



### **The Challenge of Anti-Microbial Resistance in Food Production – The Food-Health-Sustainability Nexus**

Anti-microbial resistance (AMR) in food is a phenomenon that has not yet gone mainstream. AMR occurs naturally, yet overuse of antimicrobials, which is commonly used in animal production and aquaculture, accelerates resistance. These bacteria can affect animals and humans, leading to cases where diseases can no longer be treated. Globally, 700,000 people die of AMR every year. This could rise to 10 million annually by 2050.

Since the emergence of AMR is heavily tied to food production, we believe that it is high time to connect discussions on food sustainability with this issue. While there have been extensive discussions on how to make food production systems more sustainable, the AMR problem has not yet been included. The health sector (government) is aware of the consequences of AMR, but the roots of AMR lie in food production, so it is important to link these discussions. AMR is not only affecting the health of consumers, but also our environment and our economy.

Modern food systems have become very complex and include long chains of stakeholders involved in production before foods reach consumers. Under these circumstances, it makes sense to broaden discussions around AMR and food production to include stakeholders involved along the food supply chain. Power, however, has shifted from the producers downstream to retailers, but particularly consumers. Today, consumers have many food choices at very low prices, which is a significant driver of intensive agriculture, which in turn is contributing to AMR. This highlights very clearly that all stakeholders within food systems carry some responsibility for addressing the AMR challenge.

At the level of governments, it is primarily the ministries of health and agriculture that are aware of the consequences and extent of AMR. A reform of food systems, taking into account the risks and potential impacts of AMR should include Ministries of Environment, Industry and Consumer Protection Agencies.

AMR was first recognized as a global health challenge at the UN General Assembly in 2016, so it predates the formulation of the SDGs. Nonetheless, AMR has the potential to inform public and private sector choices in addressing various SDGs. It touches upon SDGs 2 (Zero Hunger), 3 (Good Health and Well-Being), 6 (Clean Water and Sanitation), 8 (Decent Work and Economic Growth), 12 (Responsible Consumption and Production), 14 (Life on Water), and 15 (Life on Land).

#### **Key Messages**

Currently, AMR is seen mainly as a technical health issue, dealt with by medical professionals and health organizations. We believe to truly go mainstream, AMR needs to become more people-centered and not only patient-centered. To enable a broader discussion around AMR, we suggest three perspectives on AMR as a societal issue: as an environmental pollution risk, as an economic risk for food supply chains, and as a health risk for consumers' lifestyle choices.

1. Reframe AMR as an environmental pollution issue – antimicrobials are not just affecting humans and animals, but they are increasingly contained in rivers, lakes and soil, contaminating crops and the water supply.
2. Recognize the potential economic effects of AMR on food production along the supply chain and its potential to jeopardize livelihoods of farmers, etc. According to the World Bank, the economic fallout from AMR could be on the scale of the 2008 global financial crisis, perhaps causing a reduction of up to 3.8% of annual GDP by 2050 with a particularly high impact on low income countries.
3. Move towards AMR as a lifestyle issue. AMR is driven by consumer lifestyle habits and demands which include the expectation of cheap, animal-based food supplies. This creates a disconnect between where food comes from, and how it is purchased. We need to change the story on what people should be consuming as they enter the global middle class. People should not only aspire to a cheap and carnivorous lifestyles, but consider non-meat-based, sustainable, nutritious diets. We should empower the consumers towards having more sustainable sources for food consumption in their life.

#### **The Way Forward for AMR and Food Systems**

1. There is a clear gap between AMR in animal and human health and AMR's environmental effects. This can be addressed by commissioning research that looks at the impact of AMR on the environment such as soil, rivers and lakes. We need research-based information of the extent of AMR's effects on the environment. What are the impacts of antibiotics



overuse on our soils and our waters? What are the contamination levels of antimicrobials from industrial effluent particularly from industries such as healthcare, pharmaceuticals and food processing? How widespread are antibiotics-resistant bacteria in our environment?

2. Developing further discussion of the economic effects of AMR and strategies to address them. Within food systems, other environment-based risks such as climate change, water scarcity or soil degradation are already being considered as business risks and research has been done on their distinctive impacts. This should also be done for AMR with the aim of sensitizing actors within the food system for the potential fallouts of an AMR-induced food crisis.
3. How can we incorporate AMR into discussion on sustainable lifestyles? Retailers etc. have traditionally dominated the supply chain and the message to consumers.

### **Translating Challenges into Stakeholder Actions**

1. In the case of AMR as an environmental issue, ministries of environment and industry should also move towards studying the issue of AMR. They should collaborate with research institutes to assess the degree of AMR impact on their areas of responsibility, such as soil, water, effluent etc.
2. In the case of AMR as an economic issue, governments need to understand the impact on all stakeholders. This goes beyond the food supply chain into stress testing other sectors that can be affected by AMR and the knock-on effect on the domestic economy, for instance through disease and loss of life. Within food systems, there is a chance for producers to turn AMR-related business risks into opportunities by moving towards more sustainable and less resource-intensive production, given the right incentives.
3. In the case of AMR as a lifestyle issue, consumer marketing campaigns from retailers and restaurant chains have traditionally advertised meat-based, low-cost food consumption patterns. This needs to be challenged with an alternative narrative. Consumers cannot be held entirely responsible for their meat-heavy, fast food lifestyles. They lack information about production inputs and the environmental impact and are constrained by finances, particularly in developing countries. Equally the solution does not lie in shifting blame to other stakeholders. Campaigns should be commissioned to develop alternative communications that educate the consumer and reverse damaging lifestyle habits. Producers, retailers, processors and wholesalers should form alliances to increase the transparency of food systems and enable all stakeholders to correctly assess AMR-related food risks.