Designing AMR Governance

Hungary

Systems workshop summary report, April 2024

Executive summary

What was the purpose of the systems workshop?
In April 2024, Hungarian stakeholders participated in a systems analysis workshop focused on the role of the Hungarian food system in the emergence and spread of antimicrobial resistance (AMR). This workshop was undertaken as part of Designing AMR Solutions, a six-country project funded by the Joint Programming Initiative on AMR, focused improving policy and governance for antimicrobial stewardship at national and global levels. The workshop objectives were to:

- Understand the factors influencing the emergence and spread of AMR in Hungary;
- Share perspectives across sectors; and
- Identify priority actions to combat antimicrobial resistance in Hungary.

Who contributed?
Seven contributors working in different sectors and disciplines attended an online workshop to participate in structured discussions and exercises to articulate the problem; map the system of relevant factors and relationships; and identify priority actions over different time scales. The workshop took a One Health approach, bringing together actors with expertise in human, animal and environmental health and reflecting on interconnections between sectors.

What were the key systems insights and priority actions?
Contributors agreed that the problem of AMR was likely to continue to increase in the future if current conditions remained fixed. Contributors identified a range of factors and relationships across the human, animal and environmental sectors that contributed to this problem. The discussion of ongoing spread of resistant pathogens within and between different environments and populations, as well as similar challenges (e.g., lack of quality surveillance data) across sectors, highlighted the importance of cross-sectoral collaboration. Contributors also discussed themes specific to the Hungarian context, including the regulatory and media environment, agricultural production practices, and changing preferences and health beliefs in the population.

To conclude the workshop, contributors identified a number of priority actions and discussed challenges to implementation including the need for strong political will and public investment to make progress.

What are the next steps?
This workshop is one of five happening globally in different countries. Once we have completed these workshops and received feedback from contributors, we will bring together insights from the workshop to support our project goals of strengthening context-appropriate policy and governance for antimicrobial stewardship. We will share cross-country insights with all contributors once the workshops are complete.

Acknowledgements

We would like to take this opportunity to thank our workshop contributors for generously giving their time to this project and sharing their essential expertise and insights.

We also thank Valentina De Leon for her support in facilitating the workshop and our colleagues in the Global Food System & Policy research group for their input in piloting workshop materials and activities.

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This workshop was undertaken as part of Designing AMR Solutions, a six-country project funded by the Joint Programming Initiative on Antimicrobial Resistance.

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If you have any responses, thoughts or additional insights, please get in touch.

Goals, format and contributors

This report summarises the systems workshop undertaken in Hungary as part of the Designing AMR Solutions project. This is a six-country project aiming to strengthen national and global governance for improved antimicrobial stewardship.

The workshop was focused on the role of the food system in driving the emergence and spread of AMR. The workshop objectives were:

- Understand the factors influencing the emergence and spread of AMR in Hungary;
- Share perspectives across sectors; and
- Identify priority actions to combat antimicrobial resistance in Hungary.

The workshop was informed by a One Health perspective, which "recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) as closely linked and interdependent".

The workshop took place virtually in April 2024 over two two-hour sessions. Attendees participated in structured discussions and exercises to develop a systems map of the problem and identify and discuss priority actions.

Seven stakeholders[1] participated in the workshop, including representatives from research institutions, civil society and practice. Contributors were recruited based on their professional roles and expertise and work on topics related to AMR and its drivers in the human health, animal health, environment and food and agriculture sectors.

[1] Only two contributors attended both sessions. The five remaining contributors attended one of the two sessions.

Workshop discussion and outputs

Articulating the problem

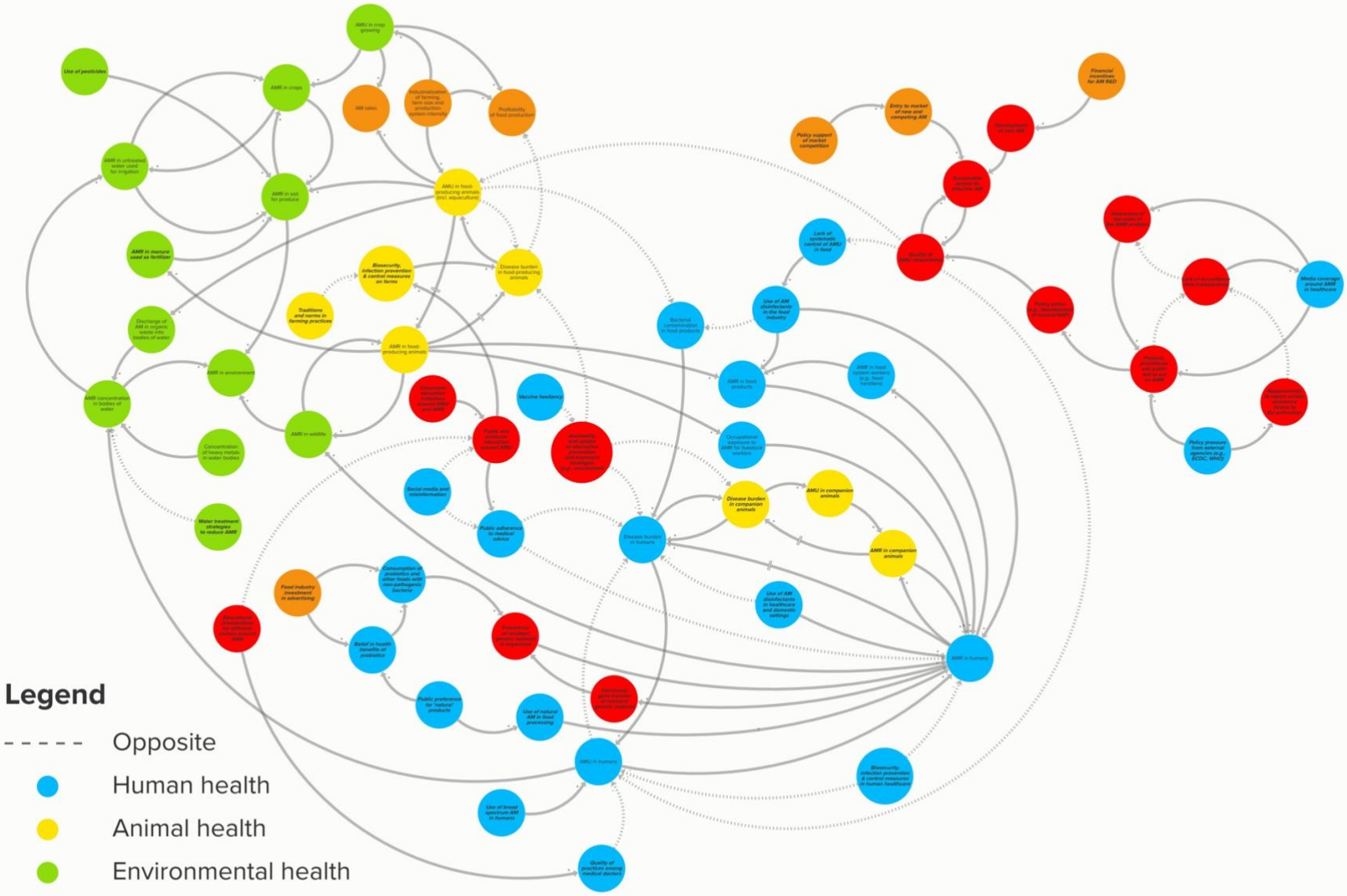
The beginning of the workshop focused on exploring and describing the emergence and spread of AMR in the Hungarian food system. Contributors were asked to think about how they perceived the trends in AMR from past to present. Contributors also subsequently provided insight into how they believed the trends in AMR would change in the future if no change was imposed (status quo), the best-case scenario with optimal changes to policy and/or practice, and the worst-case scenario with negative changes or challenging events, based on their expertise and knowledge. After some time for individual reflection, participants shared their perspectives with the group.

All contributors considered that the emergence and spread of AMR had increased steadily up to the present day, particularly due to excessive use of antimicrobials in both human and veterinary medicine, with spread of multi-resistant pathogens in hospitals being a key driver. Considering future scenarios, participants anticipated that this trend would be exacerbated if no major changes were made. A best-case scenario would still see an increase in AMR in the near future, but this would be more gradual. Conditions for this best-case scenario could include greater education and awareness-raising of different actors, and technological improvements, for example in wastewater treatment. A worst-case scenario would see even more rapid increases in the emergence and spread of AMR in Hungary, including due to the potential development of novel resistance strains through horizontal gene transfer.

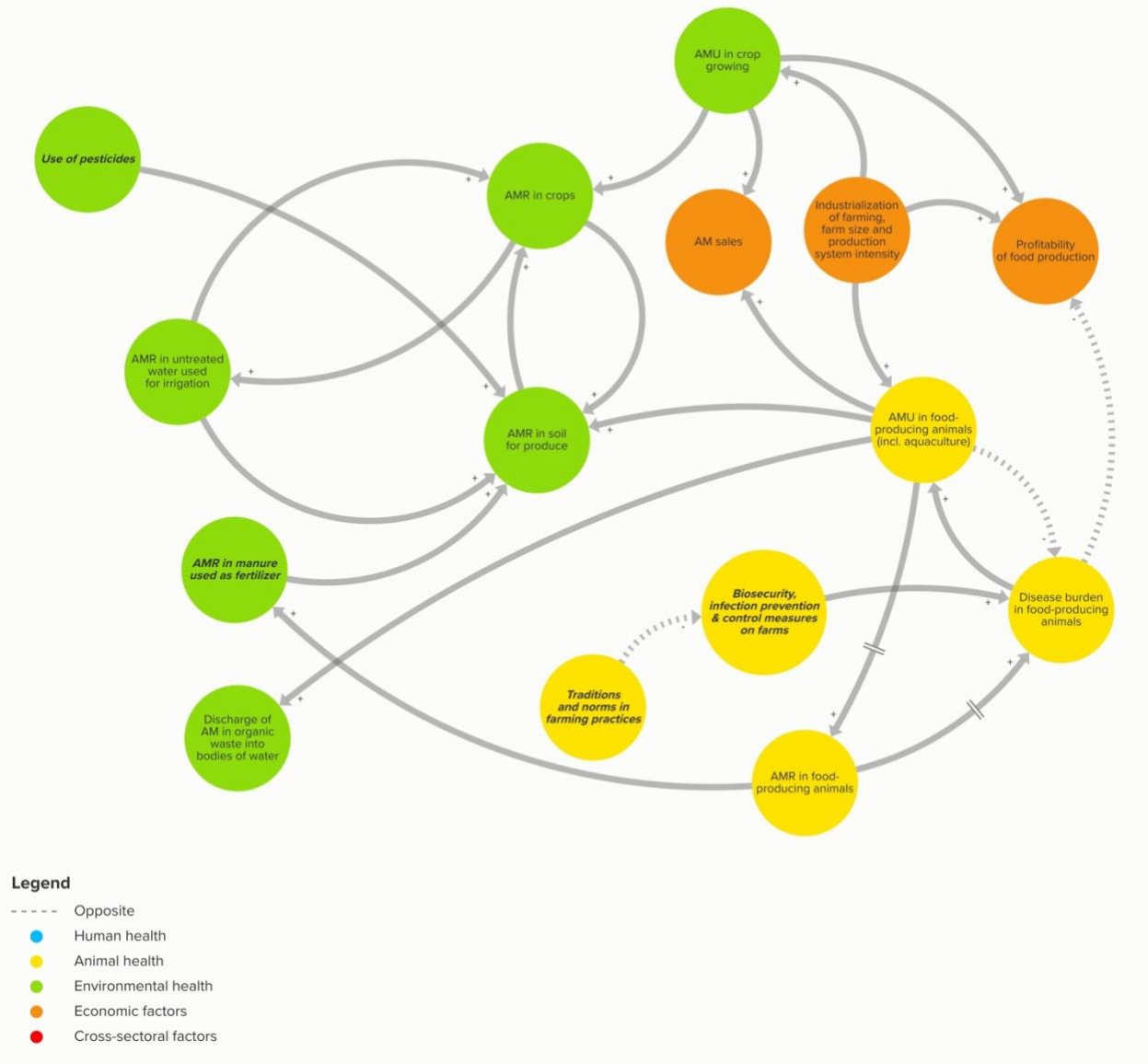
Mapping the system

Workshop contributors developed a systems map to illustrate the role of the food system in the emergence of AMR in Hungary. At the start of this exercise, the facilitation team introduced a 'seed structure': a simple model to be used as a starting point for the mapping exercise, which contributors were invited to change and expand. This seed structure was developed based on an ongoing systematic literature review focused on the food system and AMR.

After contributor input and alterations to the seed structure, the finalized systems map was developed. This map contained several key sections, which are summarised below.

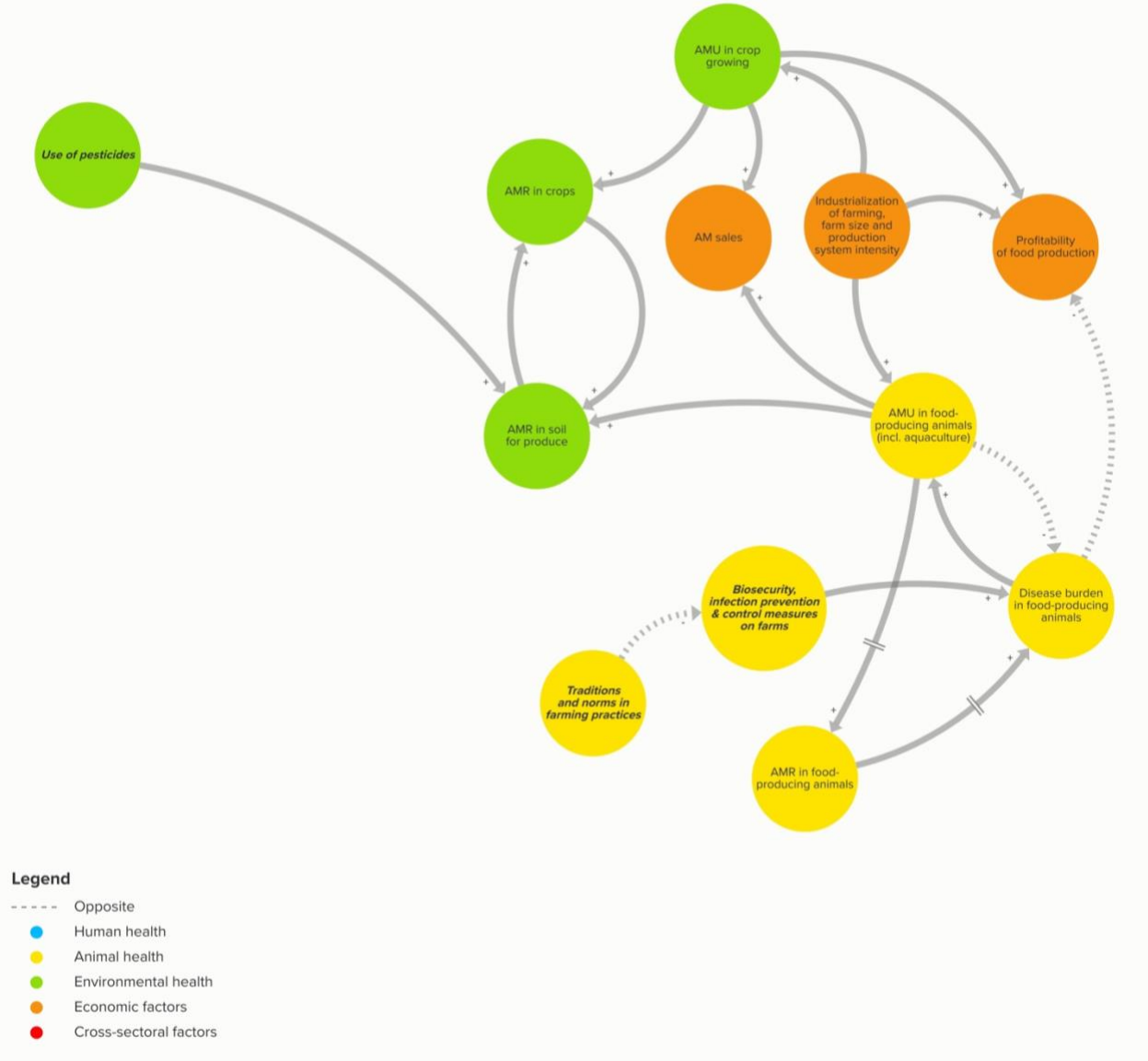

Legend
Opposite
Human health
Animal health
Environmental health
Economic factors
Cross-sectoral factors
Policies and interventions

ANTIMICROBIAL USE IN CROPS AND FOOD-PRODUCING ANIMALS



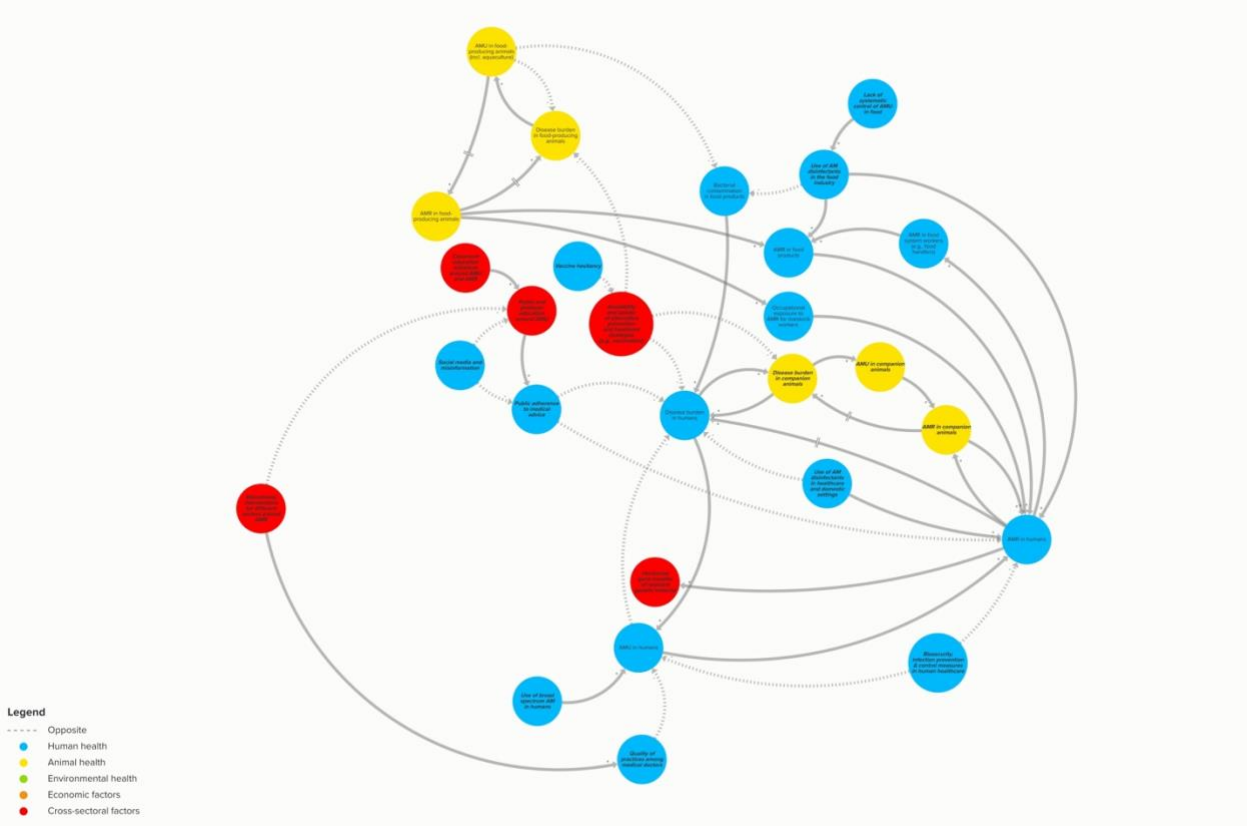
- When growing crops and rearing livestock, antimicrobials are frequently used to reduce the burden of disease
- More use runs the risk of pathogens becoming resistant to them.
- Resistant pathogens can spread to the environment and other populations
- Biosecurity and infection prevention & control measures reduce the burden of disease and the need for AMU
- Traditions and norms in farming can make this challenging

ECONOMIC FACTORS AND PRODUCTION INTENSIFICATION



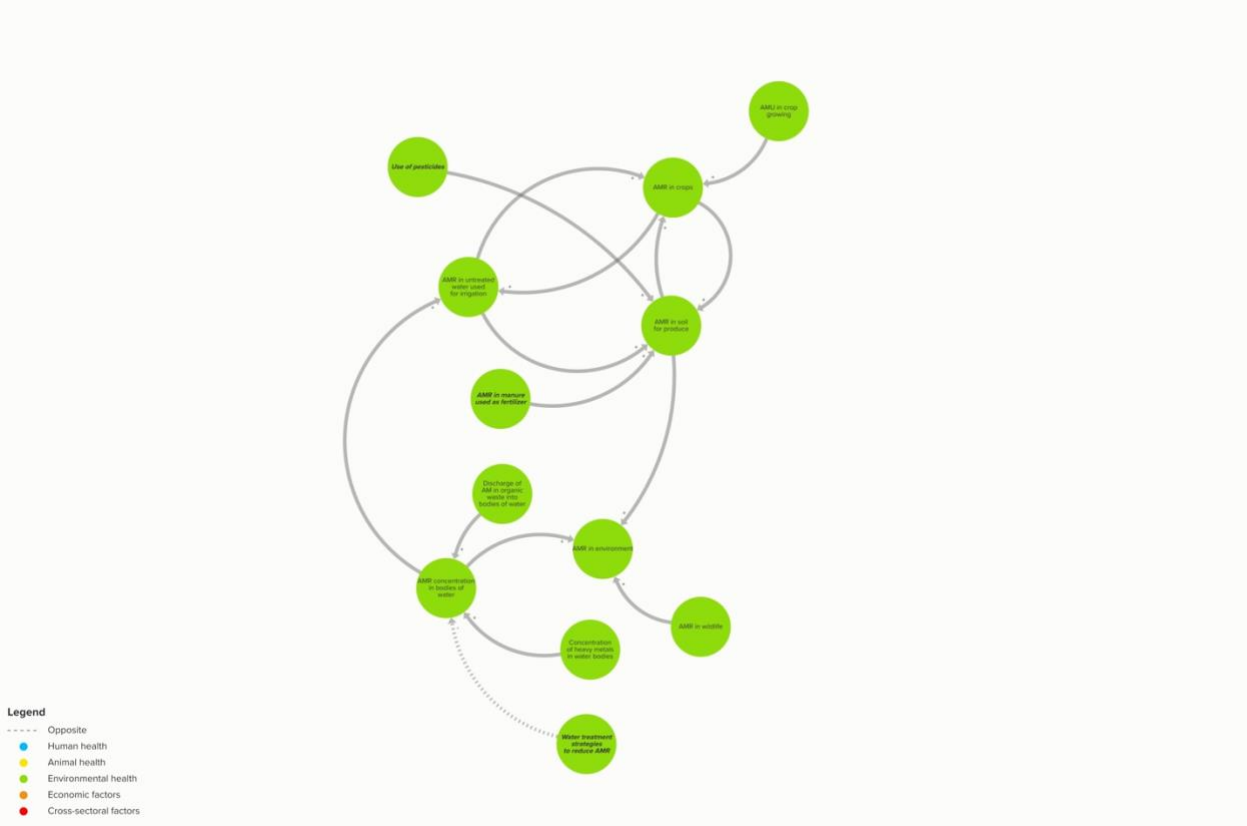
- Economic factors and production intensification drive antimicrobial use in livestock and crop production.
- AMU can prevent disease and improve the health of crops and livestock, thereby increasing profitability.
- Increased use also drives the sale of antimicrobials.

TRANSMISSION TO HUMANS AND INCREASED DISEASE BURDEN



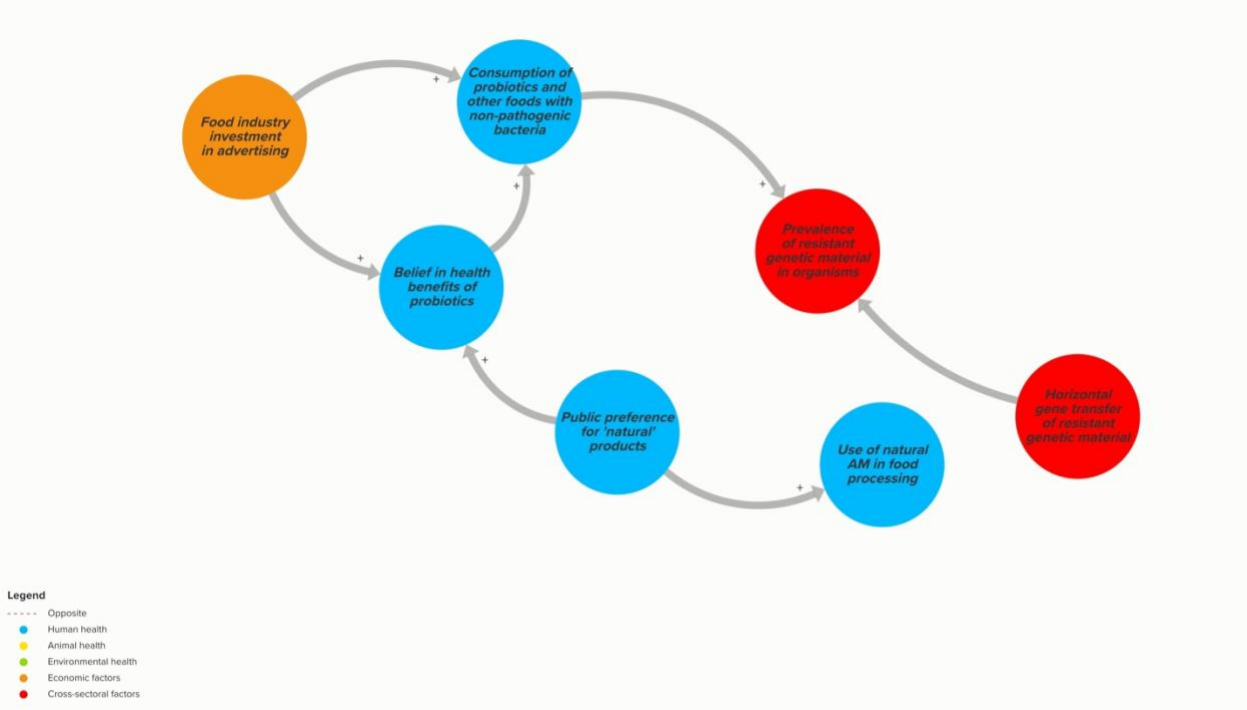
- Antimicrobials reduce the disease burden in humans by reducing illness due to microbials, including by preventing contamination of food products
- However, AMR in the food system can impact humans when they handle or consume livestock, crops and related products
- This can make human disease harder to treat, needing multiple lines of treatment
- Conversely, as antimicrobials (including broad spectrum antimicrobials) used in human healthcare are coupled with inadequate disease prevention regulations, driving resistance, AMR can spread from humans to animals and the environment, feeding back into this system
- Disease, AMU and AMR in companion animals are also transmitted to humans, given their close interactions
- Misinformation and the increased use of social media also weaken trust and public adherence to medical advice
- Widespread use of AM as disinfectants in the food system, healthcare settings and domestic settings can drive AMR in food products and humans
- Biosecurity and infection prevention and control measures in human healthcare can reduce the need for AMU in humans and reduce the spread of AMR
- Educational interventions for the public and medical professionals can improve prescribing practices and adherence to medical advice

ACCELERATED EMERGENCE AND SPREAD IN THE ENVIRONMENT



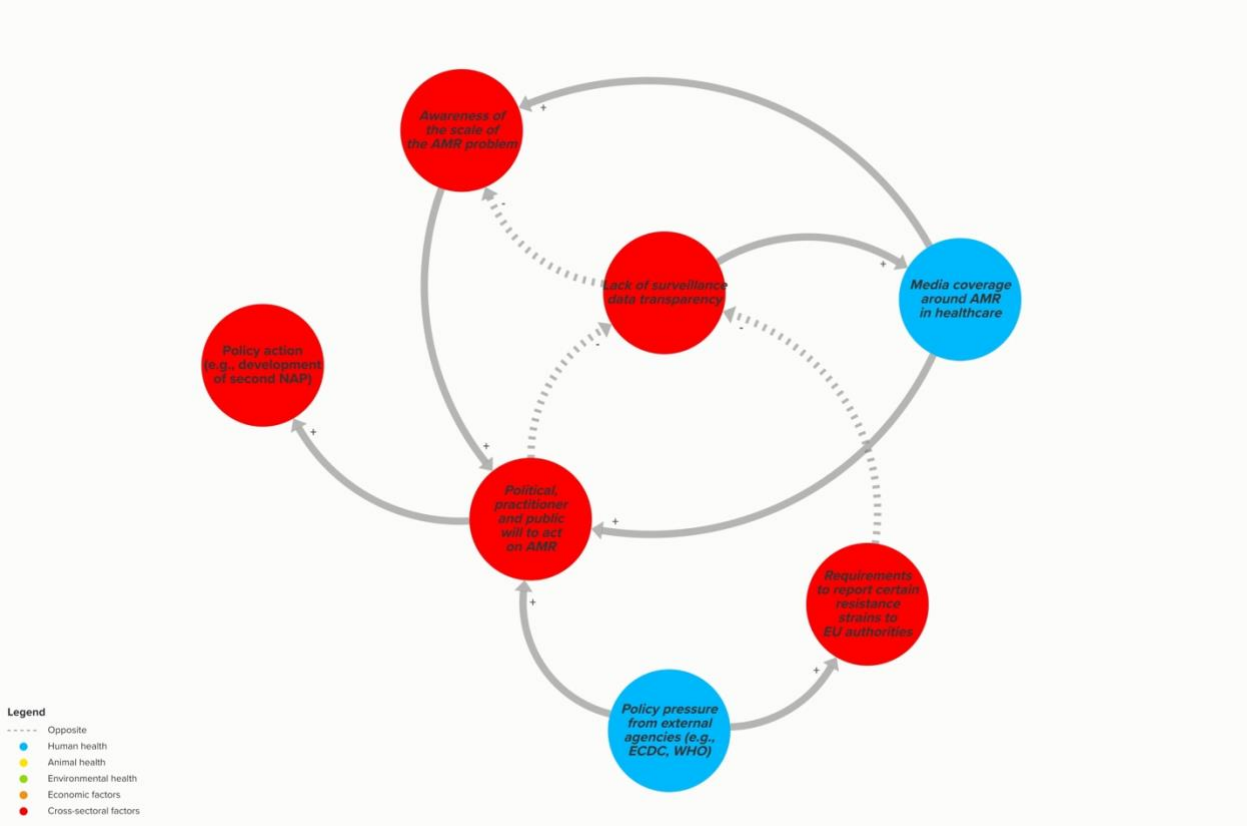
- AMR in livestock and crop production can trickle down into the environment through contact with wildlife or spread into water and soil impacting both production environments
- AMR in the environment can return to the food system, for example spreading through water used for irrigation
- Meanwhile, environmental drivers such as concentrations of heavy metals in bodies of water, can drive AMR in environmental reservoirs
- Water treatment strategies can reduce AMR in wastewater, reducing spread
- The use of pesticides in agricultural production can drive AMR in soil

CHANGING PREFERENCES AND HEALTH BELIEFS



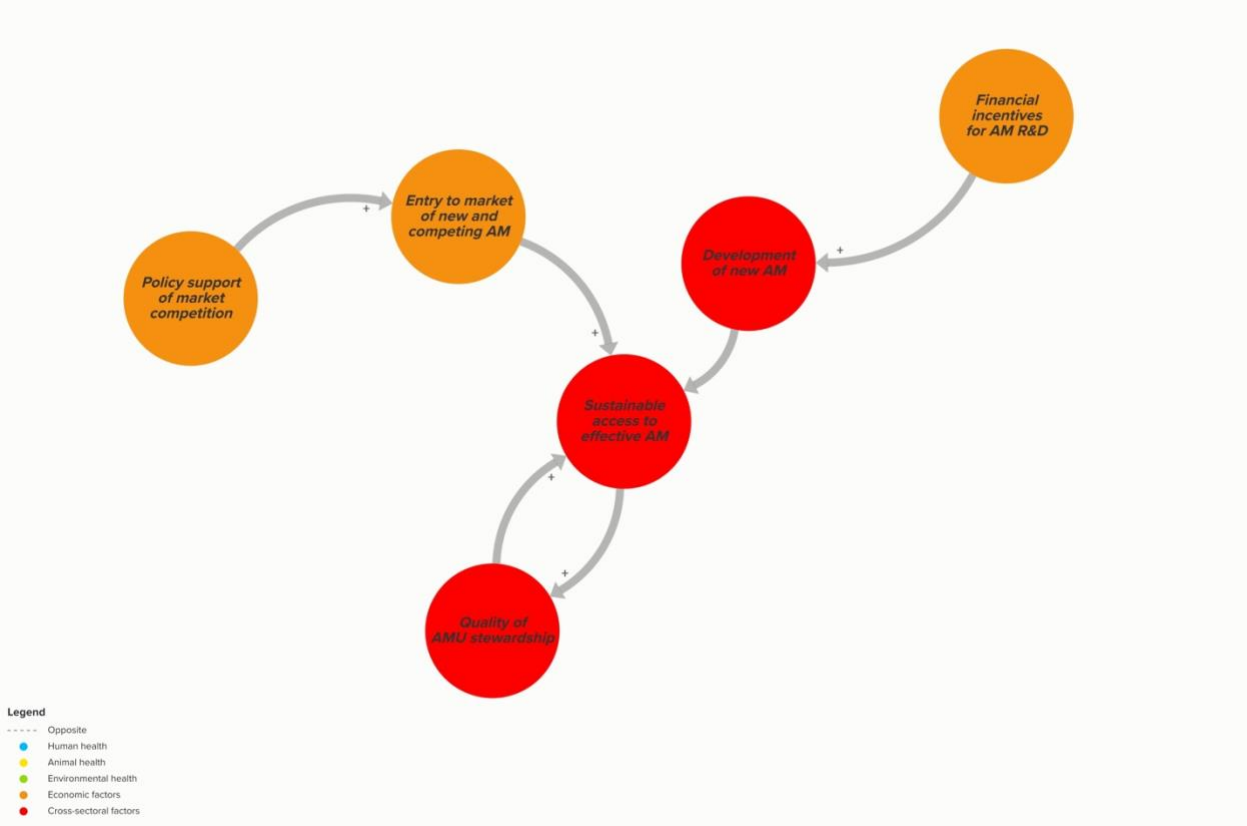
- Changing food preferences and health beliefs include public preference for ‘natural’ products and belief in the health benefits of probiotics
- This has impacted food processing and consumption, with increased use of natural AM and consumption of probiotics and other foods with non-pathogenic bacteria
- This may have an impact on AMR in humans through development of resistance to natural AM and changing prevalence of resistance in organisms through horizontal gene transfer

POLICY, REGULATION AND PUBLIC AND POLITICAL WILL



- Lack of surveillance data transparency is a challenge for understanding the scale of the AMR problem in Hungary
- However, a recent scandal around surveillance data prompted media coverage around AMR in healthcare, raising awareness and supporting public and political will to take action on AMR
- This, combined with pressure from external agencies like the ECDC and WHO, may support stronger policy action on AMR

RESEARCH AND DEVELOPMENT FOR ANTIMICROBIALS



- Mitigating the risk for AMR will depend on research and development for new antimicrobials for both human and animal use
- However, financial incentives are limited for developing new antimicrobials.
- Policy support of market competition supports entry to market of new and competing AM (e.g., different generics)

Priority actions to control the emergence and spread of AMR

Contributors identified priority actions to control the emergence and spread of AMR in the Hungarian context (Table 1). Contributors individually reflected to identify priority actions over the short- (2 years), medium- (2-5 years) and long-term (5+ years).

Contributors then shared one of their priority actions with the group, discussing the ways in which this action had the potential to transform the system, as well as barriers to implementation.

Within the Hungarian context, key challenges for implementation included the need for strong political will as well as sustained funding to ensure durable impact of interventions. For example, if financial supports were put in place for alternative modes of production that would reduce the need for antimicrobial use, the change in practice might not be sustained once the funding was no longer made available. It was also proposed that healthcare professionals might be reluctant to change their practices, such as reducing the quantity of antimicrobials prescribed.

Table 1 Priority actions to control the emergence and spread of AMR in Hungary

Short Term (2 years)	Medium Term (2-5 years)	Long Term (5+ years)
• Improving hygiene practices • Countrywide media campaign (e.g., poster or television advertising) to raise awareness on AMR among the general public • Educational interventions focusing on health professionals to improve prescribing practices • Provision of financial support for those who use modern technologies (e.g., alternative farming and production approaches to reduce the need for antimicrobial use)	• Improving surveillance and research infrastructure to support data collection and analysis • Implementation of harmonized surveillance and reporting systems for AMR and antimicrobial use in different sectors, including harmonized methods • Putting in place specific goals for decreasing antibiotic use in healthcare (e.g., a target percentage for broad-spectrum antibiotics) • Educational interventions focused on patients to improve adherence to medical advice related to antimicrobials • Interventions to reduce fecal microbial contamination of fertilizers, water and feed	• Inclusion of AMR-focused curriculum in classrooms

Conclusions and next steps

Contributors identified a range of factors and relationships across the human, animal and environmental sectors that impacted the emergence and spread of AMR in Hungary and were likely to contribute to the predicted continued growth of AMR. The discussion of ongoing spread of resistant pathogens within and between different environments and populations highlighted the importance of cross-sectoral collaboration.

Participants emphasised the role of policy, regulation and public and political will in hindering or supporting progress on AMR in Hungary. The lack of transparent surveillance data made it challenging to understand the scale of the AMR problem. Participants also discussed how changing food preferences and health beliefs in the Hungarian contexts may have ripple effects for AMR.

Contributors identified a number of priority actions to control AMR in the Hungarian context over the short-, medium- and long-term, and discussed challenges to implementation including the need for sustained investment to ensure durable impact.

Designing AMR Solutions features five case study countries, including Hungary. Parallel systems workshops are ongoing across the other country contexts in order to understand context-specific drivers and dynamics. Project outputs and activities will continue to be shared on our website:

https://design.dighr.org/