

**COMMITTEE :** FAO (Food and Agriculture Organization of the United Nations)

**ISSUE :** What strategies can be implemented in agricultural practices—both aquatic and terrestrial—to limit the resistance of microorganisms to chemical inputs without compromising farm productivity?

**CHAIRS :** Leya PETITJEAN, Hanae SCHWEBEL et Lina BEN MASSAOUDA

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## PRESENTATION OF THE CHAIR

Dear delegates, welcome to FerMUN 2026!

My name is Leya Petitjean, I am 17 years old and I am part of the English section of the Ferney-Voltaire International High School. I have always lived in France but I am of Indian origin. My passions are tennis and skiing. I have been playing the clarinet for over 10 years, along with the piano. I started out as a delegate in the MUN program in my sophomore year. This role taught me a lot and made me want to discover a new facet of MUN: that of Committee Chair. I had the opportunity to experience this last year at FerMUN 2025 and I am delighted to be doing it again this year.



At FerMUN 2026, we will debate a crucial issue for our future: how to produce enough food to feed the population while limiting the resistance of microorganisms to chemicals. The aim is to find suitable agricultural strategies that reduce the use of chemical inputs and avoid bioresistance without compromising productivity. It is essential to find solutions to this challenge in order to protect our planet and our health. We must take action to preserve the future of agriculture, while ensuring sufficient and sustainable production.

Dear delegates, it is up to us to take part in this debate! I hope to see you all in good shape in January to engage in these exciting discussions. Until then, I wish you all the best in your research!

## KEY TERMS

**Sustainable agriculture:** Sustainable agriculture, which respects the environment, is opposed to intensive agriculture. It reduces the use of chemicals and protects natural resources. In the face of climate challenges, it is an essential solution for ensuring food security while preserving soil and biodiversity. (source Ecopedia : [Sustainable agriculture: farming practices that reduce greenhouse gas emissions](#))

**Biodiversity :** Biodiversity encompasses all living organisms and the ecosystems in which they thrive. It also includes interactions between species and their relationships with their natural environment. It is important to preserve biodiversity because it is essential to human life: it provides oxygen, food, drinking water, raw materials, and energy. It stimulates research (scientific and medical inspiration such as the discoveries of morphine and aspirin), agriculture (pollination, soil fertility) and protects against environmental risks (such as flooding thanks to floodplains). It is therefore a vital pillar for our health, our activities, and our environment. (source OFB : [What is biodiversity ?](#) )

**Microorganisms :** Microorganisms are microscopic living organisms (measuring micrometers in size) that are invisible to the naked eye. They are highly diverse and play an essential role in agriculture and food production. They contribute to the nutrition and metabolism of plants and animals, food processing (such as the fermentation of bread or yogurt), and the maintenance of soils and ecosystems. (source FAO : [Microorganisms and invertebrates](#))

**Chemical inputs :** Chemical inputs such as fertilizers, pesticides, herbicides, fungicides, insecticides, antivirals, etc., are used in agriculture to improve productivity and protect crops. However, their excessive use can harm the environment (pollution, soil degradation, loss of environmental quality or quantity, and biodiversity) by promoting pest and disease resistance. To limit their impact, it is essential to adopt sustainable agricultural practices, such as crop rotation, the use of organic fertilizers, and integrated pest management.

**Antimicrobial :** Antimicrobials—such as antibiotics, antivirals, antifungals, and antiparasitics—are substances (medicines) designed to prevent or treat infections in humans, animals, and plants.  
(source OMS : [Key facts about antimicrobial resistance](#))

**Antimicrobial resistance (AMR) :** Antimicrobial resistance (AMR) occurs when microorganisms (bacteria, viruses, fungi, parasites) no longer respond to drugs. This makes infections more difficult to treat, increases their severity and spread, and can lead to death. Treatments then become less effective or even unusable.

## OVERVIEW

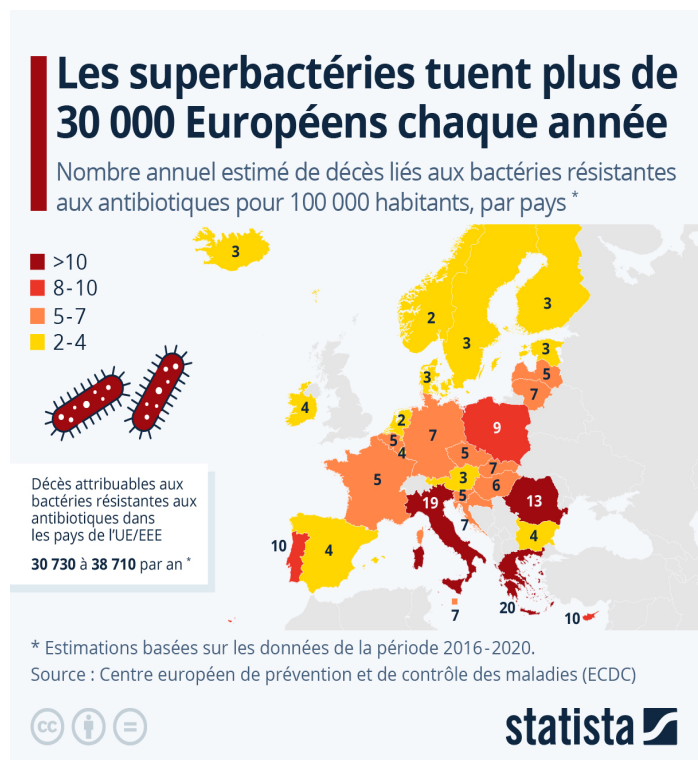
### 1. Human health issues and impacts on biodiversity

Antimicrobial resistance (AMR) is now a serious threat to global public health and sustainable development. The World Health Organization (WHO) ranks it among the 10 greatest health threats facing humanity. This resistance occurs when bacteria, viruses, fungi, or parasites no longer respond to drugs such as antibiotics or antivirals when treating diseases. Bacteria or microbes become accustomed to the treatment by mutating, rendering it ineffective. As a result, infections become longer, more serious, and more difficult to treat, increasing the risk of spread and mortality. This phenomenon also applies to agriculture:

when a chemical input loses its effectiveness against certain bacteria, it not only poses risks to human health but also exposes crops to an accumulation of chemicals in the soil or water.

In agriculture, AMR causes production losses, threatens food security, and impacts farmers' livelihoods. Resistance can spread among hosts and contaminate the food chain. The use of antimicrobials in livestock and crops is driven by several factors, such as antiseptic practices (which treat and prevent infection), limited access to experts, the use of antimicrobials as growth promoters, lack of regulation, and excessive or inappropriate use.

AMR poses a major threat to global health and the economy. It contributed to nearly 5 million human deaths in 2019 and could result in a global economic loss of \$3.4 trillion over 10 years.

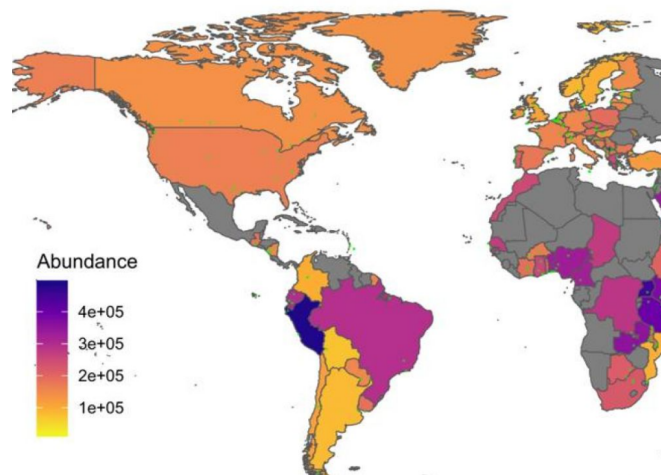
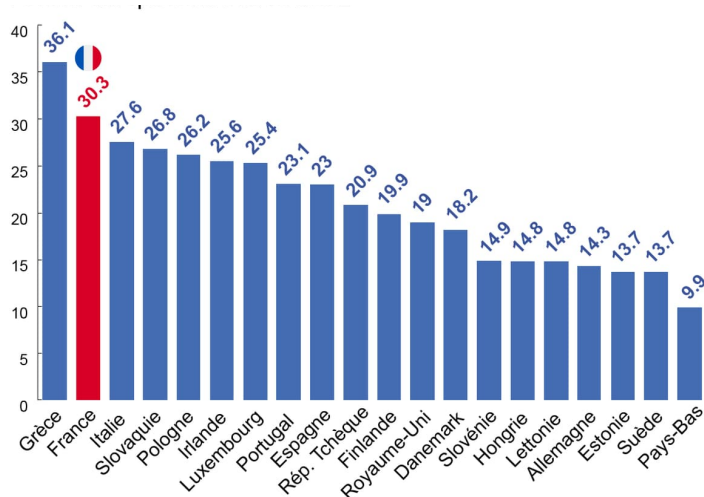


It also jeopardizes food security, animal health, and the livelihoods of millions of people, particularly in low-resource countries where regulations are insufficient.

(sources OMS et FAO : [Key facts about antimicrobial resistance](#) et [What is it? | Antimicrobial Resistance | Food and Agriculture Organization of the United Nations](#))

### Some statistics:

daily dose of antibiotics per 1,000 inhabitants in the European Union  
Source OECD



source : magazine “Sciences et Avenir” - carte de l’antibiorésistance

## **2. The agricultural and economic challenge**

Antimicrobial resistance (AMR) directly threatens agricultural productivity, food security, and rural economies. It leads to qualitative and quantitative losses in agriculture, livestock farming, and aquaculture, as well as increased healthcare costs.

**Health:** Excessive or inappropriate use of antimicrobials in livestock farming promotes the emergence of resistant bacteria, reducing the effectiveness of treatments while increasing animal mortality. Residues of these drugs or the presence of resistant microbes in food also pose a danger to public health.

**Agriculture and chemicals:** Antimicrobial resistance (AMR) increases the cost of veterinary care and reduces farm productivity. It compromises food safety, disrupts international trade, and threatens global food supplies, increasing the risk of poverty in certain regions.

Antimicrobials are commonly used in livestock farming to treat or prevent disease, but also, in some cases, to accelerate animal growth. However, their misuse or inappropriate use promotes the emergence of resistant bacteria, reducing the effectiveness of treatments. This can lead to an increase in disease and animal mortality, with a direct impact on farmers' incomes and food availability.

AMR also has consequences for food safety: antimicrobial residues or resistant microbes can contaminate food products, threaten public health, and harm international trade.

Economically, AMR increases animal health costs (longer and more expensive treatments), reduces farm profitability, and increases losses for global food systems. It could also push millions of people into extreme poverty in the coming years. (voir : [antimicrobial resistance and the united nations sustainable development cooperation framework](#))

## TREATIES AND MAJOR EVENTS

### 2016

The **WHO Global Action Plan on AMR**, which proposes concrete measures to curb the use of antimicrobials in human, animal, and plant health.

(voir : [9789242509762-fr.pdf](#))

### 2017

The **UN Political Declaration on Antimicrobial Resistance**: For the first time, heads of state recognize AMR as a major threat to global health, food security, sustainable development, and the economy.

(voir : [https://iris.who.int/bitstream/handle/10665/274737/A70\\_12-fr.pdf?sequence=1](https://iris.who.int/bitstream/handle/10665/274737/A70_12-fr.pdf?sequence=1))

**Stratégie One Health :** The “One Health” approach aims to protect human, animal, and environmental health in a coordinated manner, recognizing the close links between these

three areas. It seeks to strike a balance between these dimensions in order to better prevent, monitor, and manage diseases.

(source: [One health](#))

## POSSIBLE SOLUTION

Here are some ideas for potential solutions:

1. **Adopt sustainable agricultural practices**
  - Promote infection prevention through improved hygiene and livestock management.
  - Promote the responsible and justified use of medicines.
2. **Enforce laws to regulate the use of antimicrobials in livestock farming and crop cultivation**
  - Prohibit their sale without a prescription
  - Train farmers and veterinarians in the correct use of treatments
3. **Managing and treating agricultural waste correctly**
  - Prevent soil and water from being contaminated by antimicrobial residues or resistant bacteria. Bioconcentration (when an organism accumulates a water pollutant, which becomes more concentrated in its body than in the water) must also be limited, as is the case with tuna, for example
4. **Strengthen surveillance and research**
  - Establish systems to monitor the use of antimicrobials in agriculture
  - Support research to better understand the sources and mechanisms of AMR
  - Regularly evaluate progress and adjust strategies
5. **Acting in a coordinated manner at all levels**
  - Involve all sectors: agriculture, animal health, human health
  - Raise awareness among farmers and consumers about the risks of overconsumption of food

voir aussi : <https://www.woah.org/app/uploads/2021/10/unsdcf-amr-guidance-en-final-approved.pdf?-final-fr.pdf> (p.14)

## QUESTIONS TO CONSIDER:

- Why are so many chemical inputs used in agriculture (pesticides, antibiotics, fertilizers, etc.)?
- What are the economic impacts for farmers when products become ineffective?
- How can farmers be encouraged to change their practices?
- Can developing countries apply the same strategies?
- What public policies or regulations are needed to support the transition to more sustainable agriculture?
- What roles can international organizations (FAO, WHO, UN) play?
- How does people's consumption impact agricultural production?

## BIBLIOGRAPHY

### Websites :

- [WHO: \(Key points on antimicrobial resistance\)](#) World Health Organization
- [Ecopedia](#) : Knowledge base on nature, ecology, and forest management
- [OFB](#) : French Office for Biodiversity
- [FAO](#) : Food and Agriculture Organization of the United Nations
- [FAOSTAT](#) : FAO statistics
- [Statista](#) : reliable statistical data
- [WOAH](#): World Organization for Animal Health

### Videos :

- [Antimicrobial Resistance. The role of food and agriculture](#) - Antimicrobial Resistance. The role of food and agriculture
- [Antimicrobial resistance \(AMR\) - What does it mean and why it matters](#) - UK Health Security Agency