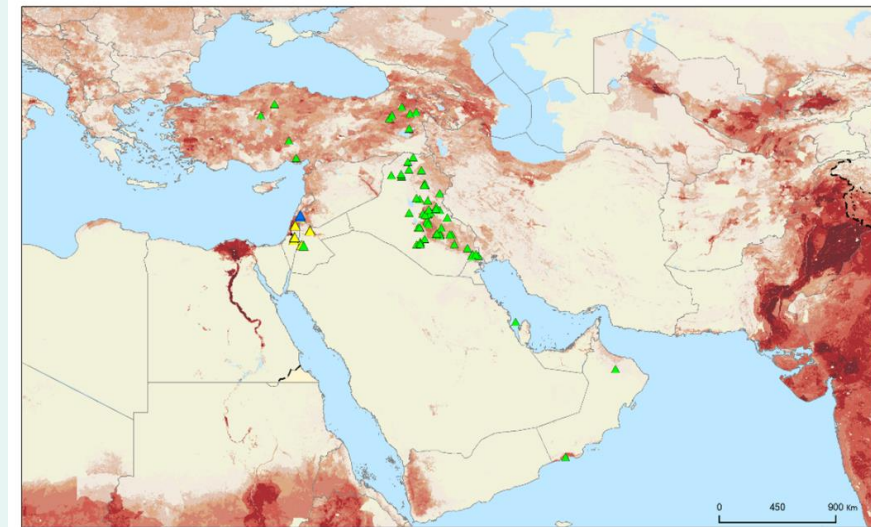
OCTOBER 2023



Distribution of Small Ruminants (head per sqkm, 2015)



FMD outbreaks 1 Dec 2022 - 20 Jun 2023



Distribution of Large Ruminants (head per sqkm, 2015)

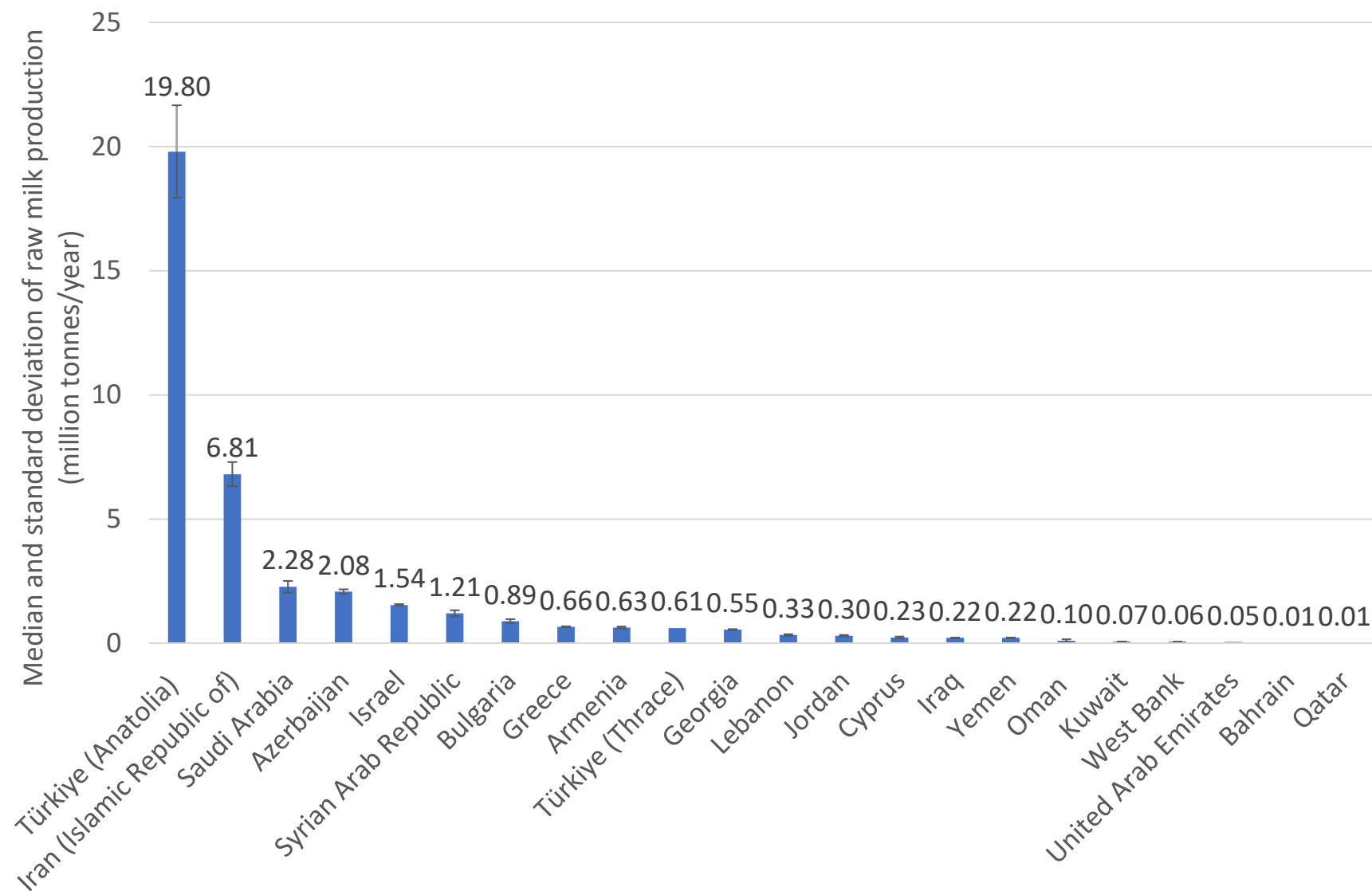


FMD outbreaks 1 Dec 2022 - 20 Aug 2023

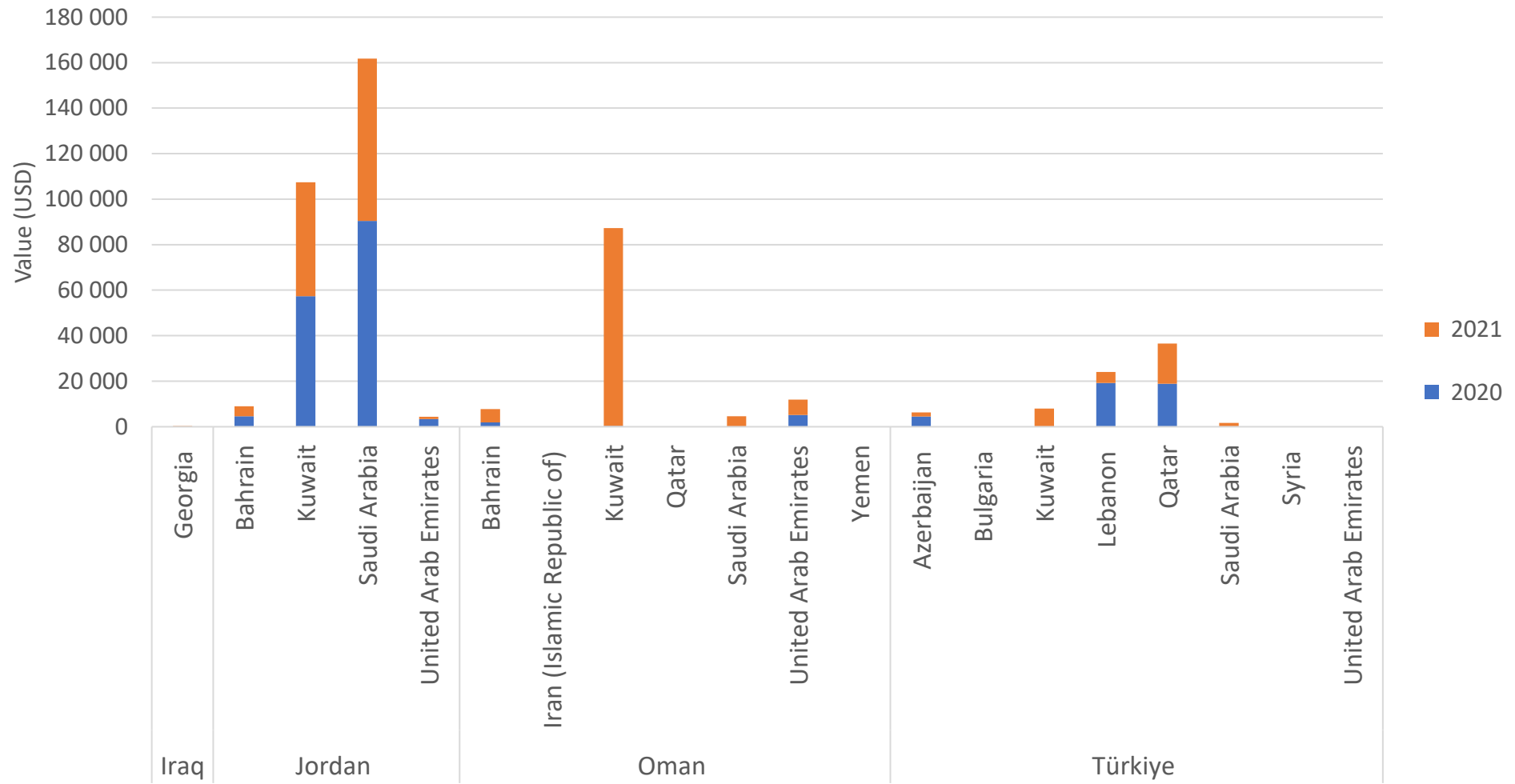


<https://www.fao.org/documents/card/en?details=CC8173EN>

Milk production (2016-21)

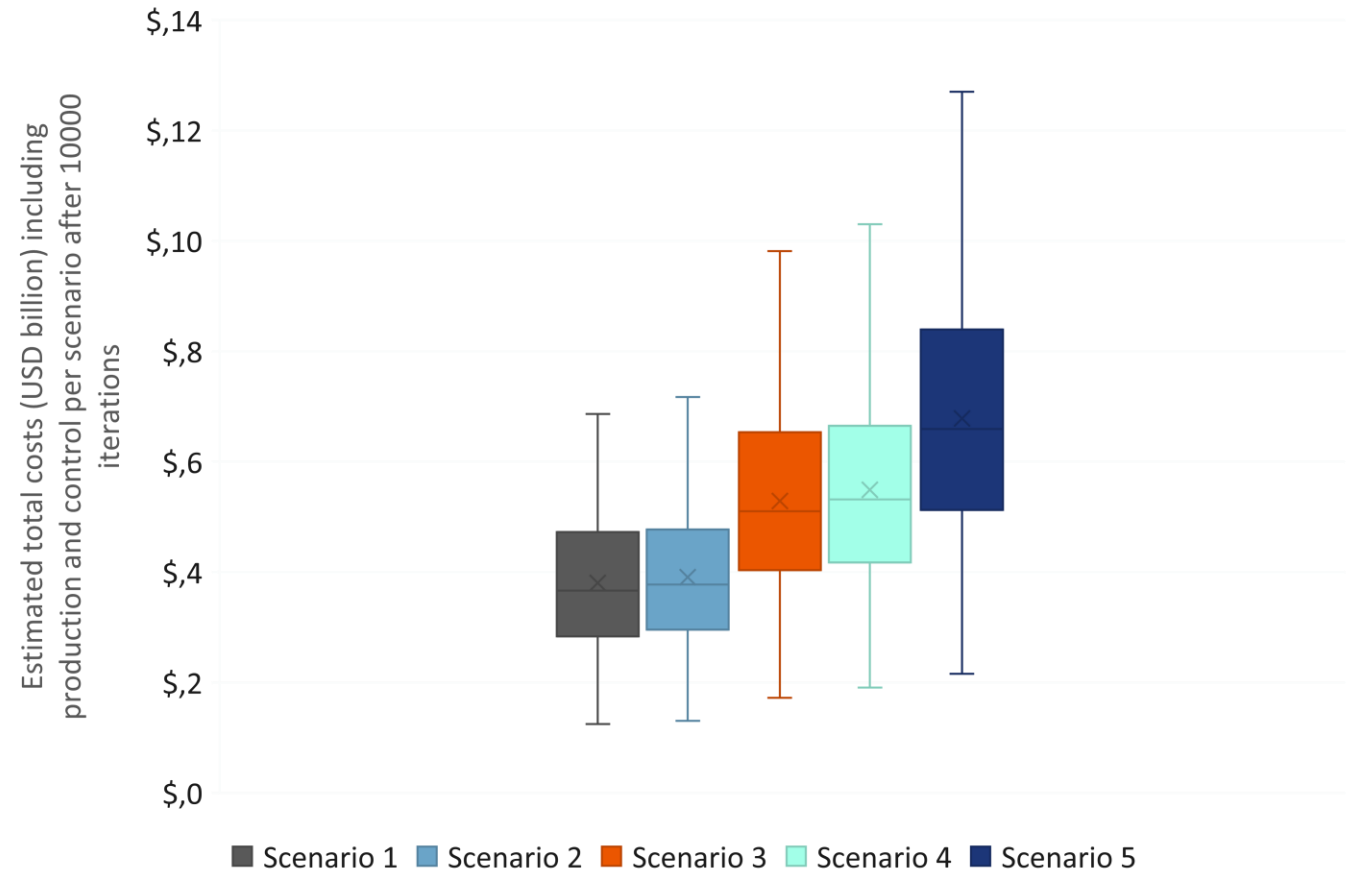


Trade

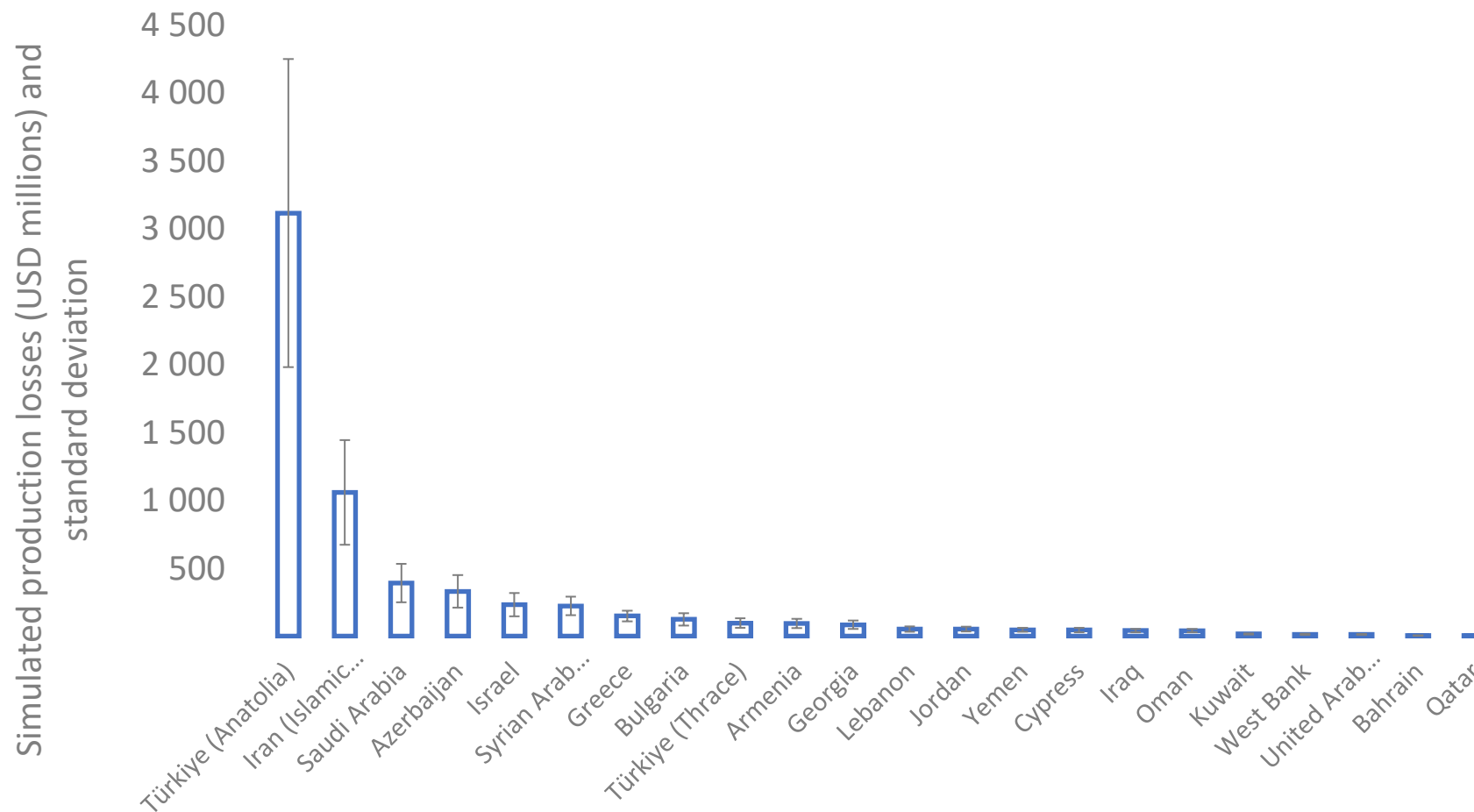


Spread scenarios

- Scenario 1: Jordan, Iraq, Oman, Türkiye
- Scenario 2: Jordan, Iraq, Oman, Türkiye Bulgaria, Greece, Cyprus
- Scenario 3: Jordan, Iraq, Oman, Türkiye Armenia, Georgia, the Islamic Republic of Iran, the Syrian Arab Republic
- Scenario 4: Jordan, Iraq, Oman, Türkiye the Islamic Republic of Iran, Kuwait, the Syrian Arab Republic, Saudi Arabia, and Qatar
- Scenario 5: all the 20 countries/territories

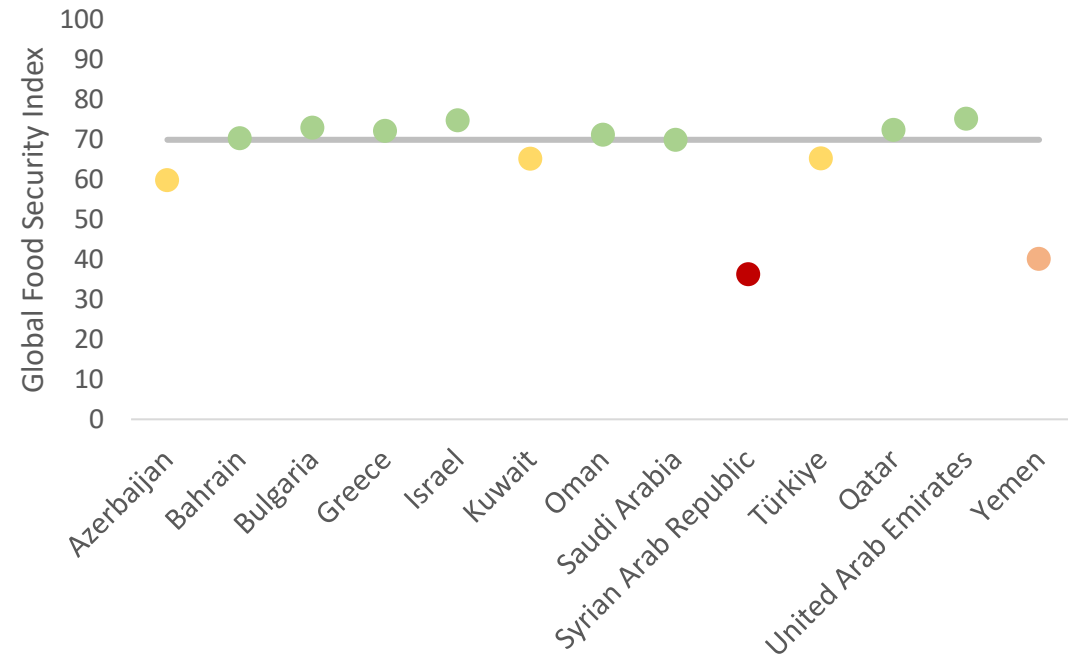
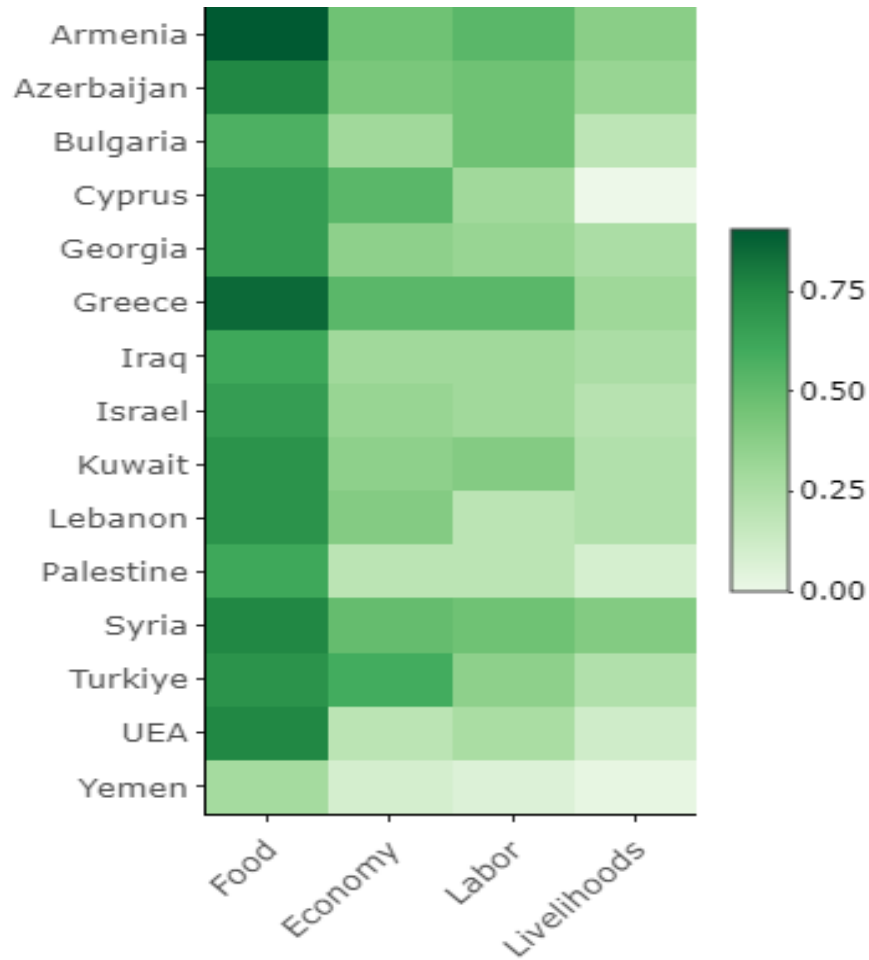


Estimated potential loss



- An incursion of FMD SAT2 would have a substantial negative impact in all countries
- Production losses and cost of control measures estimated at **USD 3.6–6.5 billion**, depending on the extent of spread within the region.

Socioeconomic impacts

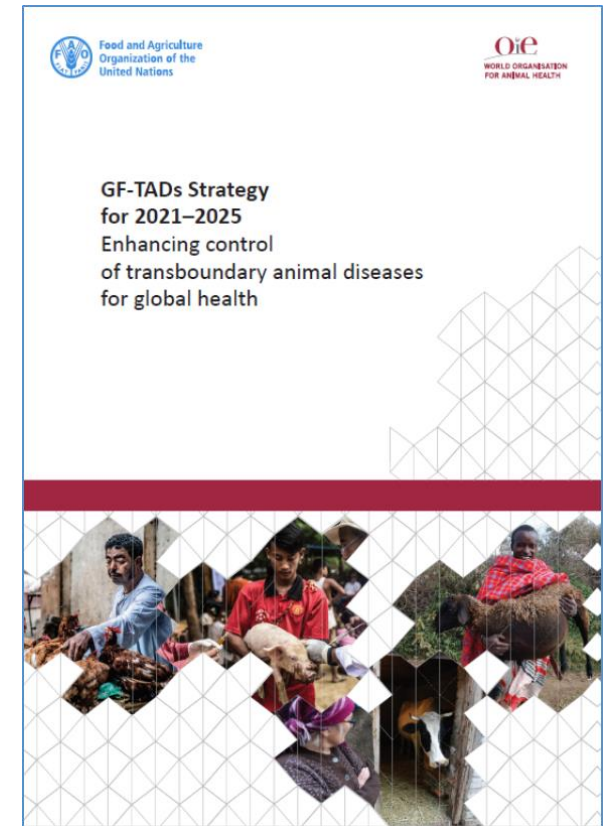




Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs)

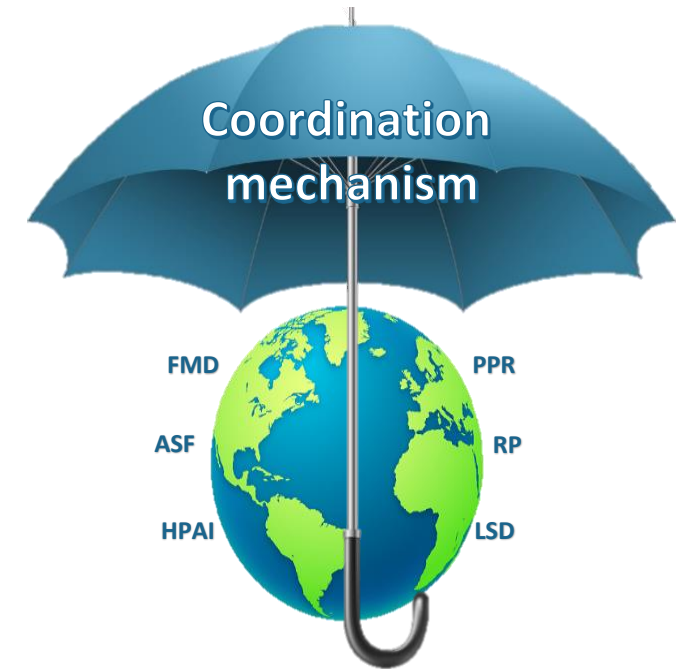
- A coordination mechanism jointly established by FAO and WOA^H (2004) to reduce the threats from Transboundary Animal Diseases (TADs) re food security, livelihoods and safe trade.
- Strategy adopted for 2021-2025

The GF-TADs coordinates strategies at the global level on **FMD, PPR, ASF, Rinderpest post-Eradication programme, Avian Influenza** as well as activities on regional priority diseases such as LSD, Rabies, RVF, CBPP, etc.



GF-TADs Strategy 2021-2025: objectives

- Establish strategies for priority TADs at the sub-regional, regional and global level.
- Develop and maintain capacities to prevent and control TADs.
- Improve sustainability of strategies to control priority TADs through multi-disciplinary partnerships.



Public-private partnership as a way forward

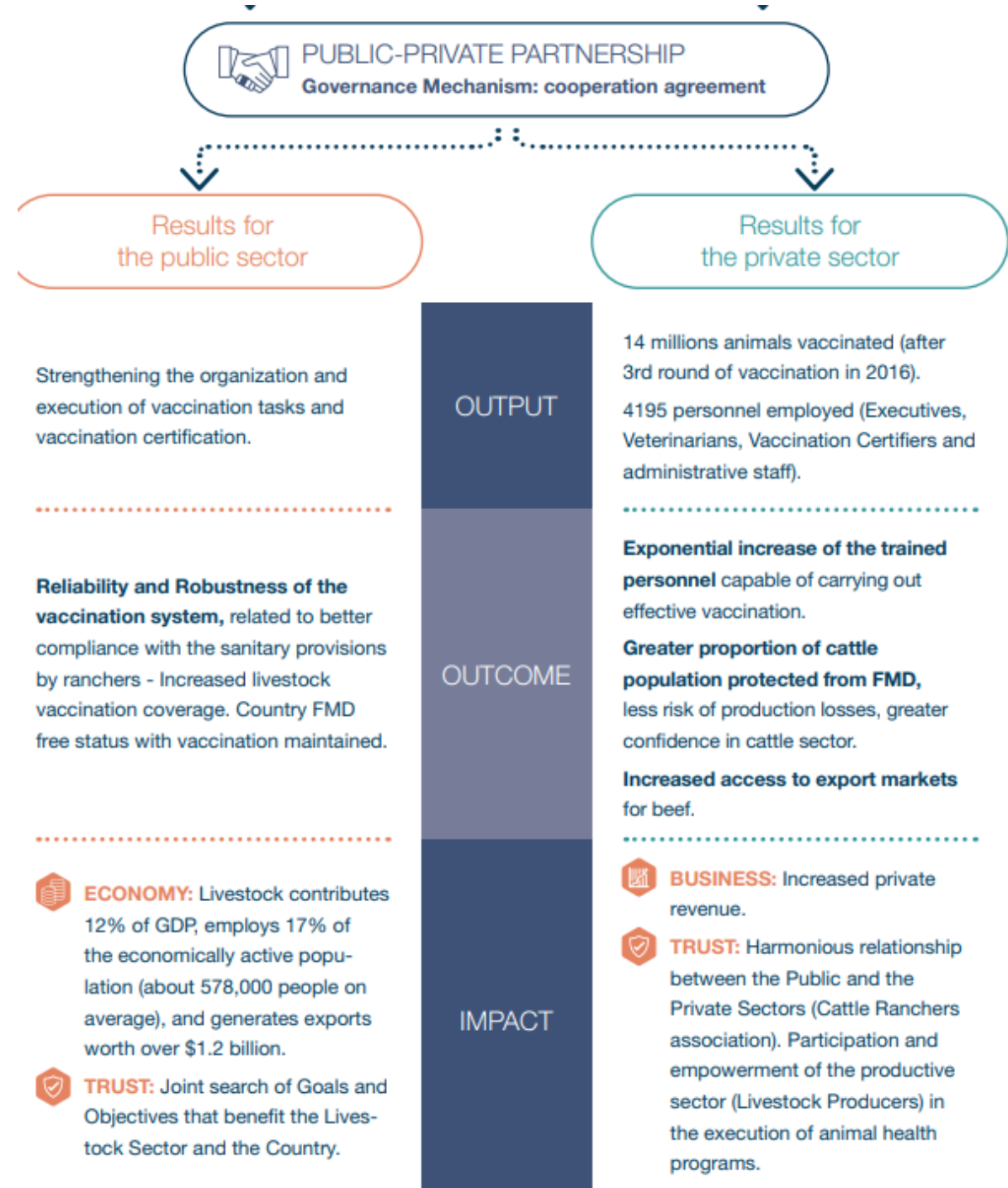
The OIE PPP Handbook:

Guidelines for Public-Private Partnerships
in the veterinary domain

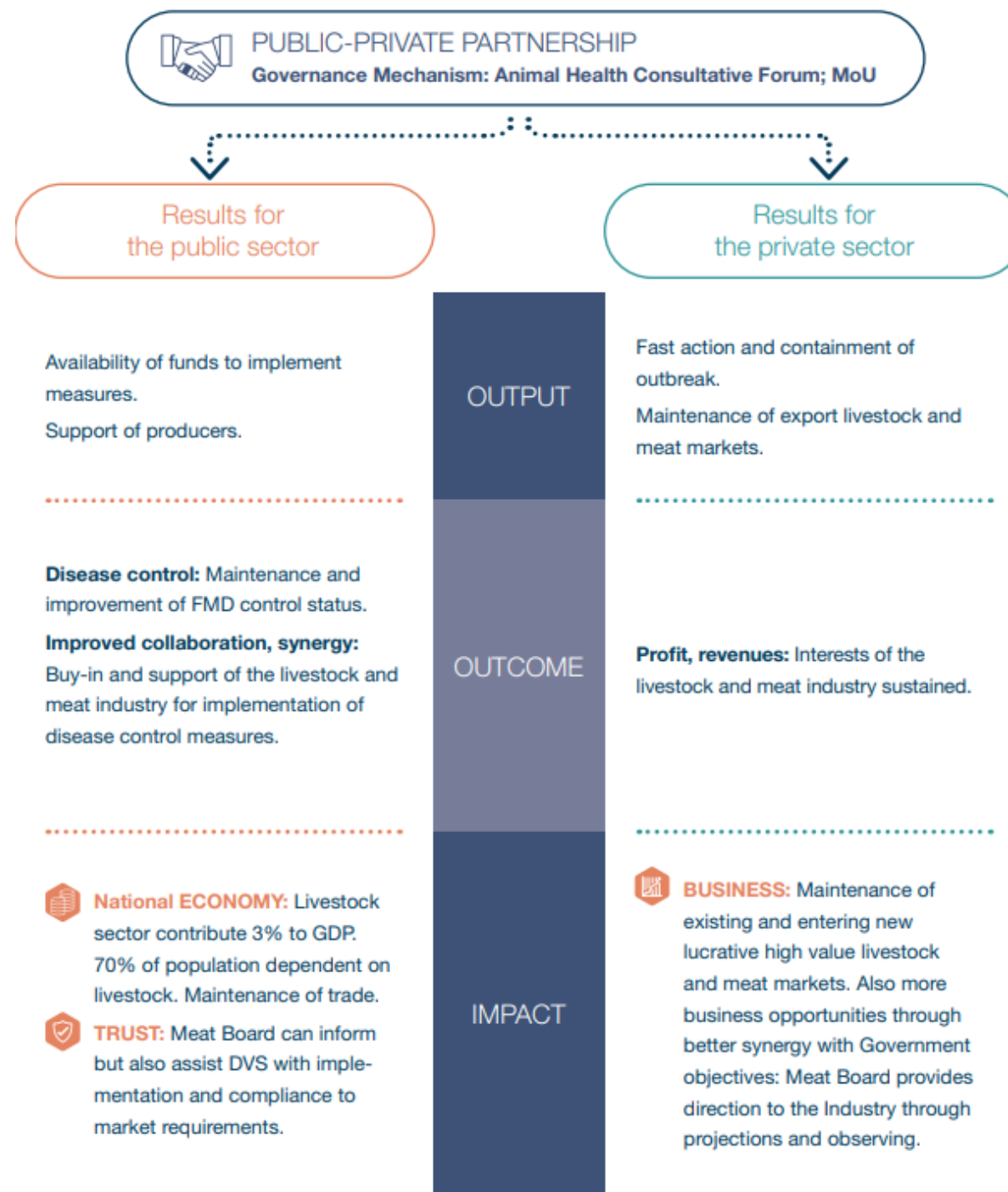


WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

Eradication & control of FMD in Paraguay



Emergency animal health fund for FMD in Namibia





Challenges and gaps for PPPs in the ME

Lack or weakness
of enabling
institutional
arrangements

Retaining control
of animal health by
the public sector

Lack of
identification of
areas for mutual
benefit

Lack of knowledge
of private sector's
needs

Financial risk for
the private sector

Lack of
coordination



PPR vaccination of Kuchi flocks in Afghanistan © Arif Noori
Source: OIE Bulletin



Report on a Technical Item presented to the 15th Conference of the OIE Regional Commission for the Middle East, Abu Dhabi, United Arab Emirates (10–14 November 2019).



Opportunities for PPP

- Strengthening and extending public Veterinary Services
- Learning from and drawing on successful examples
- Solving complex issues such as vaccine security and access to quality vaccine
- Empowering private veterinary sector
- Establishing PPP legislation
- Cost and responsibility sharing



Source: getty images.



Conclusions

- Institutional context must be carefully studied & considered in designing control plans
- Human behaviour is part of institutional context as well as epidemiology of diseases
- Economics and social sciences can inform disease control
- Disease control involves trade-offs and requires several policy options
- Understanding the impacts and socioeconomics around who pays and who benefits – is crucial to advocacy and develop national strategies
- Effective and sustainable PPPs are crucial for TADs control

Acknowledgments

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DEFRA, WU, EC



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