

CHALLENGES FOR A ONE HEALTH SCIENTIFIC RESEARCH AND MAPPING OF ACTORS IN BELGIUM

Hein Imberechts

With contributions from

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Outline

- Sciensano and One Health
- Example: the European Joint Programme on One Health
- Partners with declared interest in PREZODE: IMT, Sciensano, UGent, ULiège
- Belgian One Health vision, future plans

Tripartite (FAO, WOA and WHO) and UNEP support One Health High-Level Expert Panel's definition of One Health, "to prevent, predict, detect, and respond to global health threats and promote sustainable development".

*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 & Sciensano, the Belgian Institute for Health

- Sciensano adheres to a definition of One Health where health for people, animals and their environment are closely linked.
Its collaborators
 - Monitor various human and animal infectious diseases (National Reference Labs);
 - Improve ways to prevent, detect and control such diseases in animals and humans;
 - Follow-up the health situation and risks (not only infectious!) in the populations.
- In addition, for Sciensano One Health means the strong link between the environment and health. For example, Sciensano collaborators:
 - Monitor food safety and the impact of biophysical aspects such as air pollution, pollen;
 - Investigate the influence of the socio-economic environment on people's health: professional occupation, social networks, quality and access to health care, as well as individual characteristics (e.g. immunity, genomic profile), lifestyle and behaviour.
- At Sciensano, the expertise in the areas of human health, animal health and the living environment is all under one roof, which is rather unique in Europe (ISS, IT and SSI, DK).

One Health @ Sciensano

Themes identified in the One Health programme:

- Vector-borne pathogens
- Antimicrobial resistance
- Influenza and other respiratory pathogens
- Foodborne pathogens
- Zoonoses
- Exposome (*all environmental conditions that affect our health*)
- Generic and innovative One Health methods



Een 'One Health' aanpak

- In het onderzoek naar de gezondheid van mens én dier, en hoe deze elkaar beïnvloeden via het eco-systeem
- In de detectie van en waakzaamheid voor nieuwe ziekten
- In het groeperen en coördineren van acties uit verschillende disciplines en instellingen.

One Health @Sciensano

- Thema's op het One Health programma:
 - vector-overdraagbare pathogenen
 - antimicrobiële resistentie
 - griep en respiratoire pathogenen
 - voedsel pathogenen
 - exposome
 - generieke en innoverende One Health methoden
 - monitoring van zoonosen
- Coördinatie van
 - het One Health European Joint Programme
 - het Belgian One Health Platform

Meer informatie op
intranet.sciensano.be
One Health ruimte

One Health EJP: key facts

- **European Joint Programme** Co-fund under Horizon 2020, 5 year project started in January 2018.
 - Coordination Team: ANSES, France
Scientific Coordinator: Sciensano, Belgium.
 - 44 partners across Europe.
 - Partners have received mandate from authorities.
 - Total cost €90M, **50% EU co-funded**.
 - 24 Joint **Research** Projects and 6 Joint **Integrative** Projects.
 - **Education & Training** activities:
 - 17 PhD students
 - 40+ Short Term Missions, Workshops, Summer Schools and Continuing Professional Development modules.



One Health EJP: partners

44 partners across Europe:

Austria (AH, FS, PH)

Belgium (AH, FS, PH)

Bulgaria (FS)

Czech Republic (AH, PH)

Denmark (AH, PH, FS)

Estonia (AH, PH)

Finland (AH, PH)

France (AH, FS, PH)

Germany (AH, FS, PH)

Hungary (AH, Public Education)

Ireland (FS)

Italy (AH, PH)

Latvia (AH)

Lithuania (AH)

The Netherlands (AH, PH)

Norway (AH, PH)

Poland (AH)

Portugal (AH, PH)

Romania (AH)

Spain (AH, PH, FS)

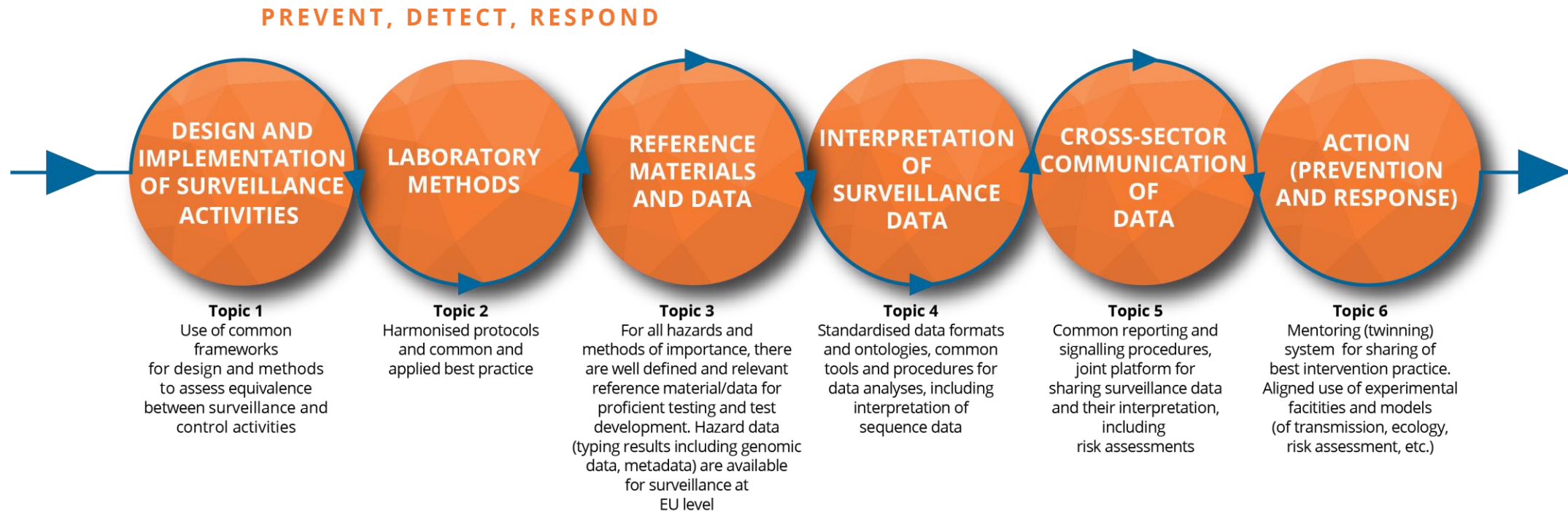
Sweden (AH, FS, PH)

United Kingdom (AH, PH)



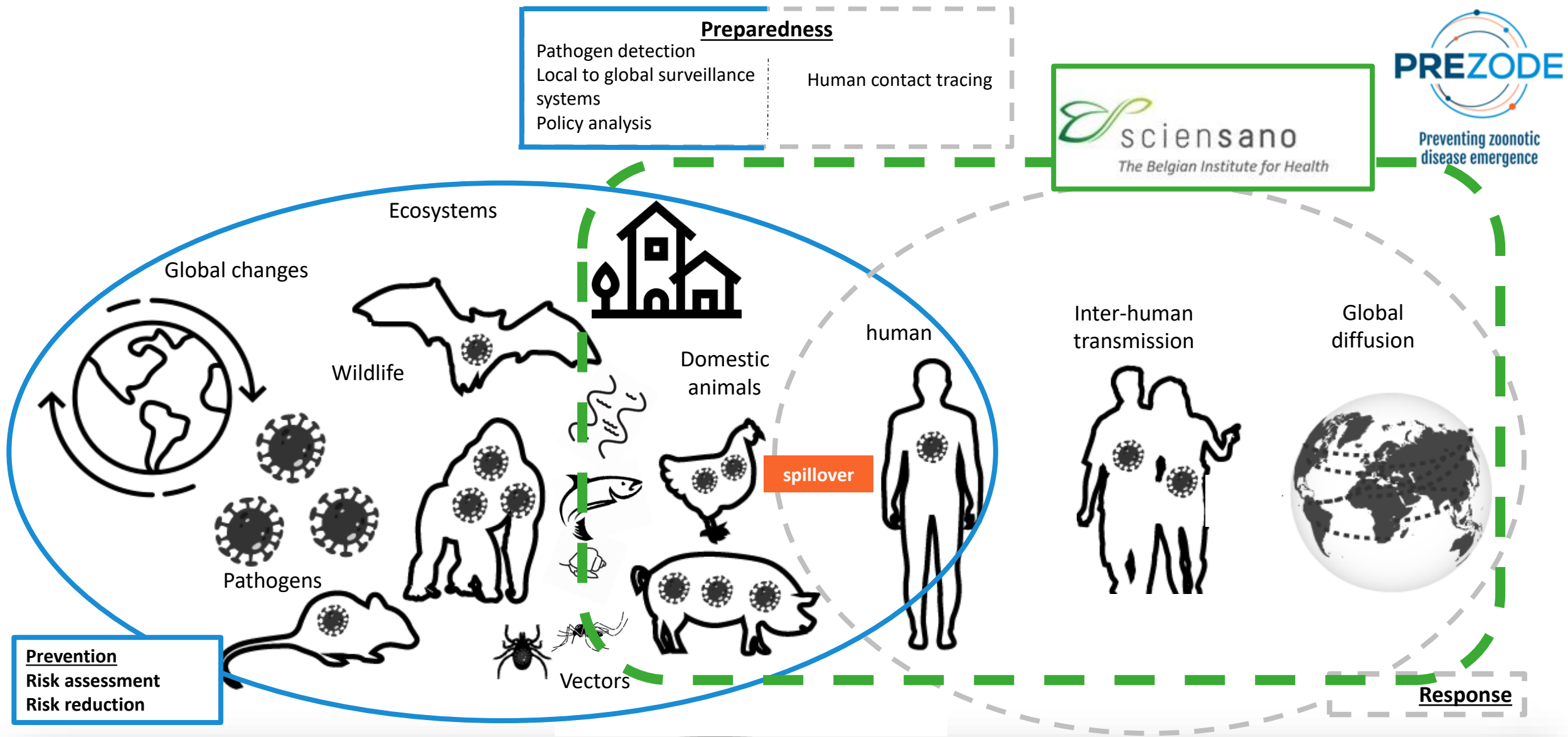
AH = Animal Health FS = Food Safety PH = Public Health

The EJP Integrative Strategy Matrix



Successive steps in setting up surveillance programmes, for **preparedness**.

For details please consult our Strategic Research Agenda onehealth.ejp.eu



Zoonoses Emergence

Pre-emergence

Pathogen
spillover

Emergence

Localized
transmission

Epidemic

Pandemic

Overview activities

Preparedness

Pathogen detection
Local to global surveillance
systems
Policy analysis

Human contact tracing

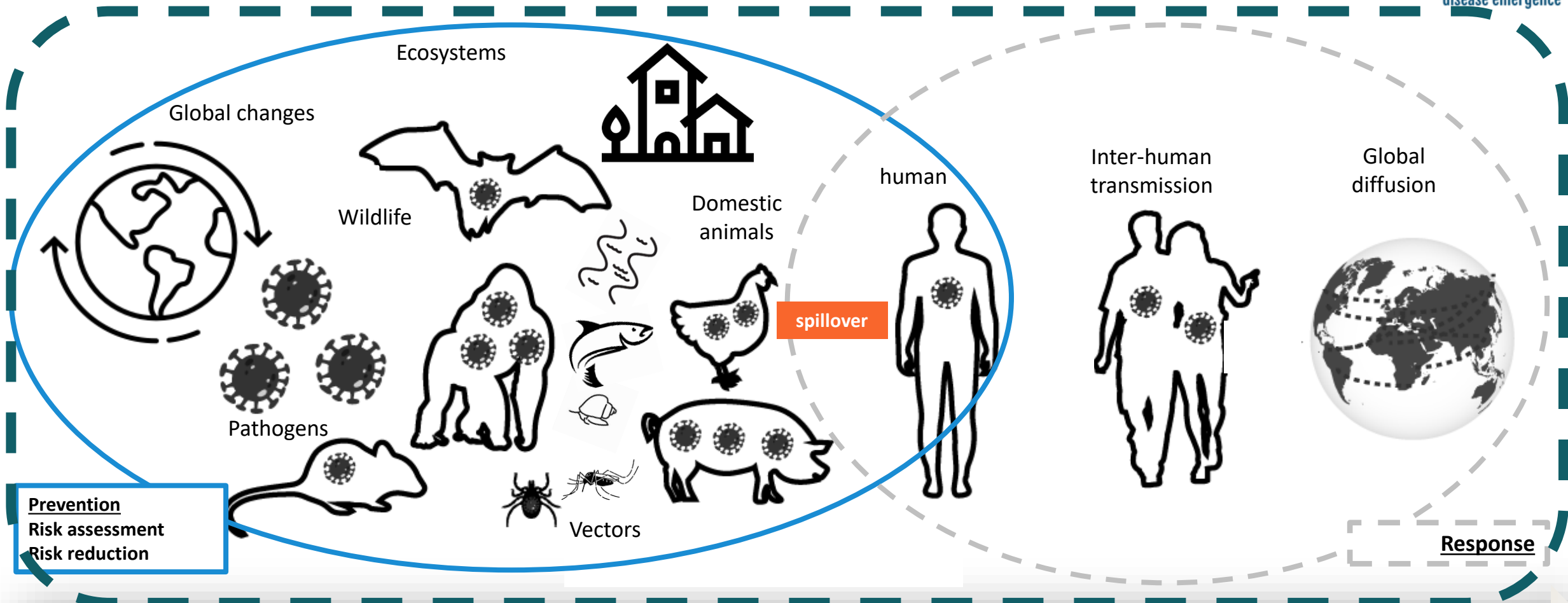


INSTITUTE
OF TROPICAL
MEDICINE
ANTWERP



Preventing zoonotic
disease emergence

Populations, Patients, Pathogens



Zoonoses Emergence

Pre-emergence

Pathogen
spillover

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Pandemic

Overview activities



Department of Public
Health



Department of
Clinical Sciences



Department of
Biomedical Sciences

Populations, Patients, Pathogens

Research



OH topics

- Foodborne helminths (ao. *Taenia*, *Fasciola* other foodborne trematodes, *Echinococcus*)
 - Mosquito borne diseases
 - Wildlife impact: rodent, fox, bat, ...
 - AMR
 - Outbreak Research Unit
- + Impact climate change, migration, urbanisation, ...

Research area:

Belgium (local transmission, import cases, reference activities), Europe (European networks, exchanges scientists, reference activities), Global South (ao. capacity strengthening programmes)

Teaching



MSc programmes

ITM/UP MSc Global One Health
OH relevant courses. Examples:

- Introduction to Zoonoses
- Introduction to One Health
- One Health: Policy
- Global Health in times of crises
- Outbreak investigations and research

Training scientists

- MSc, PHD (Belgium, Europe, Global South)
- Laboratory staff (Belgium, Europe, Global South)

Services



National reference centers

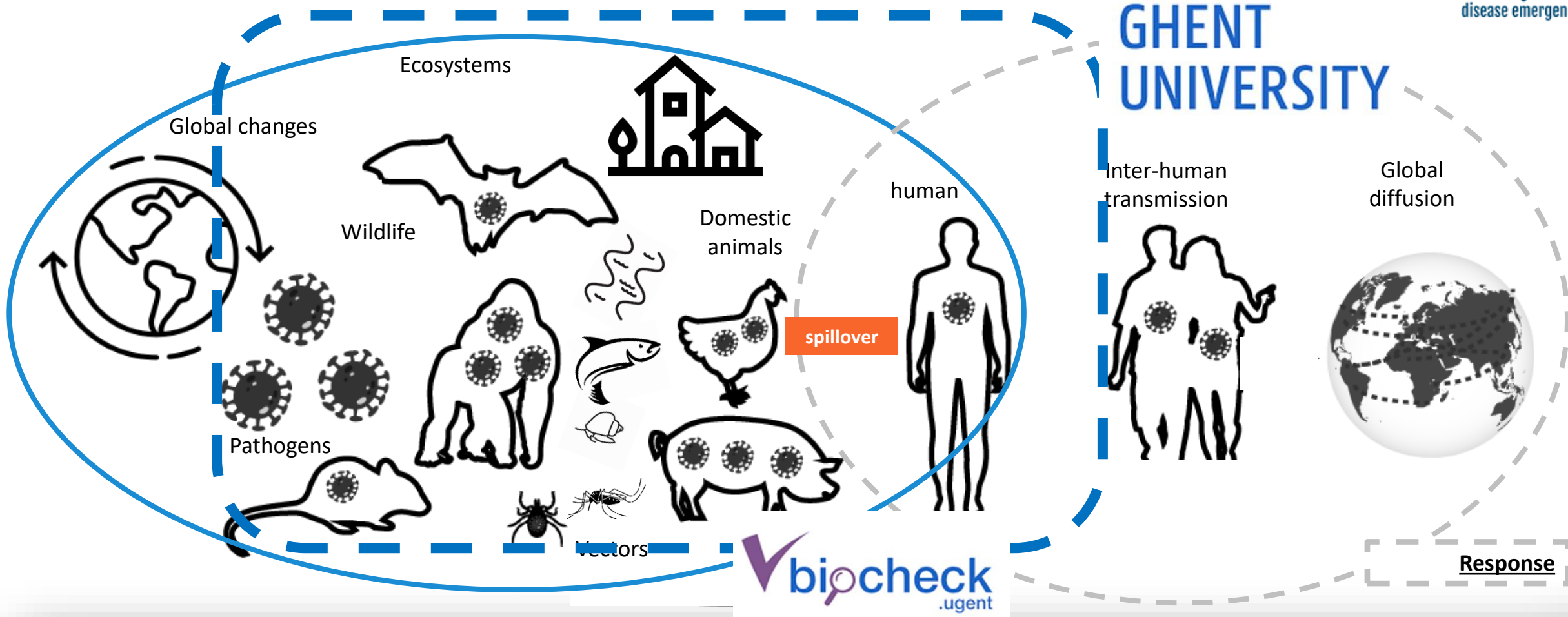
E.g. *Trichinella*, *Echinococcosis*, *Anisakis* (FAVV), *Leptospira*, *Cryptosporidium* (Clinical RefLab), ...

<https://www.itg.be/en/research/itm-reference-laboratories>

International capacity strengthening programmes

12 countries: DR Congo, South Africa, Ethiopia, Vietnam, Peru, ...
Setting up laboratories/technical platform, provide training, collaborative research, feedback loop to communities & policy makers, create networks, ...





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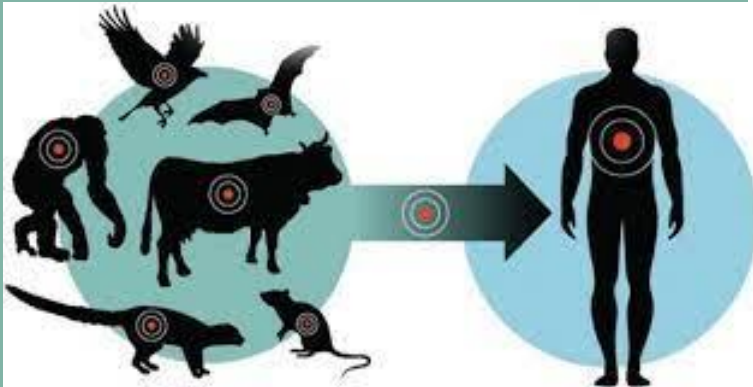
Epidemic

Pandemic

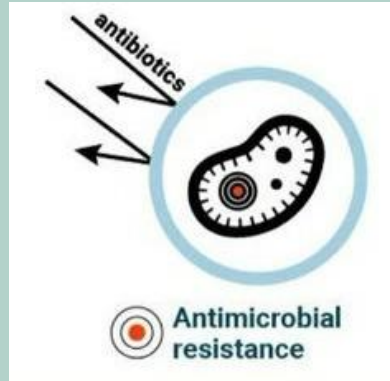
TOP THEMES ON ONE HEALTH

Zoonoses

- Bacteria
- Virus
- Parasite
- Fungus



Pathogen resistance to treatment



Biodiversity

- Wildlife Health Ghent

Planetary health

- e-Planet consortium
European platform
for planetary health
in medical
education



LIÈGE université
EpiOne

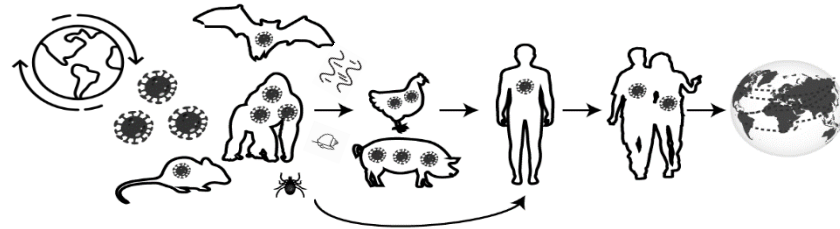
The **EpiOne** network

- together with its close partners
- researchers across 11 faculties
- to renew our way to approach health

Taking up the challenges

Rethinking agriculture & food ...
... Ecosystem restoration
Green & inclusive cities ...
... Migrations, justice & welfare
Habitat and vulnerability ...
... Climate change and adaptation
International cooperation ...
... Post-industrial, superdiverse societies

Changing systems requires **Thinking in systems**



**A whole
university...**

Medicine & Public Health
Law & Political sciences
Social sciences
Architecture
Humanities
Environmental sciences
Veterinary medicine
Business & administration
Artificial intelligence
Bio-engineering
Bio-tech
Space-tech
Psychology

**... at work
for One Health**

Fully in line with the Prezode agenda
Eager to collaborate !

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Next steps for One Health in Belgium

- Solid partners with a broad **scientific expertise** and **service provision** at **national and international / global level**, appropriate **infrastructure**, adequate **procedures** to handle (zoonotic) pathogens and **updated risk assessment models** are essential in order to be prepared to tackle unknown future challenges, especially those at the interface between animals, humans and the environment.
 - **Research performers**, including private partners, should design and perform appropriate multi-disciplinary research (public health, animal health, environment), innovation and integrative projects in order to develop and extend relevant scientific expertise;
 - **Funders** should invest in both basic and applied, policy driven research;
 - **Authorities**, be it national, European or at the global level, should stimulate the cross-sector and multidisciplinary cooperation and collaboration.
- Belgian Biodiversity Platform and BELSPO

Belgian Biodiversity Platform

- Science Officer One Health & Biodiversity will give support to:
 - Map Belgian One Health organisations.
 - Map their One Health research projects and related activities.
 - Support the Belgian One Health Network and PREZODE.
 - Propose a Belgian One Health vision and strategy.
- Coordinate with Belgian One Health partners, inclusive.
- Starting April 2023.



3 | Job opportunity: Scientific Officer One Health & Biodiversity

Together with **Sciensano**, we are looking for a **science officer with expertise in One Health**, particularly with its relation to Biodiversity. The One Health approach aims to sustainably balance and optimize the health of people, animals, ecosystems and the wider environment. It mobilizes multiple sectors, disciplines and communities to work together to foster well-being and tackle threats to health and ecosystems. And it addresses the collective need for clean water, energy and air, safe and nutritious food, action on climate change, and contributing to sustainable development.



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