A BELGIAN VISION ON ONE HEALTH AND ITS IMPLEMENTATION

Dr Dominique Vandekerchove

One Health science officer

Sciensano & Belgian Biodiversity Platform
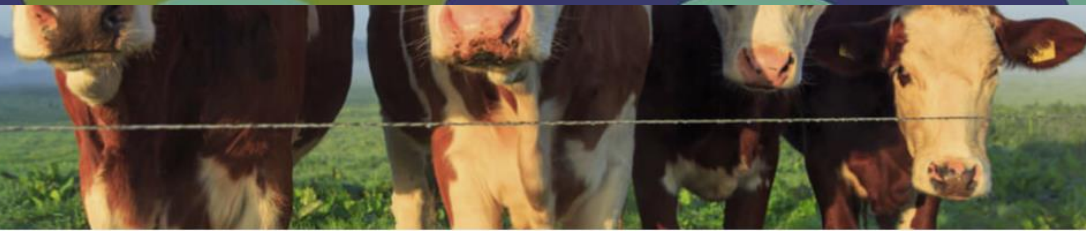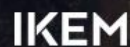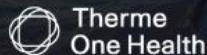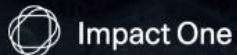
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connects health, science and society

Sciensano supports human and animal health policies from a One Health perspective

- by making use of its expertise in research and surveillance, also in the context of crisis management,

- by providing high-quality scientific advice, recommendations and services,

- by collecting, analysing and making available validated health data,

- by collaborating with external partners and

- by liaising with relevant actors in Belgium and internationally

Organisation chart

MANAGING DIRECTOR

5 Scientific Directorates

Administrative Directorates and Services

Supporting directorates

5 Scientific Directorates	Finance and management control	Services of the managing directorate
Epidemiology and public health	Finance and management control	Services of the managing directorate
Infectious diseases in humans	Personnel and organisation	Strategy and external positioning
Infectious diseases in animals	Information and communication technologies	Management support
Chemical and physical health risks	Facility services	Communication
Biological health risks		Quality, (bio)sécurity and environnement
		Legal
		Crisis coordination

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A One Health institute

Breaking silos → building synergies

- reinforce internal collaboration
- create/participate in external platforms with key partners
- obtain funding for One Health projects
- pay attention to the health-environment dimension
- innovation
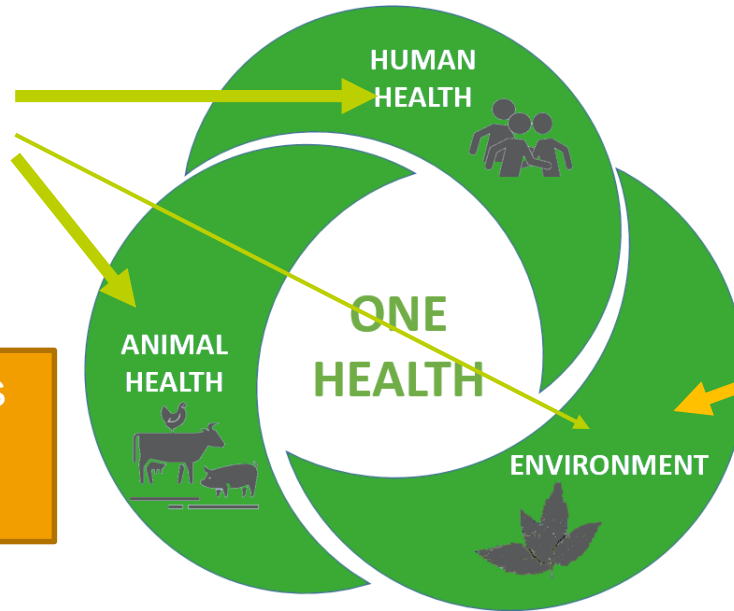
- Across disciplines
- Across 'ancestor' institutions

4 Cs :
- Communication
- Collaboration
- Coordination
- Capacity building

Internal & external OH platforms

Monitoring zoonoses
Geraldine Boseret

Exposome
Svetlana Malysheva

Innovative & generic OH approaches
Sigrid De Keersmaecker

AMR
Pieter-Jan Ceyssens

Climate
Eveline Cleynen

Vector-Borne Diseases
Nick De Regge

Food Toxico-Infections
Bavo Verhaegen

Respiratory Pathogens
Kaat Ramaekers

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AMR
Pieter-Jan Ceyssens

ALGEMEEN DIRECTEURS

Epidemiologie en volksgezondheid	Infectieziekten mens	Infectieziekten dier	Chemische en fysische gezondheidsrisico's	Expertise en dienstverlening
Gezondheidszorgonderzoek	Voedselpathogenen	Coördinatie diergeneeskundige activiteiten	Geneesmiddelen en gezondheidsproducten	Bioveiligheid en biotechnologie
Kankercentrum	Bacteriële ziekten	Diergeneeskundige bacteriologie	Organische contaminanten en additieven	Kwaliteit van vaccins en bloedproducten
Volksgezondheid en genoom	Virale ziekten	Virale enzoötische, vectorgebonden en bijenziekten	Spoorelementen en nanomaterialen	Kwaliteit van laboratoria
Levensstijl en chronische ziekten	Mycologie en aerobiologie	Exotische virussen en bepaalde ziekten	Risico- en ... ...valuatie	Transversale activiteiten in toegepaste genomica
Epidemiologie van infectieziekten	Immuunrespons	Aviaire virologie en immunologie	Platform... massasp...	Healthdata.be
Zorginfecties en antibioticaresistentie	Laboratorium voor medische microbiologie (LMM)			Staalbeheer
Veterinaire epidemiologie				
Crisis				
EU-gezondheidsinformatiesysteem				

- **Since 2017**
- **Joint projects (waste water, joint PhDs, BELMAP, etc.)**
- **Improved communication**

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AMR

Strengths

- Expertise known and acknowledged
- Sciensano prominently present in debate

Threats

- Lack of investment in genomics-based surveillance
- Reimbursement of molecular diagnostics

Weaknesses

- Limited surveillance of MDRO
- Budgetary restrictions – AMR part of larger surv.
- Organisation needs to be more efficient

Opportunities

- EU presidency – high-level meetings
- Authorities need the expertise
- New NAP (2025-2028)
- Hot topic (UN 2024)

Monitoring zoonoses
Géraldine Boseret – Marcella Mori
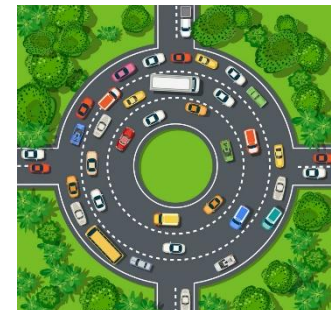
Challenges :

Different
nomenclatures → Standardisation 'zoonoses'

Scattered
expertise →

Crossing
domains among
OH platforms →

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Monitoring zoonoses

Internal activities

→ Ongoing

- joint project : *Coordinated surveillance system under the One Health approach for cross-border pathogens that threaten the Union - HPAI, WNV, QFV*

→ To do

- achieve clear definition of 'zoonoses' within Sciensano
- find intersections with other OH platforms
- map units in Sciensano working on zoonotic diseases
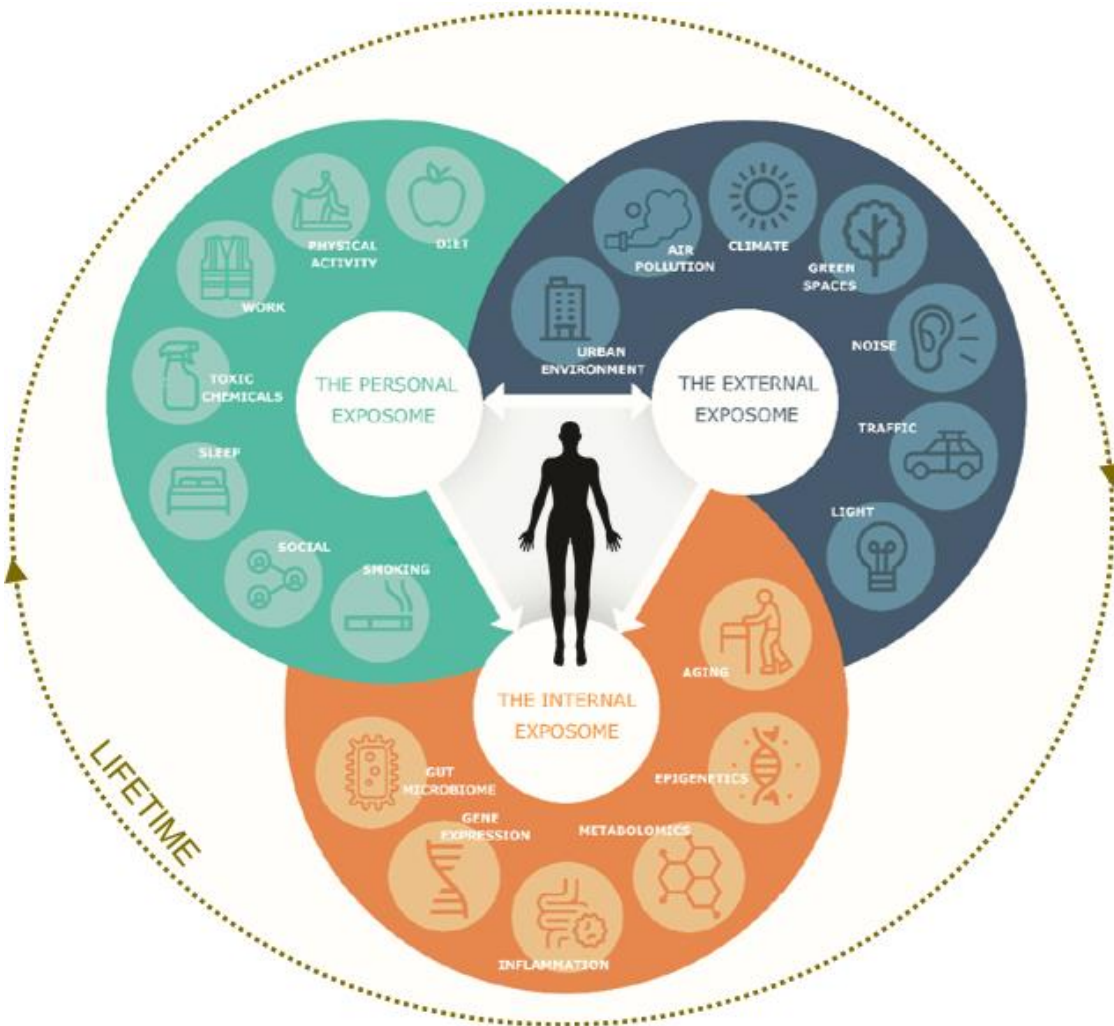
External activities

→ Ongoing

- participation in initiatives on zoonotic diseases (Belgian Biodiversity Platform, RAG-VEZ, PREZODE …)

→ To do

- expand platform to external stakeholders from the veterinary, human and environmental sectors

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Exposome
Svetlana Malysheva

A potential measure of the effects of **life course exposures** on **health**. It comprises the totality of exposures to which an individual is subject from **conception to death** including **environmental agents**, **socioeconomic conditions**, **lifestyle**, **diet** and **endogenous processes.**

Dictionary of Epidemiology, 2014

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Exposome

Methods

- member meetings

- shaping the internal network

- outlining the available in-house expertise

- mapping the existing internal collaborations

- identifying research gaps

- exchanging information

- promoting the internal network (email, intranet, website)

- defining Vision - Mission

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Exposome

VISION

Leverage the potential of the multi-disciplinary expertise and research infrastructure available at Sciensano in addressing the exposome research paradigm

MISSIONS

- Establish **communication** within and outside the working group to broaden the possibilities and opportunities to collaborate on studying the exposures and the exposome in a more **holistic** way

- Work towards **incorporating** the exposome concept **into research**

- **Align** study designs to facilitate **re-use of data**

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Vector-borne diseases
Nick De Regge

Vector-borne diseases are infections transmitted by the bite of infected arthropod species (ECDC).
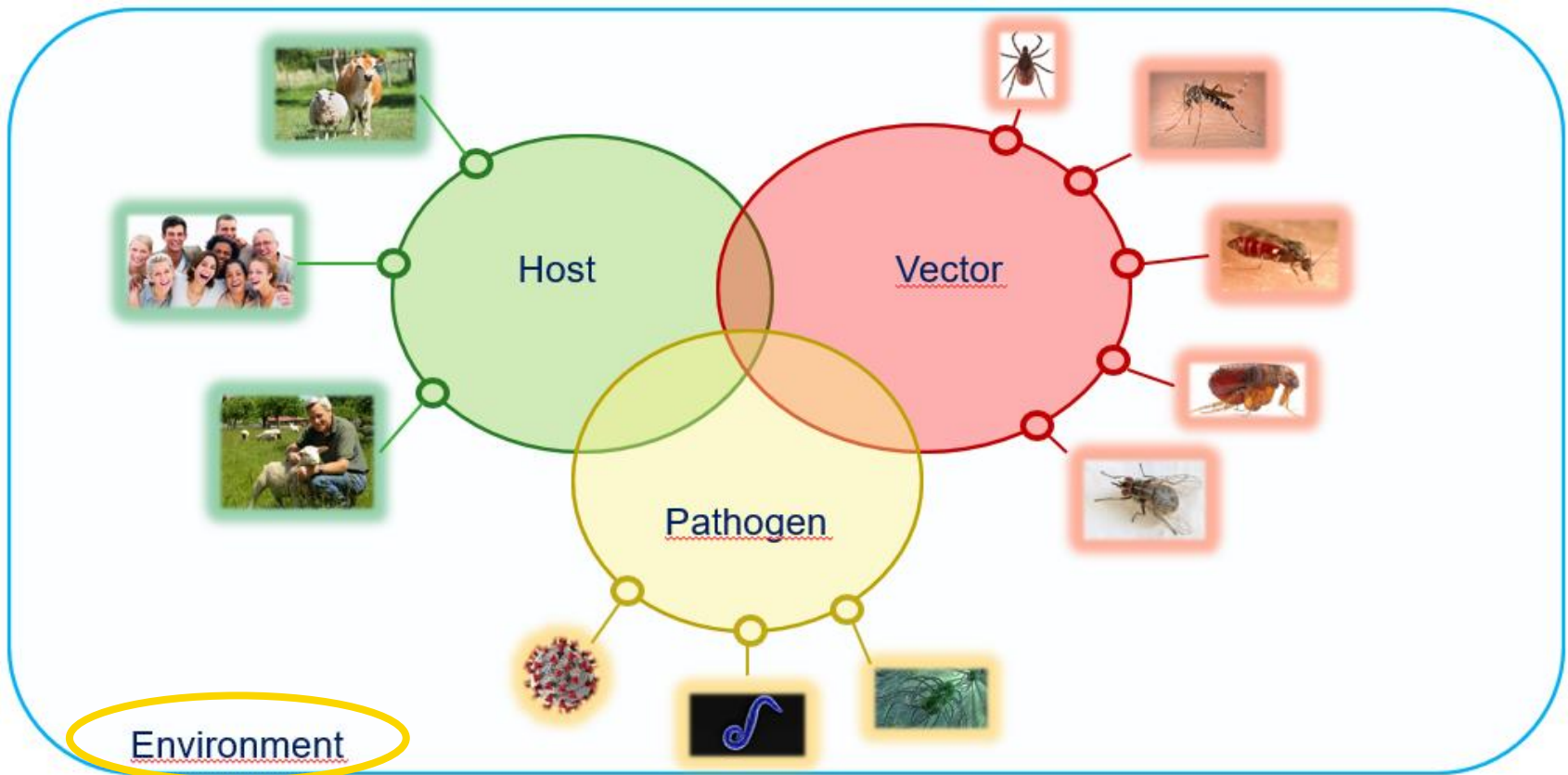
Vector-borne diseases

Goals:
- Implement clear VBD coordination and organization
- Improve internal and external communication
- Increase research – VBD experts, national and international funding and partnerships

Activities

→ *Prevention*
- Awareness raising - Reports, info for citizens (ticks net, mosquito surveillance)
- Expert advice for authorities

→ *Preparedness*
- Contingency plans (WNV, …)
- Diagnostic capacity (TBEV, RVFV, *C. burnetti*, *Rickettsia*, *Anaplasma* spp, …) Early warning/monitoring (Tick net, MEMO+ project, wild bird monitoring, …)
- Vaccine safety/efficacy (JEV in pigs, capripox in ruminants, …)
- Expertise building (pathogenesis, immune responses, vector competence)

→ *Response*
- risk assessment, communication

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Food Toxico-infections
Bavo Verhaegen

Activities

- Foodborne outbreak detection and prevention

- Providing scientific expertise on:

  - Emerging/increasing prevalence of pathogens

  - Impact of changing eating habits and novel foods

  - Implementation of novel techniques

  - How to strengthen/maintain the

    – clinical surveillance

    – surveillance from farm to fork

Objective

- Further include animal side

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Food Toxico-infections

Methods

- 3 meetings/year

- Involving all actors in foodborne outbreak investigation (NRLs, NRC)

- Updates about:

  - Foodborne outbreaks

  - Salmonella, Shigella, Listeria, Yersinia, STEC trends

  - Salmonella trends in primary sector

  - Annual reporting to ECDC and EFSA

  - One Health projects/initiatives

- UNITED4Surveillance - EU4Health Joint Action (2023-2025) (Respiratory infections platform also involved)
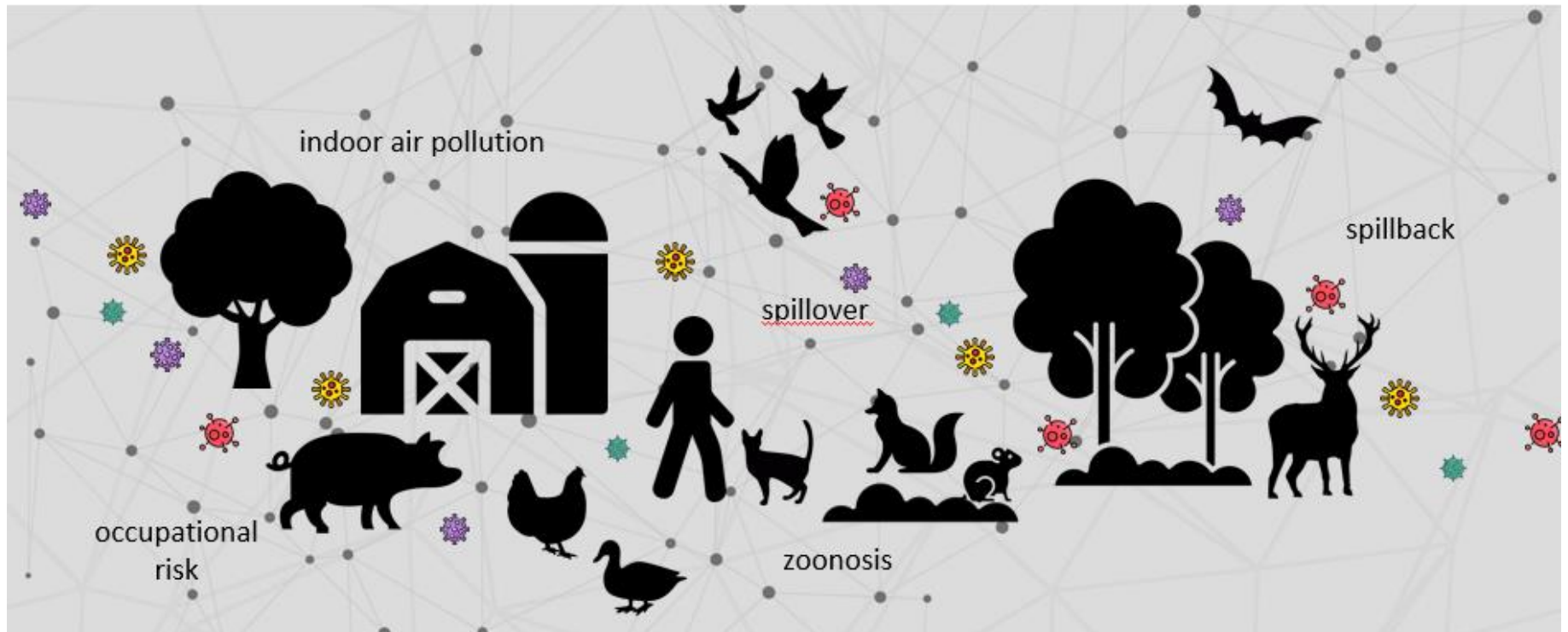
Respiratory infections

Research projects @ Sciensano

under the OH respiratory umbrella

- PANDAI
Virus-host interaction networks to evaluate the pandemic risk of AI viruses

- ZOOIS (part of UNITED4SURVEILLANCE)
Active surveillance of influenza virus zoonotic transmission events

- Influenza surveillance in wild mammals

- OH4Surveillance
EU project for surveillance in animals for zoonotic threats (AI, WNF, Q fever)

- Development of tools for pathogen detection in wastewater

- Air pollution project

- AIRCO (ended)
Ventilation in public spaces, including retirement homes

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Fields of activity very diverse => reflects impact of climate
 Challenge of defining the scope of the platform

++Huge opportunity to work accros disciplines and SDs

Internal activities

Poll held to define scope of the platform; main objectives:

- exchange info with colleagues on C&H research and activities
- develop a research agenda and proposals
- strengthen external partnerships
- work on strategic positioning of Sciensano for C&H

External activities

Meeting with key players : Belgian Climate Centre & RMI
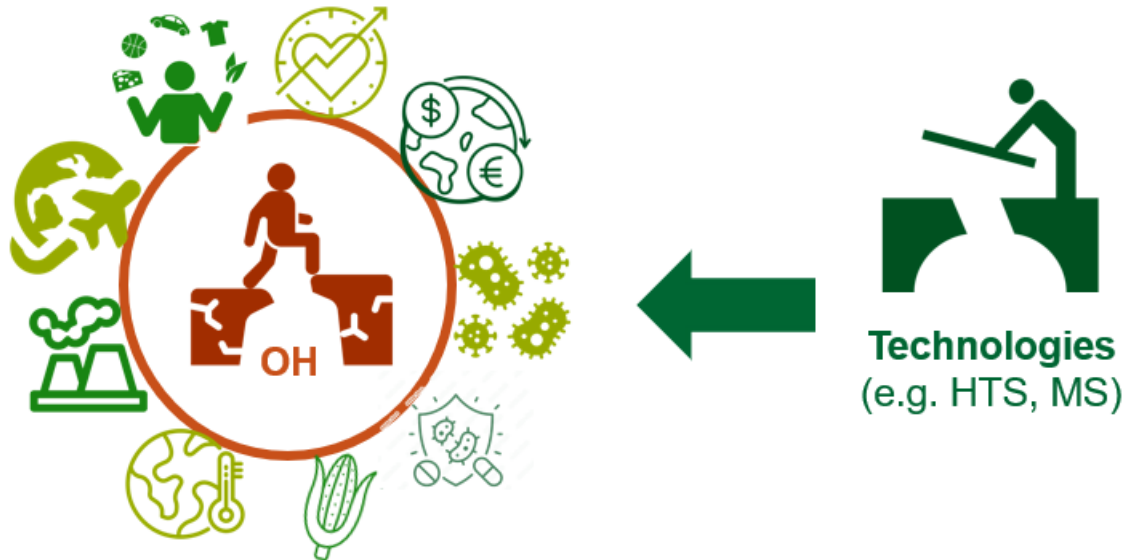
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Climate & Health

Objectives

- Understand impact of changing climate on the environment, on vectors, on pathogens, on health

- Prepare for changes in burden of disease due to climate change → advise policy makers

- (How NOT to be part of the problem:)
  - Ecofootprint health system (eg RIVM study)

https://www.rivm.nl/publicaties/impact-of-dutch-healthcare-on-environment-environmental-footprint-method-and-examples

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Innovative & generic OH approaches
Sigrid De Keersmaecker

Technologies
(e.g. HTS, MS)

- Need to bring **innovation** to **public health institute** like Sciensano
    - **Staying ahead** of evolving threats, harnessing the **power of technology**, fostering **interdisciplinary collaboration**, creating **sustainable solutions**, addressing complex health challenges **more effectively**
    - **Innovative** approaches: pushing boundaries of technology and science
    - **Generic** approaches: common to different specific One Health topics, the foundation for effective collaboration and risk management

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Innovative & generic OH approaches

Objectives

→ *Transversal ${}^{cross-SD}$ working group to bring innovation, especially in generic methods that can be used cross-OH topics*

→ *Mapping and gap identification*

Methods

- Establishing an **internal network/community** for innovative approaches to deal with OH topics

- Offering **centralized technological platforms & core facilities** to Sciensano (with some technology maintained, updated in line with the evolution of the technology; new technologies)

- Providing **trainings** to use the technological platforms

- Increasing and/or optimising **technological & scientific research** with transversal application, involving innovative approaches
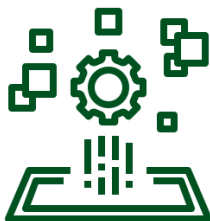
Innovative & generic OH approaches

- **Technology watch**
  - actively follow-up, scout, contact, evaluate new/ next emerging/ alternative technologies in cross-OH topics

- **Networking** (internal and external)
  - create synergies between the different SDs, units and platforms
  - better knowledge of mutual networks, competences
  - innovative transversal scientific research
  - exchange knowledge and data
    $\rightarrow$ joint actions or research, collaborations

- **Proactive communication**
  - to better understand needs of competent authorities

Belgian OH network / platform

- launched in 2019

- integrating

  o human and animal health

  o environment/nature/biodiversity

  o social and economic sciences, anthropology, …

- https://www.biodiversity.be/5984/

- website update foreseen by July 2024

- further development platform by e.g. mapping exercise

- activities & outputs supported by a coordination team

- e.g. description mission and vision

PREZODE

- PREventing ZOonotic Disease Emergence (2021)
- https://prezode.org/
- Belgium joined Oct. 2021
- Development of One World One Health vision policy recommendations

7 key policy recommendations

There is a need for

1. One World One Health Governance structure

2. One World One Health National action plan

3. Monitoring and surveillance programmes

4. One World One Health research funding

5. One World One Health socio-educative programmes

6. Assisting the global community – higher risk countries

7. Advocating the One World One Health approach

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OHEJP
Hein Imberechts

- <u>One Health European Joint Programme</u>

- January 2018 - September 2023

  - Coordination Team: <u>ANSES</u>, France
    Scientific Coordinator: <u>Sciensano</u>, Belgium

  - 44 partners across Europe ~ Plant Health/Animal Health/Food Safety

  - Total budget €90M, 50% EU co-funded.

  - Internal calls: 24 Joint Research Projects
    and 7 Joint Integrative Projects

  - Education & Training activities:

    - 17 PhD students, 40+ Short Term Missions,
      Workshops, Summer Schools and
      Continuing Professional Development modules.

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OHEJP – some major outcomes

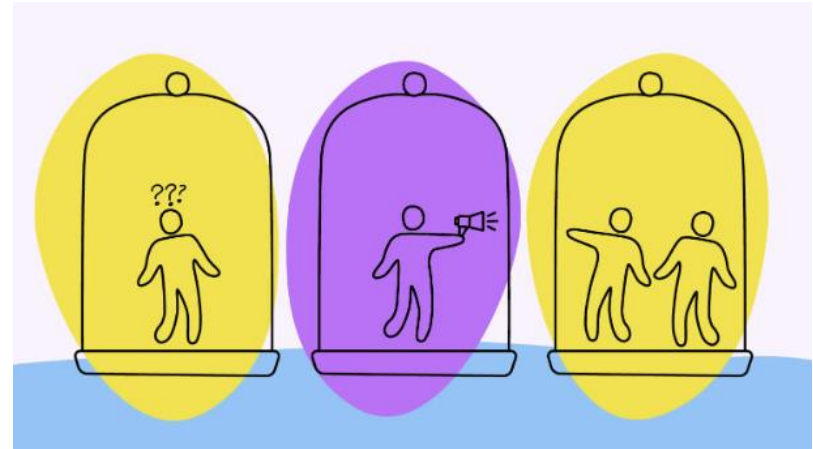| Resource title	Further information	url link
One Health Outcome Inventory (OHOI)	A public database of scientific and integrative outcomes. It lists **databases, strain collections, tools and other scientific outputs**.	https://onehealthejp.eu/outcomes/science-to-policy-translation/outcome-inventory
Project Impact Brochures	8 PDF brochures that share **key messages, outputs and outcomes from each project** in an easy-to-understand format.	https://onehealthejp.eu/projects/project-impact-brochures
OHEJP SimEx Project	**Simulation exercise** reports, publications and tools used are listed on their webpage with links provided.	https://onehealthejp.eu/outcomes/ohejp-simex-2022
Analysis of outcomes and uptake of One Health EJP outputs by stakeholders (brochure)	PDF document on the website.	https://onehealthejp.eu/wp-content/uploads/2023/02/Analysis-of-outcomes-and-uptake-of-EJPs-outputs-by-stakeholders-_Feb2023.pdf
Strategic Research and Innovation Agenda (report)	PDF document on the website.	https://onehealthejp.eu/wp-content/uploads/2023/05/OHEJP-Strategic-Research-and-Innovation-Agenda_05.05.23.pdf
EU-JAMRAI Policy Briefs	10 **Policy briefs** on the website.	https://onehealthejp.eu/about/stakeholders/addressing-amr-policy-briefs-from-eu-jamrai

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OHEJP – some major outcomes

Resource title	Further information	url link
Publications	The publications from peer-reviewed journals produced by JIPs, JRPs, PhD projects.	https://onehealthejp.eu/outcomes/key-documents/publications
Science to Policy Translation Reports	Thematic reports and Dissemination Workshop reports are listed, which can be accessed via Zenodo.	https://onehealthejp.eu/outcomes/science-to-policy-translation/reports
Annual Reports from 2018 to 2022 (5 reports)	Each report has its own menu title. The 5 PDF documents can be read and downloaded from the website.	https://onehealthejp.eu/wp-content/uploads/2018/12/One-Health-EJP-Annual-Report-2018.pdf https://onehealthejp.eu/wp-content/uploads/2018/12/Annual-Report-2019_100620.pdf https://onehealthejp.eu/wp-content/uploads/2021/06/OHEJP-Annual-Report-2020_final-1.pdf https://onehealthejp.eu/outcomes/annual-reports/annual-report-2021 https://onehealthejp.eu/outcomes/annual-reports/ohejp-annual-report-2022
Final Report	The Final Report published in September 2023 highlighting OHEJP outputs, outcomes and impact. PDF document on the website.	https://onehealthejp.eu/wp-content/uploads/2023/09/ohejp-final-report-september-2023.pdf
Consortium and External Newsletters	All newsletters from December 2018 to September 2023 are listed on one webpage, with links to individual newsletters provided.	https://onehealthejp.eu/community/news/newsletters

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Take-home message

In practice,
One Health is mainly about

breaking silos

multi/inter/transdisciplinarity

4 Cs :
- Communication
- Collaboration
- Coordination
- Capacity building

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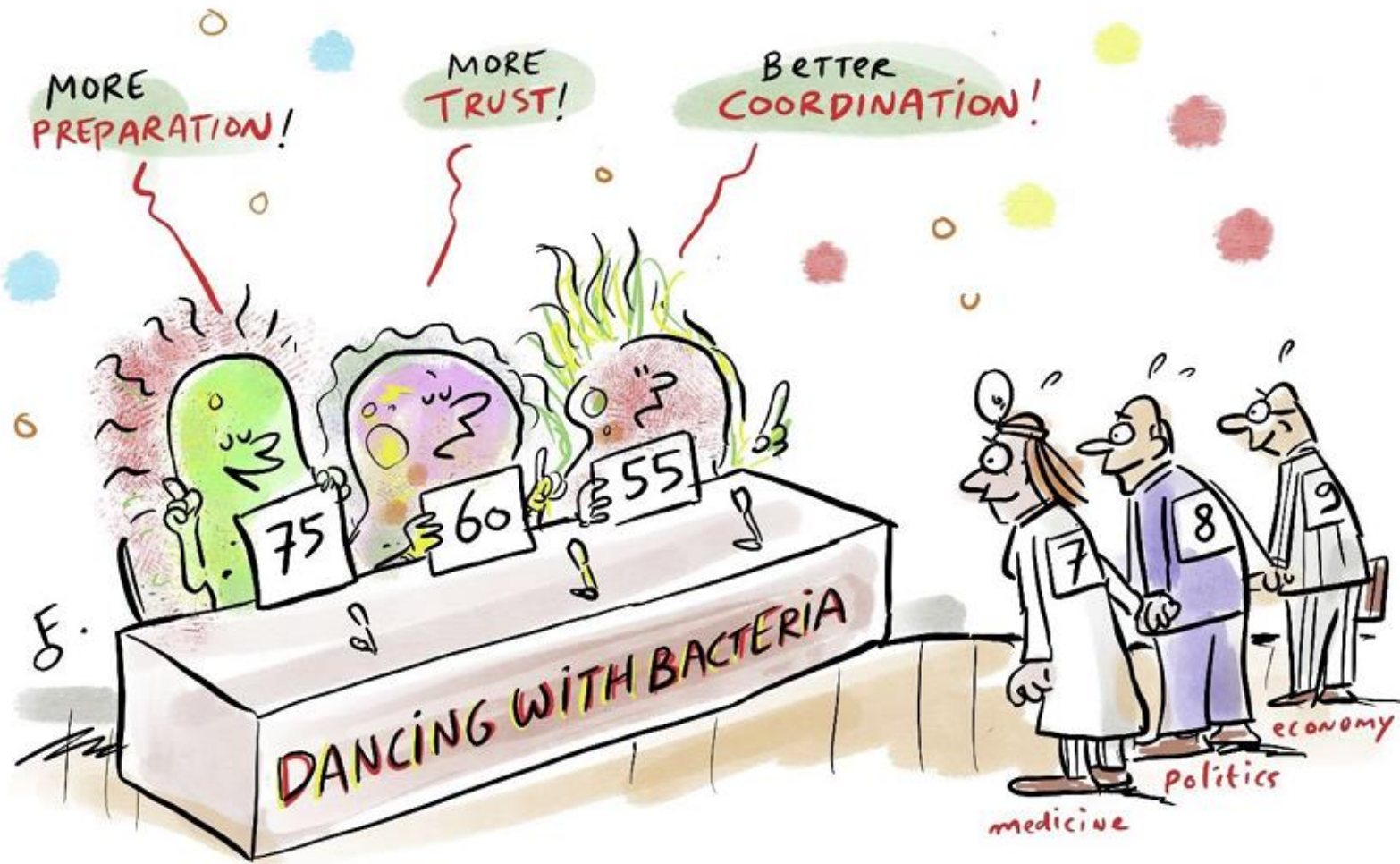Svetlana.Malysheva@sciensano.be
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