

ONE HEALTH

IL LEGAME TRA UOMO, ANIMALE E AMBIENTE IN UNA
PROSPETTIVA DI INTERDISCIPLINARIETÀ COMUNICATIVA E
DIDATTICA INNOVATIVA

*THE LINK BETWEEN HUMANS, ANIMALS AND THE
ENVIRONMENT FROM A PERSPECTIVE OF INTERDISCIPLINARY
COMMUNICATION AND INNOVATIVE TEACHING*

Stef BRONZWAER

5 May 2023 – UniParma

- 1 What is One Health
- 2 Global
- 3 EFSA - Europe
- 4 National
- 5 Case study - AMR



1. WHAT IS ONE HEALTH

REVIEW

OPEN ACCESS

Advancing One Health: Updated core competencies

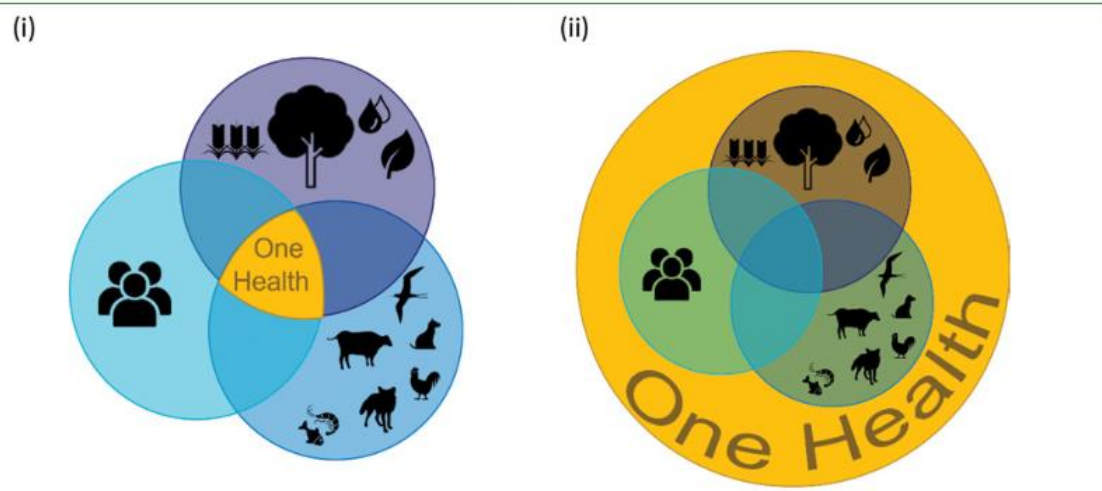


Fig. 1. Two main streams of thought found in One Health (i) One Health focusing on human-animal-plant-environment interfaces; and (ii) One Health focusing on the whole system encompassing humans, animals, plants and the environment. Credit: BH, Julian Blanc, SR.

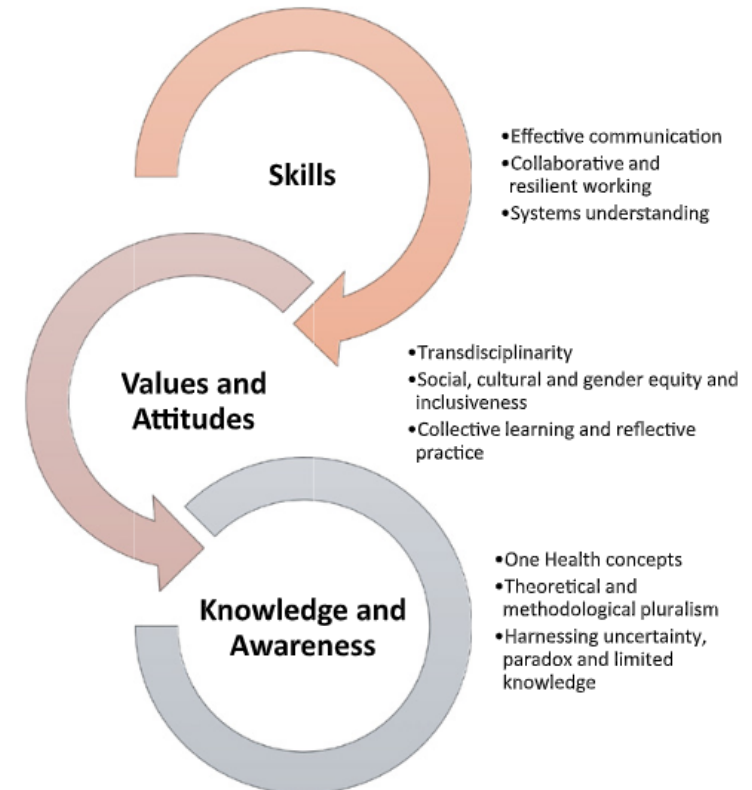
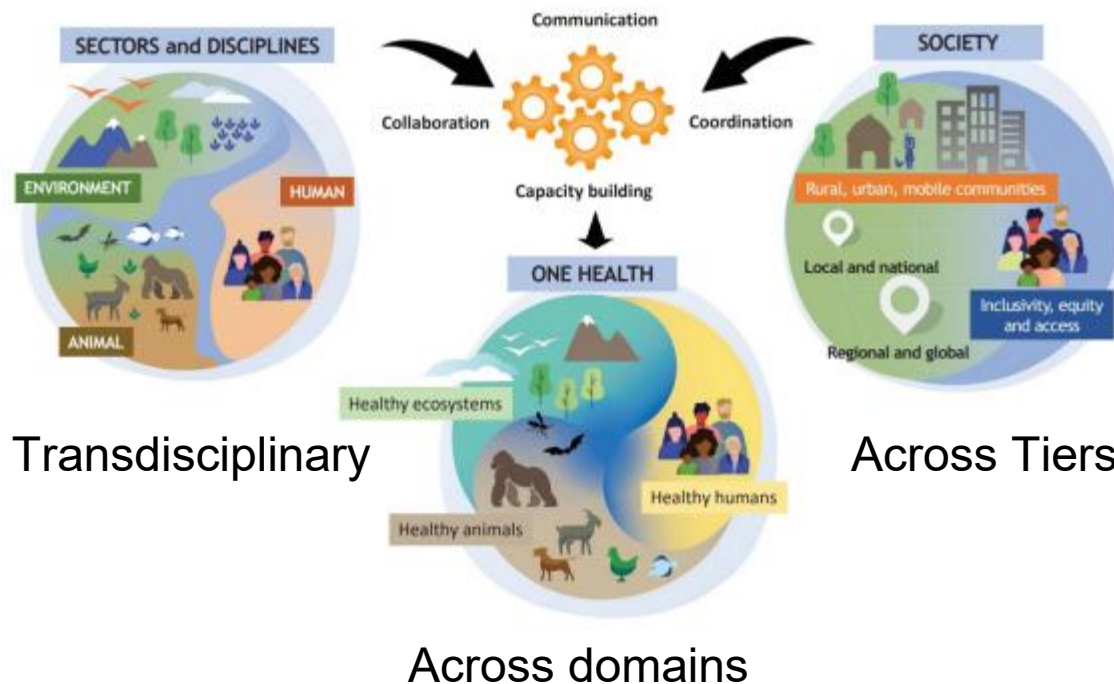


Fig. 2. The nine NEOH-updated competencies for One Health are grouped into three themes—Skills, Values and Attitudes, and Knowledge and Awareness.

ONE HEALTH DEFINITION – FAO, UNEP, WHO & WOAHA

- One Health is an **integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems.**
- It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent.



The approach mobilizes **multiple sectors, disciplines and communities** at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.



ONE HEALTH ACTORS



**EFSA
OH Operationalisation
Task Force**



**Inter-Agency OH Task
Force**



**EU Partnerships/
Europe**



DG SANTE/AGRI/ENV



WHO/FAO/WOAH/UNEP



MEMBER STATES



2. GLOBAL



MEMORANDUM OF UNDERSTANDING

BETWEEN

THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

AND

THE WORLD ORGANISATION FOR ANIMAL HEALTH

AND

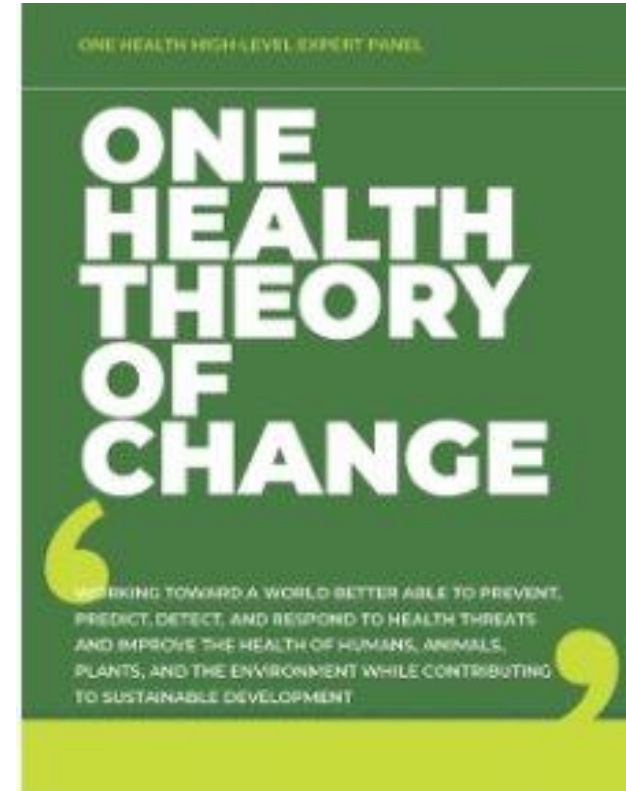
THE WORLD HEALTH ORGANIZATION

AND

THE UNITED NATIONS ENVIRONMENT PROGRAMME

REGARDING

COOPERATION TO COMBAT HEALTH RISKS AT THE ANIMAL- HUMAN- ECOSYSTEMS INTERFACE IN THE CONTEXT OF THE “ONE HEALTH” APPROACH AND INCLUDING ANTIMICROBIAL RESISTANCE



Quadripartite Memorandum of Understanding (MoU) signed for a new era of One Health collaboration 29 April 2022



OH ACTION PLAN

ONE HEALTH QUADRIPARTITE JOINT PLAN OF ACTION (2022-2026)

WORKING TOGETHER FOR THE HEALTH OF HUMANS, ANIMALS, PLANTS AND THE ENVIRONMENT

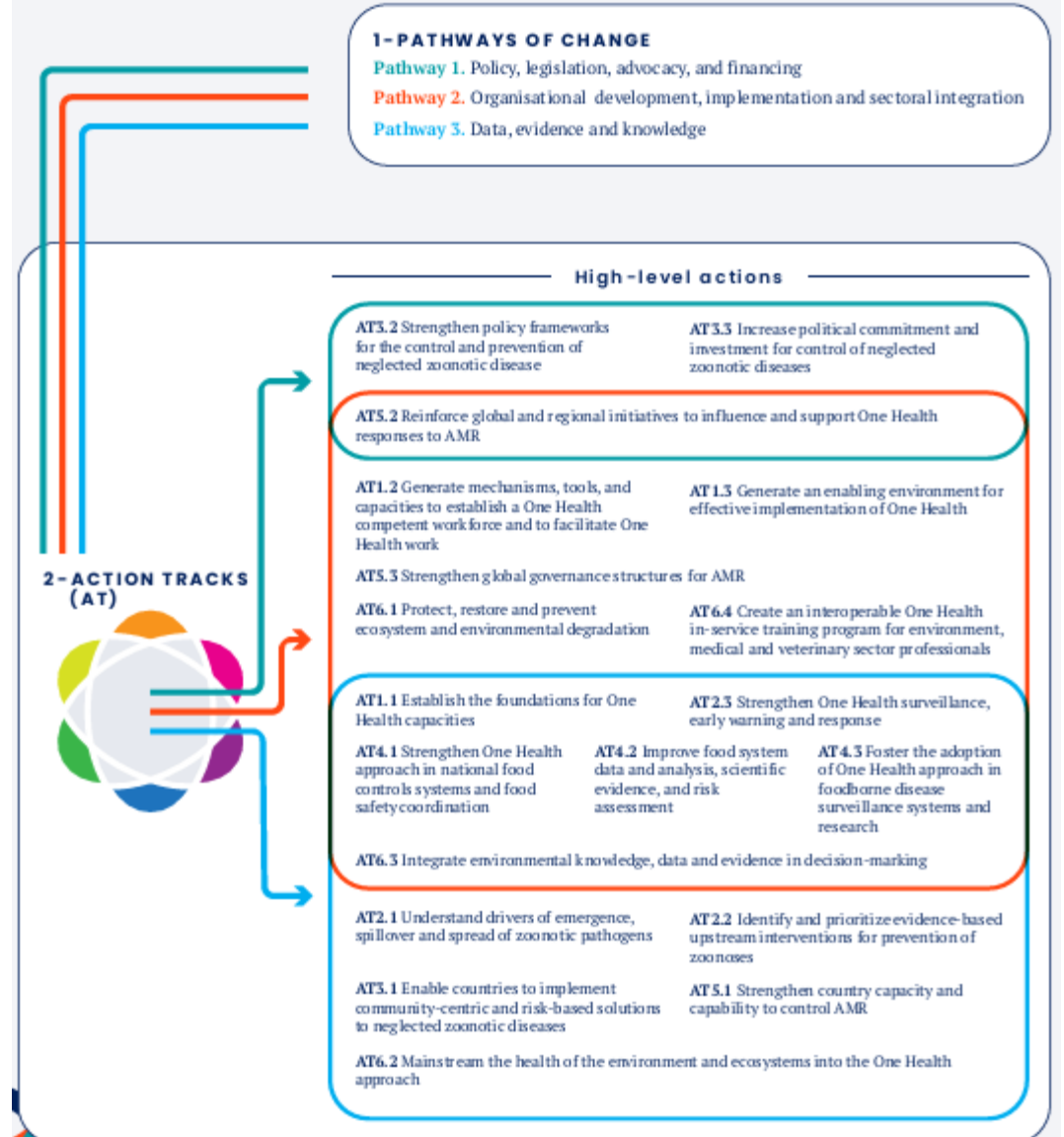
1.2.2 Facilitate One Health capacity building, including workforce development in all relevant sectors

- Mapping of existing opportunities, resources and curricula at global, regional and national levels
- Definition of access and selection criteria and processes; evaluation of capacity-building programmes
- Mechanisms to build synergies and avoid duplication in capacity-building delivery
- Competency-based frameworks, training programmes, courses, plans and e-learning resources
- Workforce development tools
- Job descriptions for One Health professionals
- Simulation exercises to build and strengthen One Health competencies
- Monitoring and evaluation tools to assess capacity building

1.2.3 Support and promote the next generation of One Health practitioners, researchers and technical officers

- Internships, placements, mentorship schemes and a competency framework for junior One Health practitioners, researchers and technical officers

FIGURE 2: OVERVIEW OF THE THEORY OF CHANGE FOR THE OH JPA



ONE HEALTH - JOINT PLAN OF ACTION (2022-2026)

Action 6.4. Create an interoperable One Health academic and in-service training programmes for environmental, medical, agricultural and veterinary sector professionals

6.4.3 Develop an interoperable One Health training course (FTP-WEBE) for in-service professionals – a complement to the Field Epidemiology Training Programme (FETP), Field Epidemiology Training Programme for Veterinarians (FETPV) and Field Epidemiology and Laboratory Training Programme (FELTP) – targeting professionals in ministries responsible for natural resource management (wildlife, biodiversity, ecosystems, environment), climate and other environmental issues

- Interoperable environmental sector One Health training modules and course developed
- Interoperable environmental sector One Health training delivered on biodiversity, ecosystems and wildlife
- Environment sector professionals understand how to contribute to One Health at national and subnational level
- Environment sector has the capacity to influence One Health policy and identify and implement environmental sector priorities as part of national and subnational One Health programmes
- National One Health policies and priorities reflect the mandates and interests of environment ministries and are expanded beyond zoonoses, AMR and food safety

AT 6, action 4

- FT-WEBE and FETP
- FETPV and In-Service Applied Veterinary Epidemiology Training (ISAVET)
- Needs Assessment and impact assessment tools, for example for national wildlife health programmes and country assessments of environmental health services (currently being piloted)
- [FAO Virtual Learning Center](#) training courses
- Introductory One Health Training course (7 technical modules) – FAO Regional Office for Asia and the Pacific Virtual Learning Center
- [Global Framework for Transboundary Animal Diseases \(GF-TADs\)](#)
- FAO manuals on highly pathogenic avian influenza (FAO, 2013a; 2013b; FAO and OIE, 2008), bats (FAO, 2011b) and other technical subjects (see, for example, FAO, 2019b; 2021e; 2021f)
- WHO/WOAH One Health workforce initiative
- WOAH/OIE National Focal Point for Wildlife training cycles & manuals
- **The Tripartite One Health FETP Competency Framework**



TRIPARTITE ONE HEALTH FETP COMPETENCY FRAMEWORK



- No internationally accepted competencies for epidemiologists
- graduates with varying competence and the dilution of the reputation of Field Epidemiology Training Program (FETP) or Field Epidemiology Training Program for Veterinarians (FETPV) certification.
- WHO, FAO and WOAHA developed field epidemiology competencies in a One Health context
- for reference and use by countries and regions
- planning / reviewing a One Health FETP at the frontline, intermediate and/or advanced levels.



3. EFSA - EUROPE



Editorial | Open Access | CC BY-NC-ND

EFSA's expertise supports One Health policy needs

Stef Bronzwaer , Mirelle Geervliet, Marta Hugas, Bernhard Url

First published: 12 May 2021 | <https://doi.org/10.2903/j.efsa.2021.e190501> | Citations: 4

About the authors: Stef Bronzwaer, Research Coordinator; Mirelle Geervliet, Trainee; Marta Hugas, Scientist; Bernhard Url, Executive Director

EFSA = One health

Regulation (EC) No 178/2002 - mission European Food Safety Authority:

*The Authority shall contribute to a high level of protection of **human life and health**, and in this respect take account of **animal health and welfare, plant health and the environment ...***

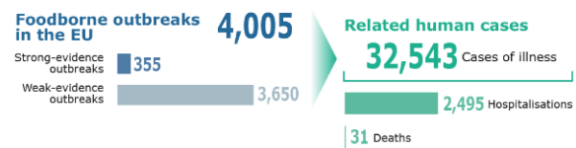


EFSA OH – STORY MAPS – DASHBOARDS

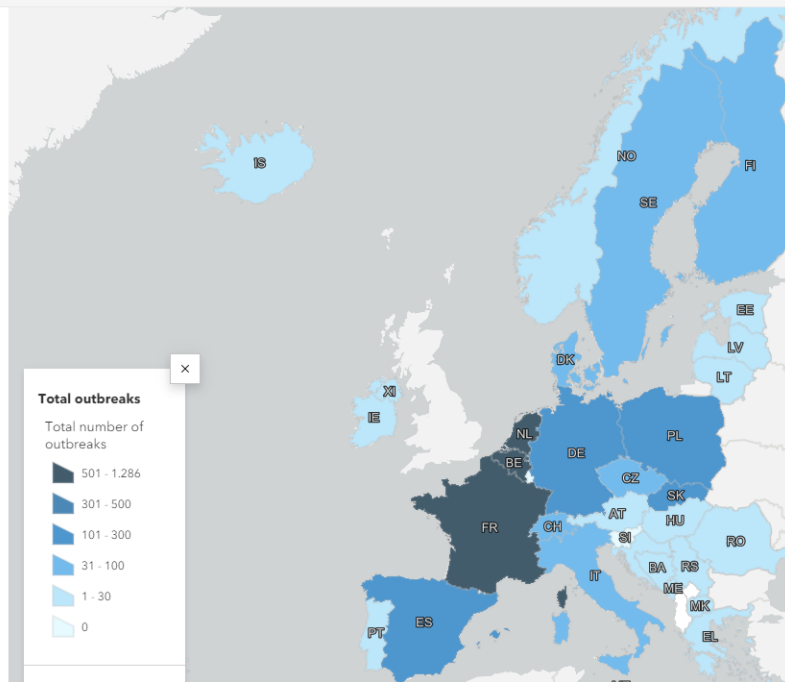
HTTPS://WWW.EFSA.EUROPA.EU/EN/RESOURCES/DATA-COLLECTION-ZOONOSES

Occurrence of foodborne outbreaks in 2021

In 2021, all EU Member States and United Kingdom (Northern Ireland) reported foodborne outbreak data to EFSA, with the exception of Bulgaria and Cyprus, which reported zero outbreaks. In addition, seven non-Member States countries (Bosnia and Herzegovina, Iceland, Montenegro, Norway, Republic of North Macedonia, Serbia, Switzerland) reported 83 outbreaks, 1,270 human cases, 65 hospitalisations and 2 deaths.

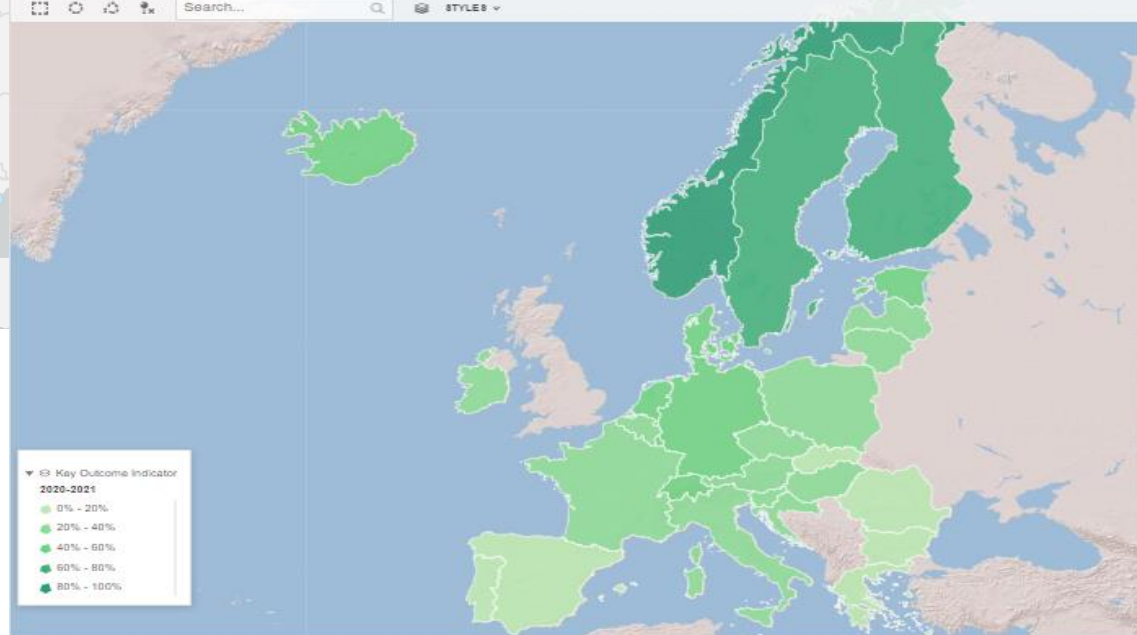


Overall, at the EU level, despite the number of foodborne outbreaks reported to EFSA in 2021 was higher than in



Reporting years
2020-2021

Key Outcome Indicator : rate of complete susceptibility in E.coli from food-producing animals



EFSA OH – STORY MAPS – DASHBOARDS - OVERVIEW

HTTPS://WWW.EFSA.EUROPA.EU/EN/RESOURCES/DATA-

Reporting tools

- [Excel mapping tools for 2022 zoonoses and AMR data reporting](#)
- [Instructions on how to use the Excel mapping tools can be found in the User manual for mapping Member State zoonoses standard terminology to EFSA standard terminology for information derived from the year 2018](#)

The catalogues extracted in the Excel format

- [Catalogues for 2022 zoonoses data reporting](#)
- [The 2022 mapping between the ZOO_CAT_MATRIX and the FoodEx2 and examples of prevalence data reported in SSD2 format](#)

Links to the annual reports

- The European Union One Health Zoonoses Report: [2011](#) | [2012](#) | [2013](#) | [2014](#) | [2015](#) | [2016](#) | [2017](#) | [2018](#) | [2019](#) | [2020](#) | [2021](#)
- EU summary report on AMR in zoonotic and indicator bacteria from humans, animals and food: [2011](#) | [2012](#) | [2013](#) | [2014](#) | [2015](#) | [2016](#) | [2017](#) | [2018](#) | [2019](#) | [2021](#)
- [National zoonoses country reports](#)

Dashboards and story maps

Foodborne outbreaks

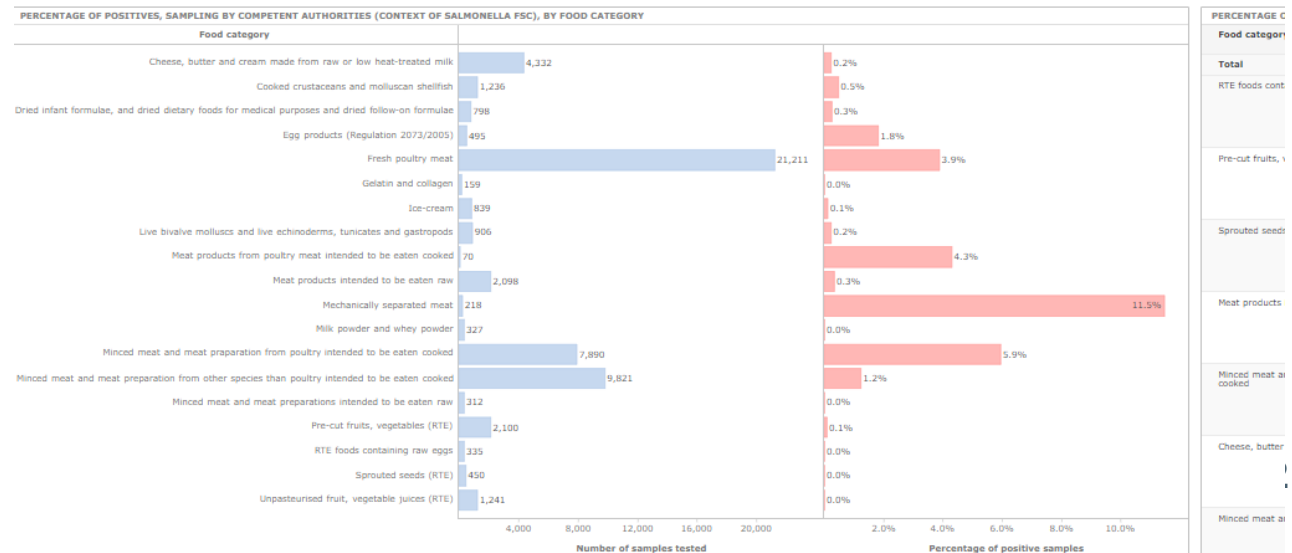
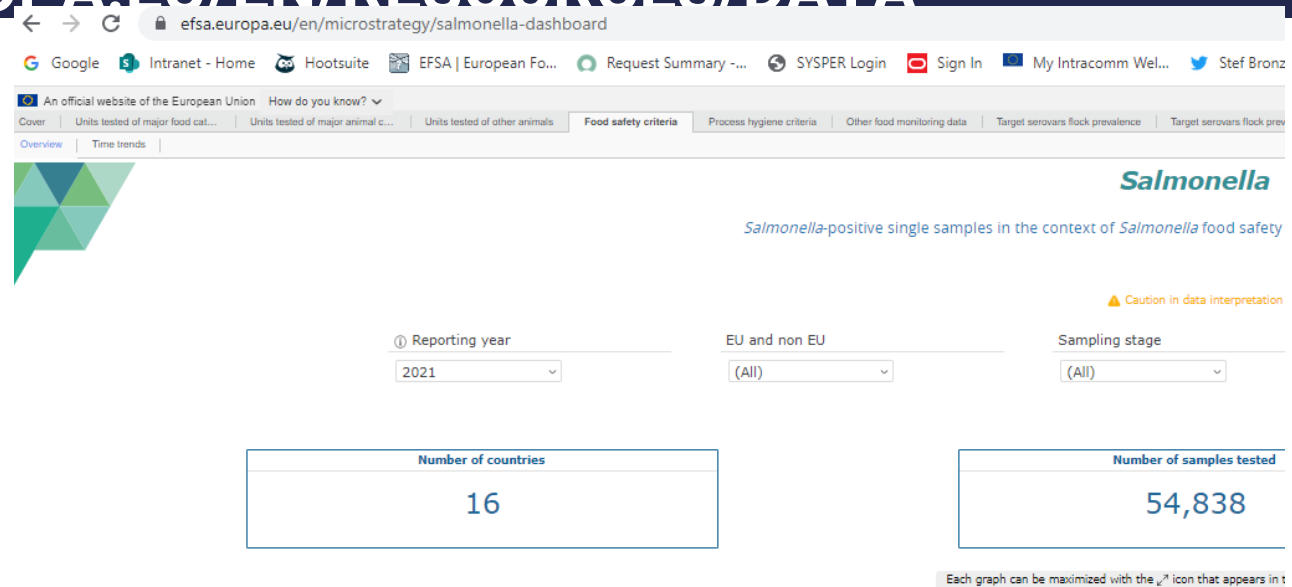
- [Foodborne outbreaks dashboard](#)
- [Foodborne outbreaks story map](#)

Prevalence

- [Salmonella dashboard](#)
- [Salmonella story map](#)
- [Listeria dashboard](#)
- [Listeria monocytogenes story map](#)
- [Campylobacter dashboard](#)
- [Campylobacter story map](#)

Antimicrobial resistance

- [Monitoring antimicrobial resistance](#)
- [Monitoring AMR in *Escherichia coli*](#)
- [Dashboard on Indicators of antimicrobial resistance](#)



ONE CONFERENCE 2022



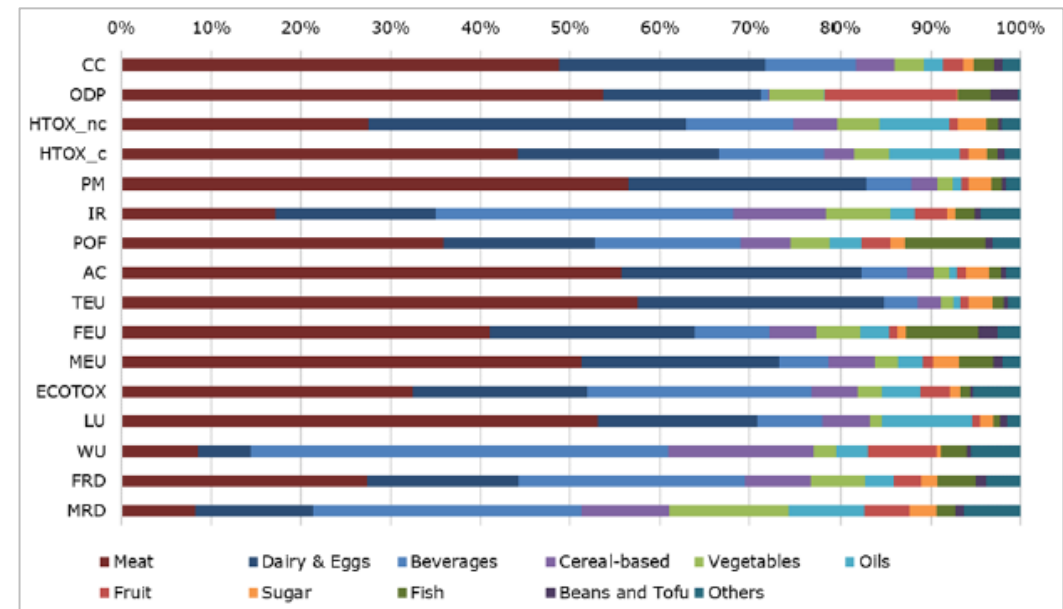
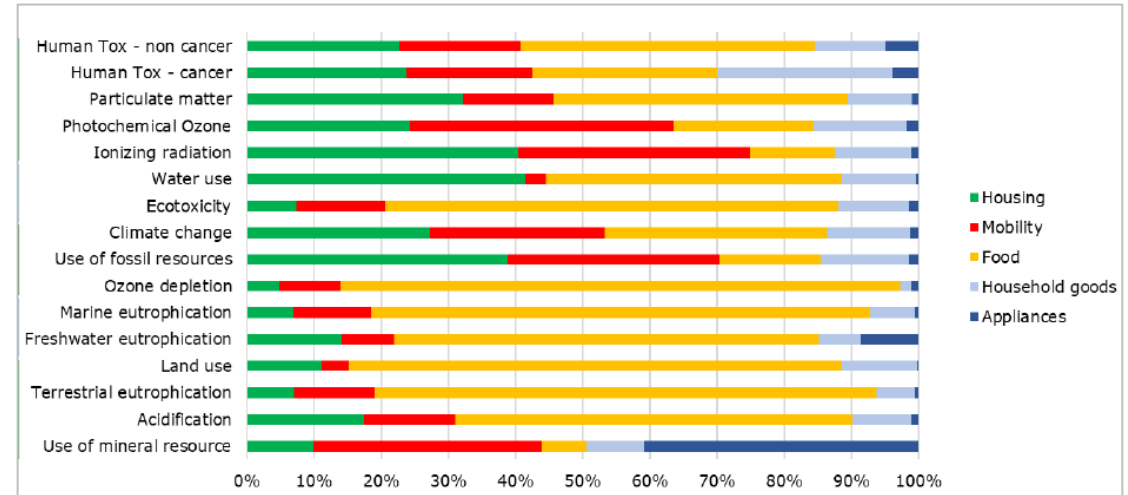
ONE CONFERENCE CONCLUSIONS

- Application of OH principles to food safety and nutrition help to deliver **more integrated, cross-sectoral and collaborative health assessments**.
- Such health assessments would better inform policies that **support the transition towards a sustainable and resilient food system**.
- It is not sufficient to merely acknowledge the concept of One Health, it will **need to be applied!**
- In recent years, EFSA with other EU Agencies, **have applied One Health principles in the areas of zoonoses, AMR and bee health**. Moreover, they have **extended this approach** to other areas (e.g. environmental risk assessment).
- Since EFSA and Member States **have access to extensive transdisciplinary data, scientific knowledge and expertise**, by deepening their cooperation they could effectively **contribute to the development and implementation of One Health policies** along the entire food chain.



THE ENVIRONMENTAL IMPACT OF FOOD

- **Food** is one of the main drivers of environmental impacts
- **Agriculture** is the highest contributor on most of the impact categories of food
- **Food of animal origin** drives the high environmental impact of agriculture



ONE CONFERENCE



Editorial | Open Access | CC BY | EN

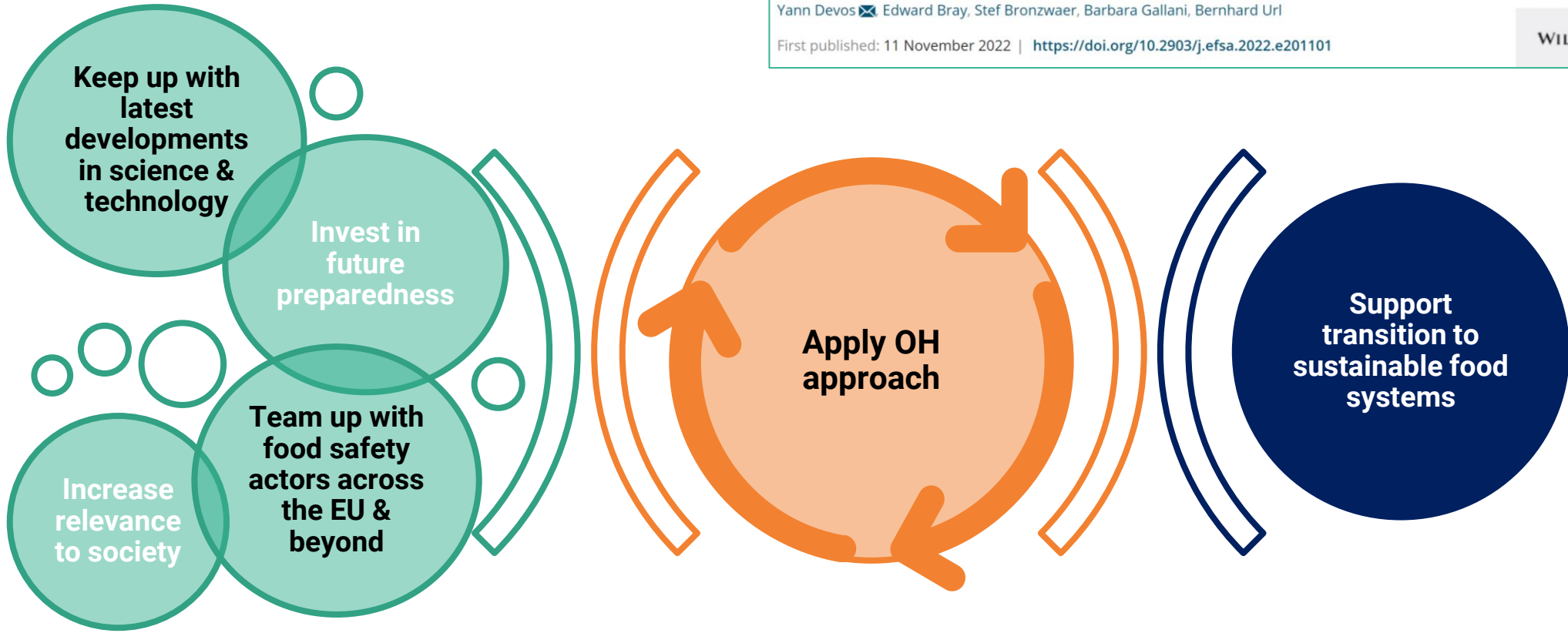
Advancing food safety: strategic recommendations from the 'ONE – Health, Environment & Society – Conference 2022'

Yann Devos ✉, Edward Bray, Stef Bronzwaer, Barbara Gallani, Bernhard Url

First published: 11 November 2022 | <https://doi.org/10.2903/j.efsa.2022.e201101>

Advertisement

WILEY



Safe food

One Health (OH)

Sustainable food



OH IMPLEMENTATION | INTER-AGENCY OH TASK FORCE



Workplan 2024 - 2026



Four priority areas



CAPACITY BUILDING -

[HTTPS://WWW.EFSA.EUROPA.EU/EN/ENGAGE/CAREERS](https://www.efsa.europa.eu/en/engage/careers)



Staff

Work for us



Experts

Contribute to our scientific work



Secondments

Join us and enhance our partnerships



Young professionals

Be one of our next trainees



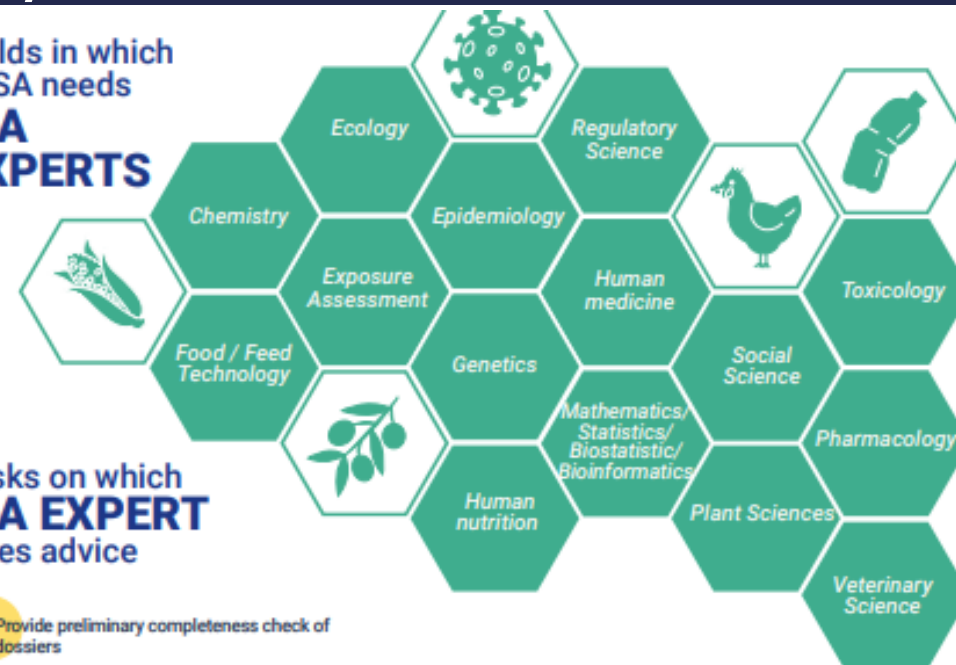
EU-FORA

EU-FORA

Increase your knowledge in risk assessment through our fellowship program

Fields in which EFSA needs

ISA EXPERTS



Tasks on which ISA EXPERT gives advice

- Provide preliminary completeness check of dossiers
- Provide advice in relation to risk a-assessment (e.g. literature analysis, systematic review, supporting an expert knowledge elicitation)
- Data validation, data extraction, data appraisal, collation and processing, summarizing and analysis
- Support the design of social research and generation of insights to ensure quality throughout EFSA risk communication (audience-first approach)
- A full list of tasks can be found [here](#)



Any individual (natural persons) with the required scientific profile

Citizens of a member state of EU or EFTA or an EU Candidate country

Citizens from third countries may also apply

R€MUNERATION

Individual experts are remunerated with a fixed fee of 360 € per day.

Maximum amount that can be paid to an individual expert during the whole duration of the call (5 years) is 140.000 €

FELLOWSHIP PROGRAMME

EU-FORA – The European Food Risk Assessment Fellowship Programme



The European Food Risk Assessment (EU-FORA) Fellowship Programme is a key initiative for ensuring preparedness for future risk analysis needs. The programme keeps evolving based on six years of experience, the implementation of 94 work programmes, and the participation of more than 70 supervisors from 40 organisations in 16 different EU Member States and the UK.

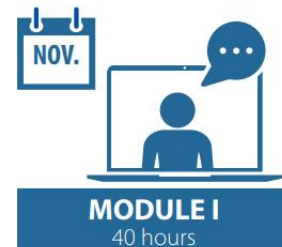
- Offering a work programme to a fellow from another Article 36 organisation.

and / or

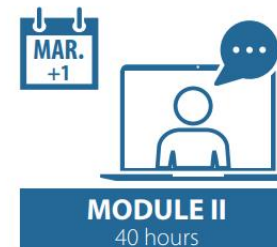
- Identifying among their staff a fellow to be trained by a partnering organisation (hosting site);

Training

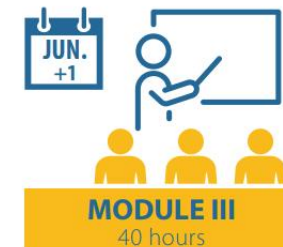
- ▶ Training is an essential part of the EU-FORA programme.
- ▶ At the summer workshop and induction training, fellows meet and exchange experiences while being introduced to the topics they will tackle over the coming year.
- ▶ Throughout the programme, fellows have the opportunity to follow seminars – physically and remotely – on topics such as risk assessment, emerging risks, risk communication or data collection.



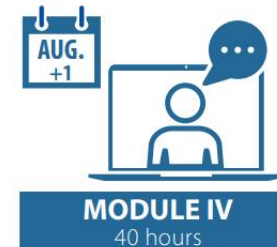
Risk assessment of other food areas
GMOs, Plant Health, AHAW, Nutrition, ERA and Regulated Products.



Emerging risks in food risk assessment



Risk communication and crisis response



Data collection and reporting



EFSA WEBSITE – TENDERS

HTTP://WWW.EFSA.EUROPA.EU/EN/PROCUREMENT/TENDERS



Tenders €140k+

Tenders from EFSA and other EU Agencies

Open call for tenders procedures published by EFSA and by the other EU Agencies reporting to the ENVI Committee of the European Parliament.



Tenders €15k - €140k

Negotiated procurement procedures

Express an interest to submit an offer for a forthcoming negotiated procedure.



Toolbox

Instructions and forms

Forms and guidance documents to help with the preparation and submission of tenders for procurement or proposals for grants.



Upcoming tenders €140k+

Future open calls for tenders

EFSA publishes a prior-information notice to indicate to economic operators that we are planning to launch an open call for tenders in the future.



Scientific and technical support

Support EFSA's scientific work

EFSA establishes lists of scientists to assist its units in carrying out some preparatory work for scientific outputs.



Procurement and grants annual reporting

Ongoing

Link	Reference	Title	Published	Deadline
Access on TED	OC/EFSA/PREV/2023/02	EU Environmental Scenarios for ERA of Non-target Organisms	7 April 2023	30 June 2023 14:30:59 UTC +2
Access on TED	OC/EFSA/PREV/2023/01	Environmental Neurotoxicants – Advancing Understanding on the Impact of Chemical Exposure on Brain Health and Disease	7 April 2023	22 June 2023 14:30:59 UTC +2
Access on TED	OC/EFSA/PLANTS/2023/01	Technical and Scientific Support to EFSA Training Courses on Plant Pest Surveillance for Improving Crisis Preparedness in Plant Health	7 April 2023	31 May 2023 14:30:59 UTC +2
Access on TED	EFSA/2023/OP/0001	Support to Process Public and Targeted Consultations	7 April 2023	31 May 2023 14:30:59 UTC +2
Access on TED	OC/EFSA/KNOW/2023/01	Provision of Specialised Training Courses on Specific Aspects of Chemical Risk Assessment and Related Tools	7 March 2023	25 May 2023 14:30:59 UTC +2
Access on TED	OC/EFSA/IDATA/2023/01	Monitoring and Surveillance Data for Future Chemical Risk Assessment Needs in EFSA: Exploring New Opportunities	7 March 2023	9 May 2023 14:30:59 UTC +2



CHANGING ENVIRONMENT - CIRCULARITY



Microplastics environmental concern since long - also possible food safety risk.

Circular economy / urban farming, may drive risks.
For example:

- a. Reusage Waste Water
- b. Urban agriculture



EUROPEAN GREEN DEAL

- Launched in 2019
- Interconnected policy initiatives
- Action plan make EU more sustainable
 - Efficient use of resources
 - Clean, circular economy
 - Restore biodiversity
 - Cut pollution
- Different policy areas
 - Biodiversity Strategy for 2030
 - Chemicals Strategy for Sustainability
 - **Farm to Fork Strategy**



LEGISLATIVE FRAMEWORK

- Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority
- Having regard to the Treaty establishing the European Community, and in particular Articles 37, 95, 133 and Article 152(4)(b) thereof,
- *Article 152(4). The Council, ... shall contribute to the achievement of the objectives ...
(b) ..., measures in the veterinary and phytosanitary fields which have as their direct objective the protection of public health
(c) incentive measures designed to protect and improve human health, excluding any harmonisation of the laws and regulations of the Member States....*
- *5. Community action in the field of public health shall fully respect the responsibilities of the Member States for the organisation and delivery of health services and medical care.*

EXCLUSIVE COMPETENCES

ONLY EU CAN LEGISLATE

In certain areas, the EU alone is able to pass laws. The role of member countries is limited to applying the law, unless the EU authorises them to adopt certain laws themselves.

According to art. 3 TFEU, the EU has exclusive competences in the following sectors:

- customs union
- competition rules for the single market
- monetary policy for the eurozone countries
- common trade policy
- international agreements (under certain circumstances)
- marine plants and animals regulated by the common fisheries policy

SHARED COMPETENCES

EU OR NATIONAL GOVERNMENTS CAN LEGISLATE

In certain areas, both the EU and member countries are able to pass laws. But member countries can do so only if the EU has not already proposed laws or has decided that it will not.

According to art. 4 TFEU, the EU has shared competences in the following sectors:

- single market
- employment and social affairs
- economic, social and territorial cohesion
- agriculture and fisheries
- environment
- consumer protection
- transport
- trans-European networks
- energy
- justice and fundamental rights
- migration and home affairs
- public health (for the aspects defined in Article 168 of the Treaty on the Functioning of the European Union)
- research and space
- development cooperation and humanitarian aid

SUPPORTING COMPETENCES

MEMBER COUNTRIES LEGISLATE, EU HELPS

In certain areas, the EU can only support, coordinate or complement the action of member countries. It has no power to pass laws and may not interfere with member countries' ability to do so.

According to art. 6 TFEU, the EU has supporting competences in the following sectors:

- public health
- industry
- culture
- tourism
- education and training, youth and sport
- civil protection
- administrative cooperation

CROSS-BORDER HEALTH THREATS

REGULATION (EU) 2022/2371 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 23 November 2022
on serious cross-border threats to health and repealing Decision No 1082/2013/EU

(Text with EEA relevance)

Article 5 Union prevention, preparedness and response plan

- (f) the health preparedness and response and multi-sectoral collaboration, such as identifying risk factors for disease transmission and the associated disease burden, including social, economic and environmental determinants, **following the One Health approach for zoonotic, food and waterborne diseases and relevant other diseases and related special health issues;**

Article 11 Training of healthcare staff and public health staff

- 1. The Commission may organise training activities, in close cooperation with the relevant Union agencies and bodies and professional health organisations and patient organisations, for healthcare staff, social service staff and public health staff in the Member States, **in particular interdisciplinary One Health training, including on preparedness capacities under the IHR.**

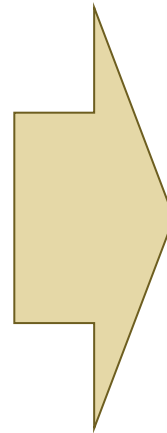
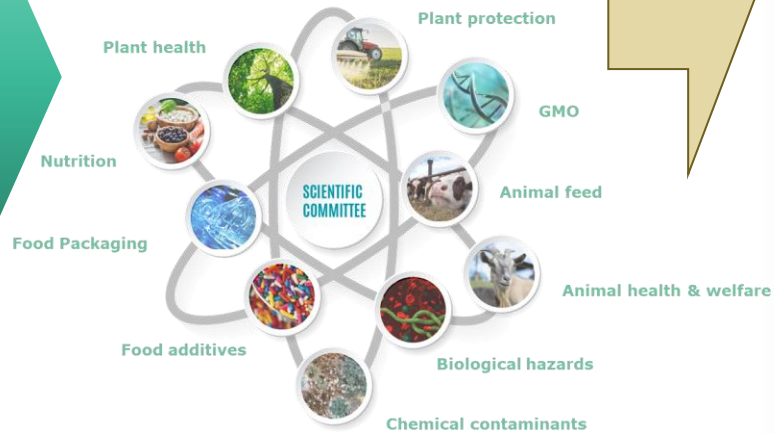
Article 20 Public health risk assessment

- 1. Where an alert is notified ..., the Commission shall, ..., make promptly available ..., a **risk assessment of the potential severity of the threat to public health**, including possible public health measures. That risk assessment shall be carried out by one or more of the following Union agencies or bodies: ECDC, EMA, EFSA, ECHA, EEA, EMCDDA, ...



EUROPEAN PARTNERSHIPS IN CONTEXT.....

- PARC
- One Health AMR
- PAHW
- SFS



- EU Global Health Strategy
- The European Green Deal: Delivering Step by Step
- From Farm to Fork
- Chemicals Strategy for Sustainability
- EU BIODIVERSITY STRATEGY



4. NATIONAL - ONE HEALTH EUROPEAN JOINT PROGRAMME (OHEJP)

<https://onehealthejp.eu/>



About ▾ Projects ▾ Outcomes ▾ Community ▾

KEY DOCUMENTS

- OHEJP SCIENTIFIC ACTIVITIES
- OHEJP OVERVIEW BROCHURE
- PUBLIC DELIVERABLES
- STAKEHOLDER ANALYSIS OF OUTCOMES OF EJPS OUTPUTS (FEB 2023)
- PUBLICATIONS

SCIENCE TO POLICY TRANSLATION

- REPORTS
- ONE HEALTH EJP CONFERENCE 2023
- OHEJP OUTCOME INVENTORY
- DATA MANAGEMENT

ANNUAL REPORTS

- OHEJP ANNUAL REPORT 2018
- OHEJP ANNUAL REPORT 2019
- OHEJP ANNUAL REPORT 2020
- OHEJP ANNUAL REPORT 2021

ANNUAL SCIENTIFIC MEETINGS

- ASM 2019
- ASM 2020
- ASM 2021
- ASM 2022

WORKSHOPS

- ASM SATELLITE WORKSHOP 2019
- INTEGRATED APPROACHES TO ZOOSES WORKSHOP
- ASM SATELLITE WORKSHOP 2021
- ASM SATELLITE WORKSHOP 2022
- COMMUNICATION AND MEDIA WORKSHOP

OHEJP SIMEX 2022

https://explore.openaire.eu/search/project?projectId=corda_h2020::ad3bed331601f46182a10ba919857c8b

OpenAIRE | EXPLORE

Search Deposit Link Data sources



Project: 2018 - 2023. On going

One Health EJP

Promoting One Health in Europe through joint actions on foodborne zoonoses, antimicrobial resistance and emerging microbiological hazards.

OPEN ACCESS MANDATE FOR PUBLICATIONS

EUROPEAN COMMISSION

Funder: European Commission Project code: 773830 Call for proposal: H2020-SFS-2017-1

Funded under: H2020 | COFUND-EJP Overall Budget: 90,000,000 EUR Funder Contribution: 44,999,000 EUR

Status: On going

01 Jan 2018 (Started)

30 Sep 2023 (Ending)

Detailed Project Information (CORDIS)

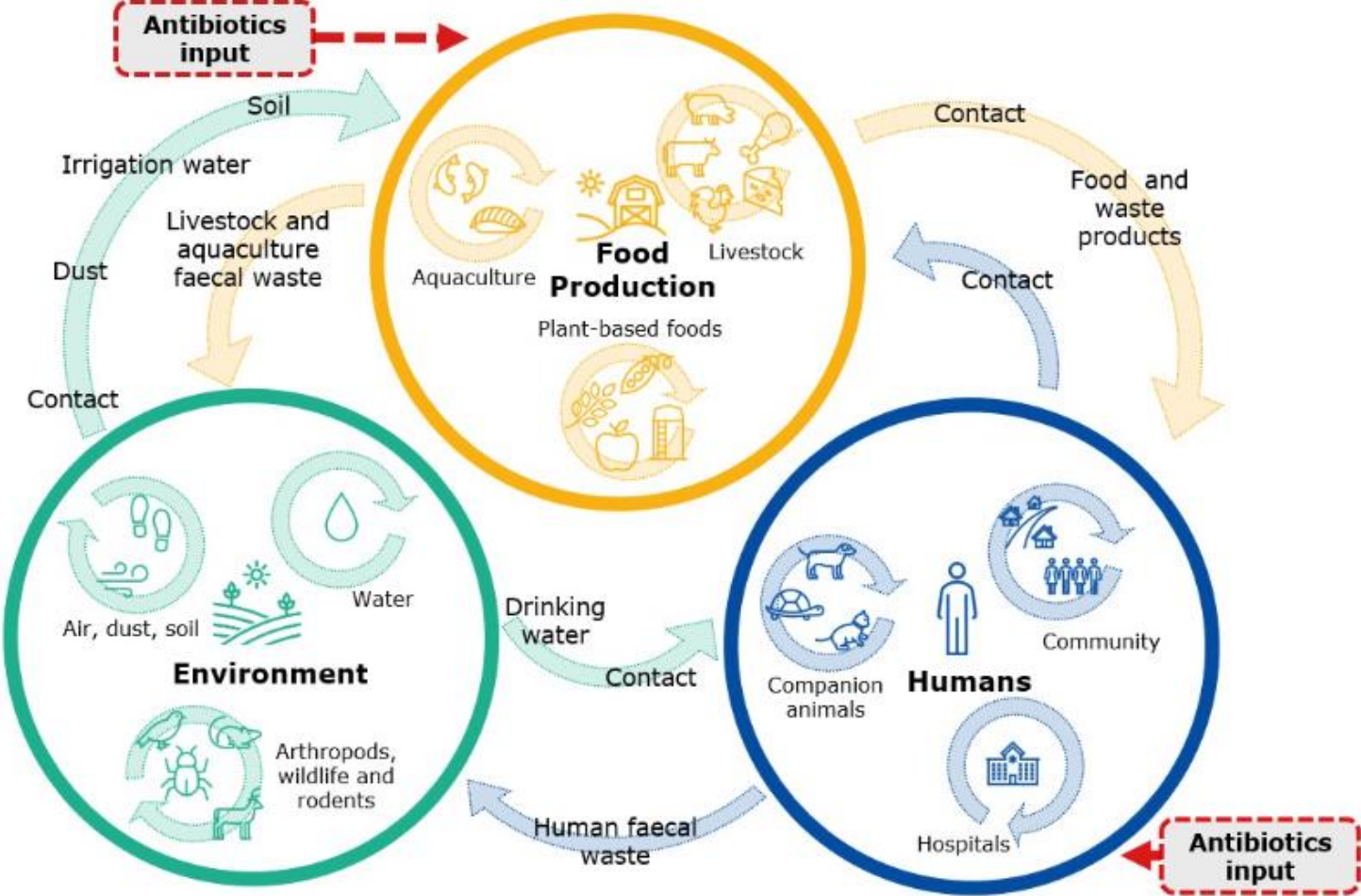
Open Access mandate
Research data: No

ACTIONS

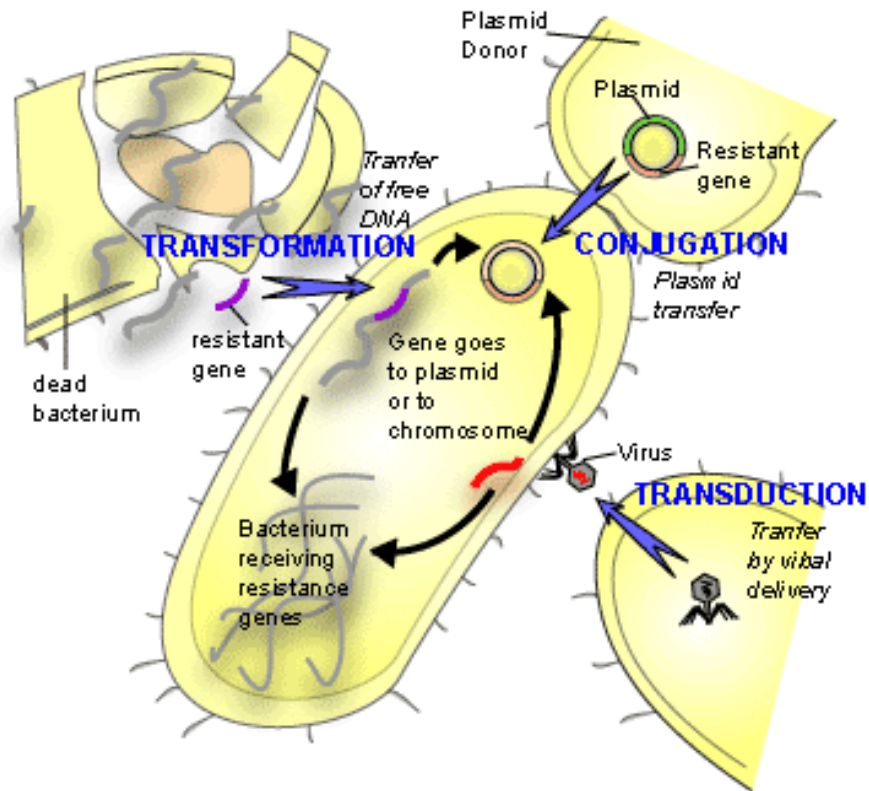
Summary Publications (1,597) Research data (94) Research software (6) Other research products (243) Dmps (34)



5. ONE HEALTH CASE STUDY – ANTIMICROBIAL RESISTANCE (AMR)



BACTERIA READILY EXCHANGE INFORMATION ...



Defense possible by

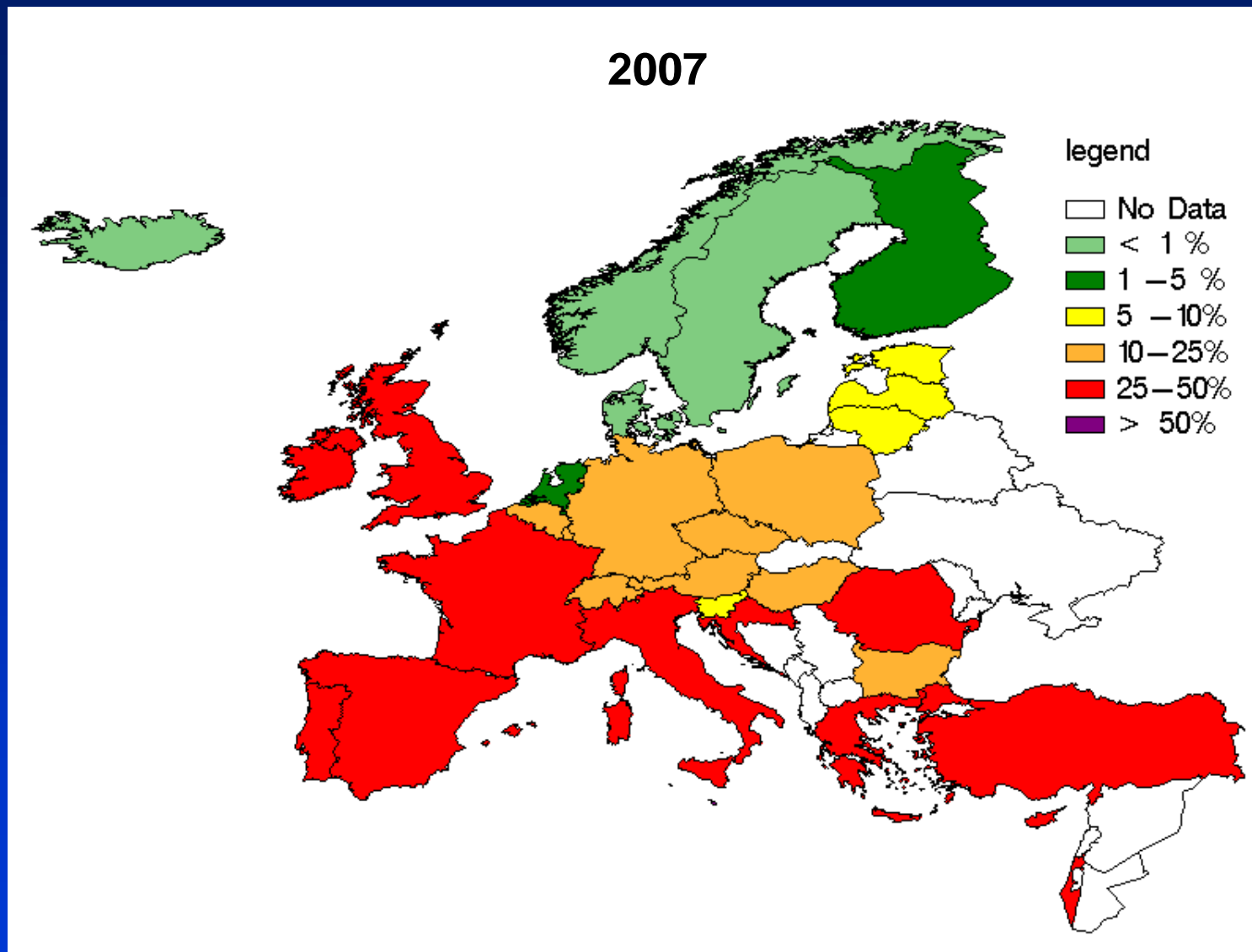
- Closing-up?
- Cooperation

The *Sapiens* secret of success is large-scale flexible cooperation.
Yuval Noah Harari



MRSA

2007

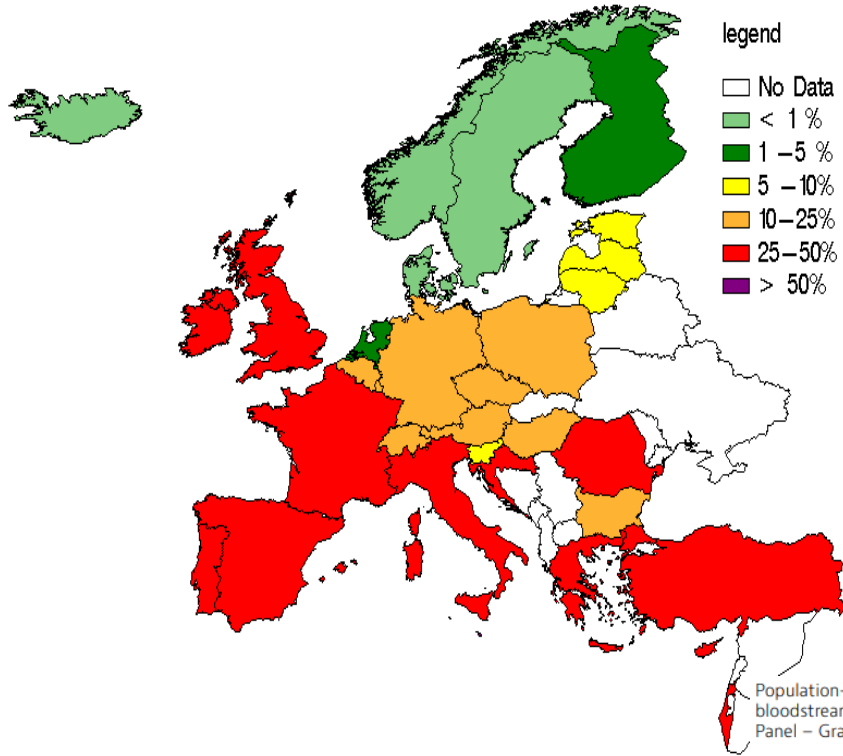


EARSS

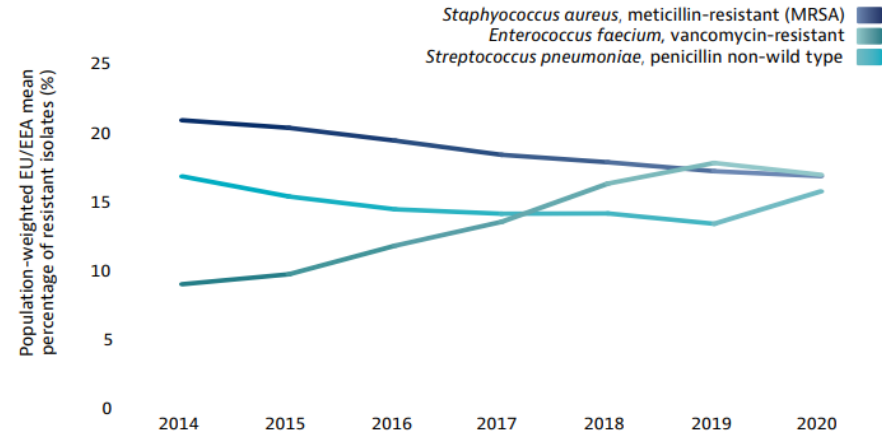
EUROPEAN ANTIMICROBIAL RESISTANCE SURVEILLANCE SYSTEM

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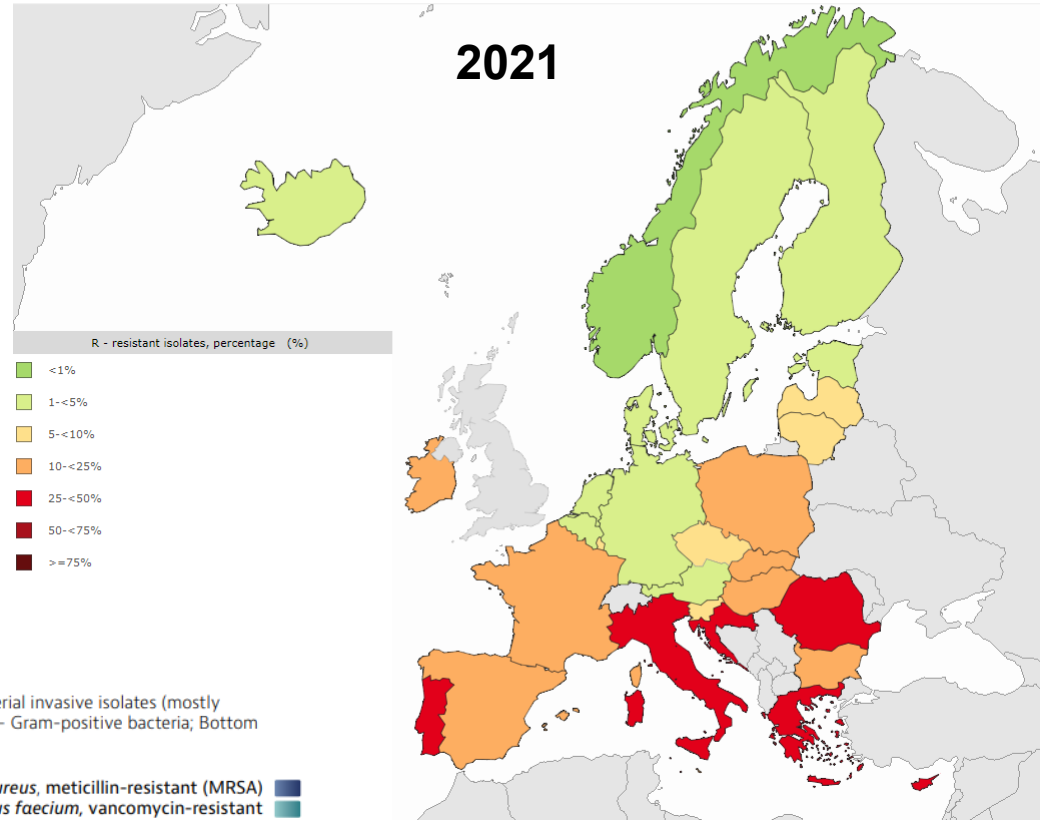


Population-weighted mean percentage of resistant isolates among bacterial invasive isolates (mostly bloodstream infections), in 29 EU/EEA countries, 2014-2020; Top Panel – Gram-positive bacteria; Bottom Panel – Gram-negative bacteria



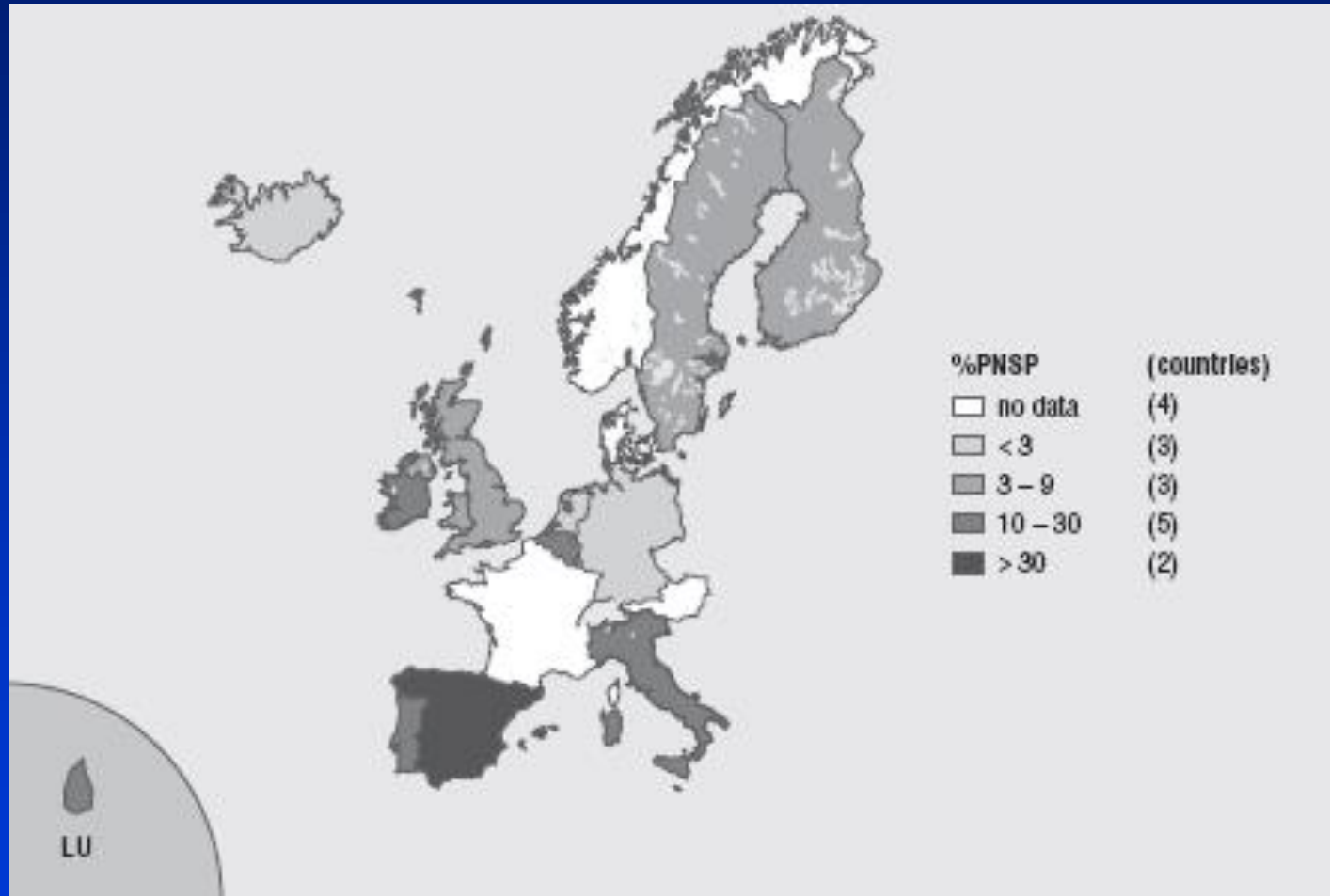
Surveillance Atlas of Infectious Diseases

Antimicrobial resistance | Staphylococcus aureus | Meticillin (MRSA) | R - resistant isolates, percentage | 2021



2021

Mean Proportions of invasive isolates of *S. pneumoniae* resistant to penicillin (PNSP) among 12 European countries, 1998-99



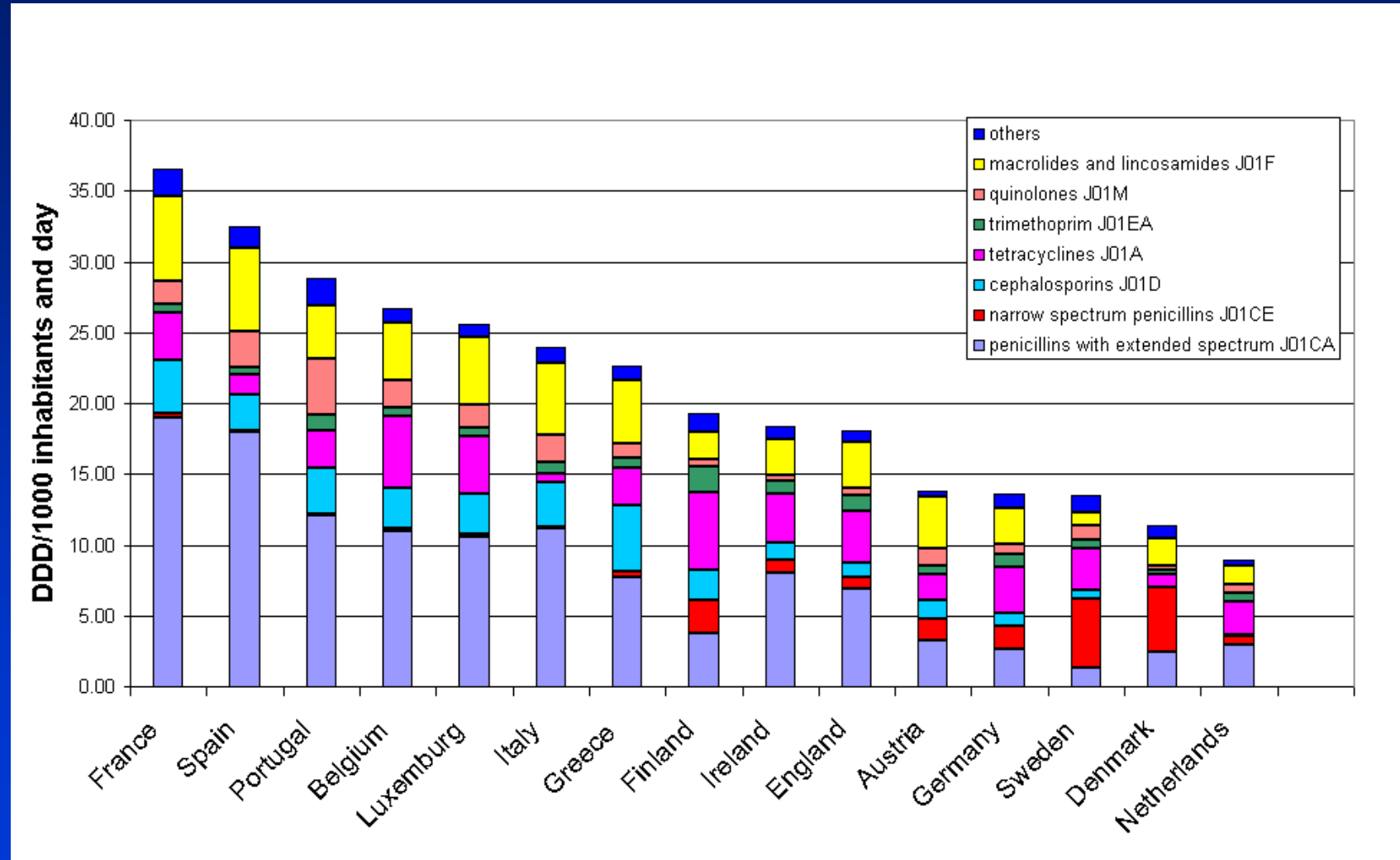
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Consumption of antibiotics: Cars "Outpatient antibiotic sales in 1997 in the EU. Lancet 2001"

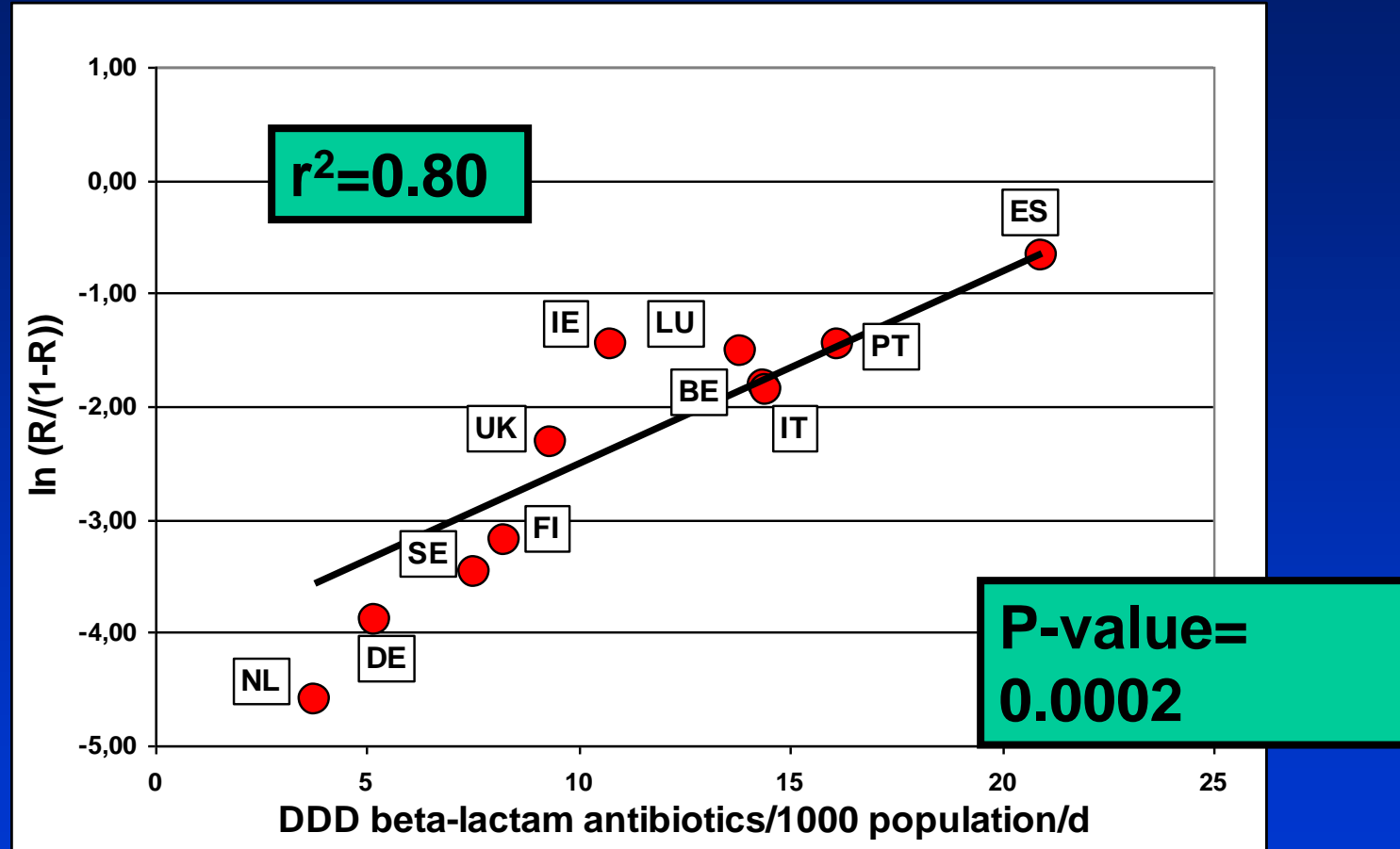


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Beta lactam usage vs. logodds of PNSP resistance



S. Bronzwaer et al, Emerg Inf Dis 2002;8(3):278-82



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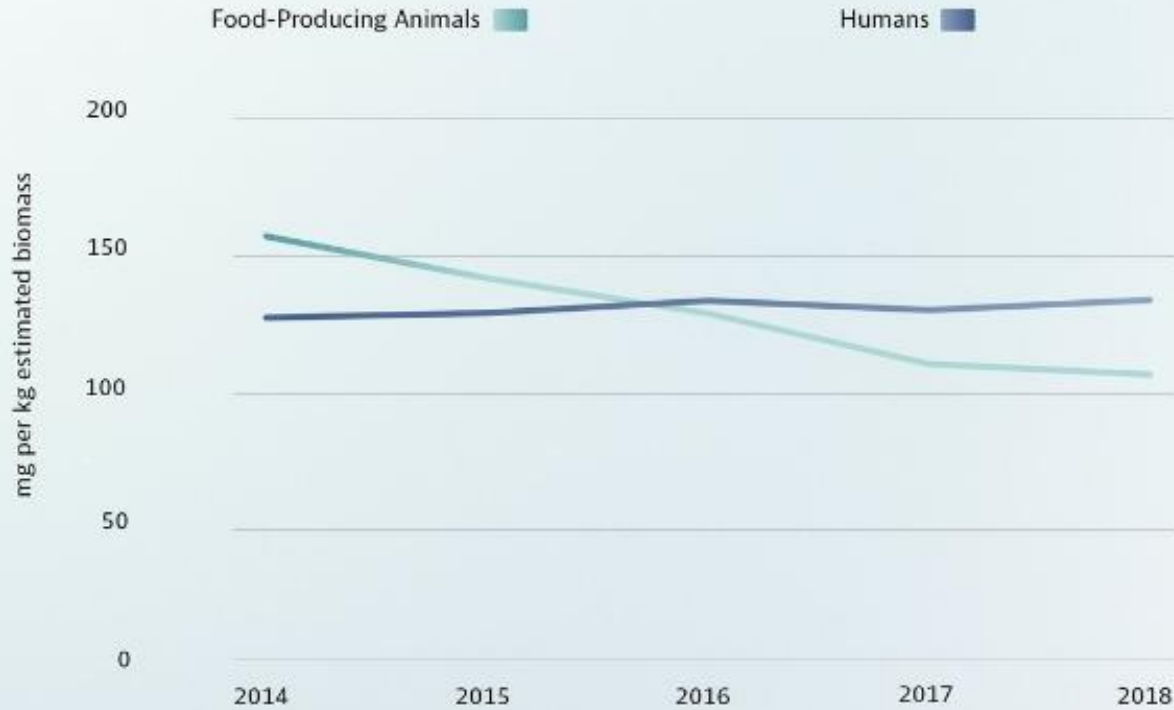
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CONSUMPTION OF ANTIBIOTICS IN HUMANS AND FOOD-PRODUCING ANIMALS, EU/EEA (POPULATION-WEIGHTED MEAN), 2014-2018

Population-weighted mean of the total consumption of antibiotics in humans and food-producing animals in 27 EU/EEA countries for which data were available for both humans and animals, for 2014-2018



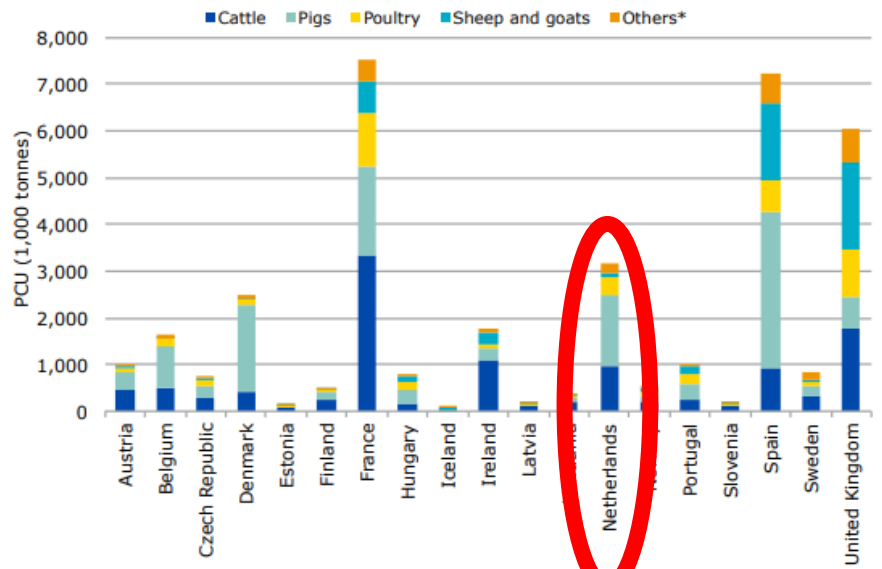
Note: For humans: ATC J01 Antibacterials for systemic use. For food-producing animals: ATCvet QA07AA, QA07AB, QG01AA, QG01AE, QG01BA, QG01BE, QG51AA, QG51AG, QJ01, QJ51, QP51AG. Population-weighted mean of 27 EU/EEA countries for which data were available: Austria, Belgium, Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, United Kingdom.

Source: ECDC, EFSA, EMA (2021).



ANTIBIOTIC USE IN ANIMALS DECREASED OVER TIME

Figure 1. PCU (in 1,000 tonnes) of the various food-producing animal species, including horses, by country, for 2010



* Horses and, for some countries, fish and rabbits.

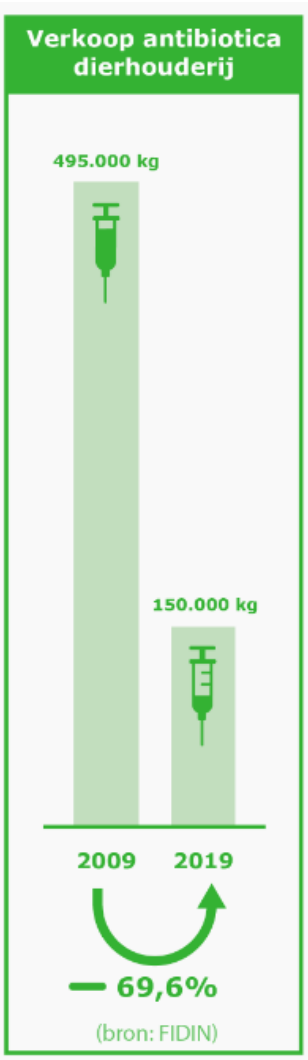
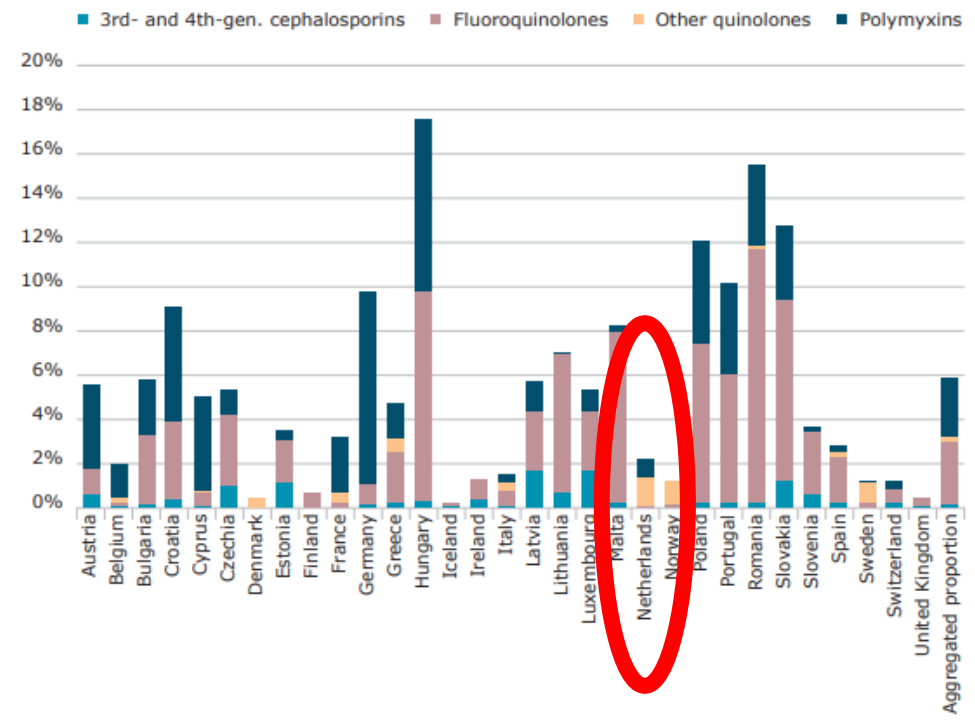


Figure 6. Proportion of sales of 3rd- and 4th-generation cephalosporins, fluoroquinolones, other quinolones and polymyxins of total sales, in mg/PCU, of antibiotic VMPs for food-producing animals in 31 European countries in 2021



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