

Assessing the benefits of One Health approaches

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Acknowledgments

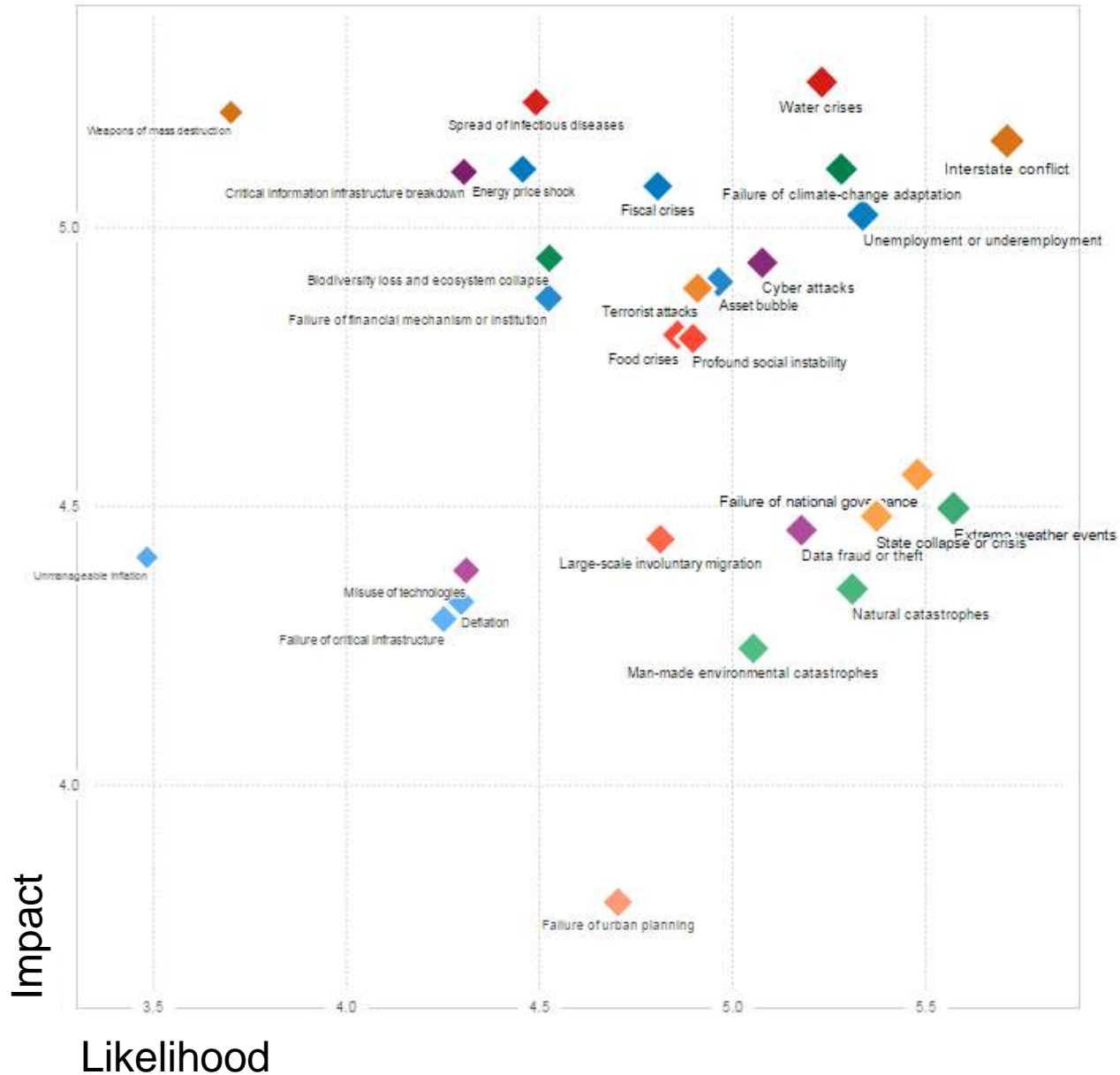
- RVC – Jonathan Rushton, Pablo Alarcon, Paula Dominguez Salas, Maud Carron, Kevin Queenan, Keith Howe, Sara Babo Martins, Houda Bennani
- LCIRAH – Laura Cornelsen
- NEOH – consortium, especially Simon Ruegg and Martha Betson
- RISKSUR – consortium, especially Dirk Pfeiffer, Marisa Peyre, Katharina Stärk

Background

- One Health is gaining **momentum**
- Expectation that **integrated approach** to the prevention and management of disease risk leads to **better** control and more efficient resource use
- Increasingly concerned with wider **systems** considerations
- Recognition of the **complexity** of the challenges we are facing

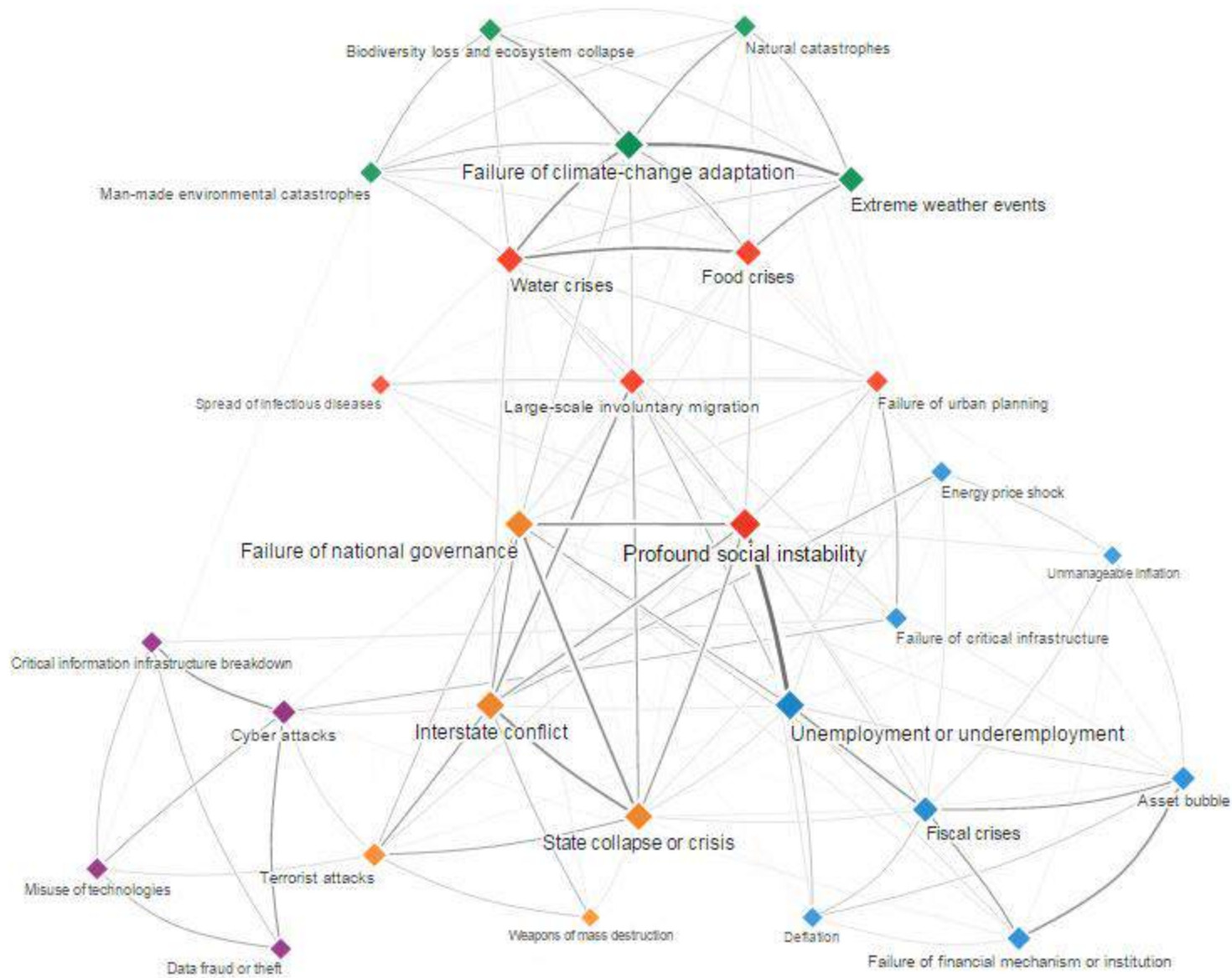
The Global Risks Landscape 2015

What is the impact and likelihood of global risks?



The Global Risks 2015 Interconnections Map

How are global risks interconnected?



But yet....



A culture of cheap food products

Increasing demand for animal source foods worldwide triggered by a growing global population

New technologies, breeds, and genetics



Can evidence promote progress?

- Assess the added value of One Health
- Conduct comparative studies / meta-analyses
- Measure One Health benefits

→ inform policy decisions?

Literature review

- Scopus, PubMed and Web of Science
- Title and Abstract search without any restrictions in terms of language, year, or similar
- Search terms used were ([“One health” OR ecohealth) AND [effectiv* OR efficien* OR useful* OR benef* OR profit OR utility OR gain OR advantage OR value OR “losses avoid*” OR “cost avoid*” OR “costs avoid*” OR “cost sav*” OR “costs sav*”).
- Exclusion criteria:
 - Reference did not refer to Ecohealth or One Health as a concept
 - Reference did not refer to any kind of benefit or value.

Literature review on One Health benefits (1)

Benefit described
<p>Early detection of threat and timely, effective or rapid response, e.g.</p> <ul style="list-style-type: none"> • Pets as sentinels (e.g. lead) poisoning • Early detection of threat and timely, effective or rapid response • Improved understanding of health problem emergence and re-emergence in order to respond in a proportionate and timely manner
<p>Better/improved/more effective disease control and/or biosecurity measures (often related to infectious disease), e.g.</p> <ul style="list-style-type: none"> • Improved understanding of the virulence mechanism and disease pathogenesis and disease epidemiology • Coordinated risk assessment • Tackle infectious disease problems in the system where is it most effective • Enhanced knowledge to efficaciously address public health aspects of emerging and re-emerging infectious diseases • More effective policies
<p>Better/improved/more effective disease control and/or biosecurity measures</p> <ul style="list-style-type: none"> • Shared veterinary laboratory to diagnose brucellosis in febrile patients has brought the collaborating physician in to include brucellosis testing as a differential diagnosis to malaria and typhoid fever in an area where raw milk consumption is still prevalent. • (Improved) management or control of diseases in animals and/or humans • Effective understanding and prevention of disease evolution require a multidisciplinary or One Health approach
<p>Economic benefit / increase in economic efficiency, e.g.</p> <ul style="list-style-type: none"> • Cost-effective reduction in disease transmission and incidence • Cost-savings by sharing resources (e.g. Reduction of logistic cost by 15%) • Economic benefits / increase in economic efficiency • Improved vaccination coverage at same or less costs • Efficient animal and human health systems • Economic growth

Literature review on One Health benefits (2)

Benefit described
<p>Improvement in human or animal health or well-being, e.g.</p> <ul style="list-style-type: none">• Reduction of disease risk in humans and/or animals• Reduction in zoonotic risk• Improvement in human and animal health or well-being• Improved food safety because of human-animal bond• Increased physical activity resulting from dog ownership• Stronger motivation to quit smoking because endangers health of pet• Improved food safety
<p>Higher quality or quantity of information, data; better knowledge, skills, e.g.</p> <p>Higher quality or quantity of information, data; better knowledge, skills</p> <ul style="list-style-type: none">• Comparative medicine – cross-fertilisation• New skills and experience• Capacity building
<p>Ecosystem benefit, e.g.</p> <ul style="list-style-type: none">• Ecosystem resilience• Wildlife conservation• Environmentally friendly approaches• Inclusion of wider habitat, e.g. community based approach <p>Ecosystem benefit</p>
<p>Personal or social benefits, e.g.</p> <ul style="list-style-type: none">• Increasing professional opportunities• Greater individual responsibility• Reduction in poverty and health related inequalities• Food security• Evidence-based decisions• Greater social cohesion• Empowerment of local communities• Trust <p>Personal or social benefits</p>
<p>Other: Foster new ideas and innovation through collaboration and exchange</p>

Benefits measured

- Expected or perceived benefits stemming from One Health were listed in a **descriptive or conceptual way**, and only a small number of studies reported a benefit *measured* either in non-monetary or monetary terms

A review of the metrics for One Health benefits. Häslér B, Cornelsen L, Bennani H, Rushton J (2014). [Rev. sci. tech. Off. int. Epiz. Vol. 33 \(2\) pp. 453-464.](#)

Some examples of benefits measured

- i. **Joint vaccination programme** for humans and cattle in Chad had a *higher human uptake* particularly among women and children when animal vaccination was being offered concurrently.
Outcome: vaccination rate (Schelling et al. 2005)
- ii. Use of an Escherichia coli O157:H7 **cattle vaccine to prevent human illness** caused by consuming beef. Cost-benefit analysis. Outcome: Monetary value of vaccination (Withee et al. 2009)
- iii. Demonstrated benefit of **vaccinating livestock for brucellosis on human and animal health.**
Outcome: Disability-adjusted life years, cost of programme per DALY averted (Roth et al. 2003)

Workshop Autumn 2013 - London

1. To describe the **usefulness, advantages and disadvantages of metrics and methods** available to measure One Health benefits
2. To **select a set of metrics (by consensus) for measurement of One Health benefits** to recommend for application in the international One Health community



Workshop conclusions

- **Do not re-invent the wheel**
 - Adopt and/or adapt metrics used by ecology, ecosystems services or others for measuring One Health benefits
- Consider how **metrics can be combined**
- Develop **common/agreed methodologies** and best practice guidelines
- Communication, exchange of information, **collaboration and interdisciplinarity** are key
- For policy purposes – *“money speaks a clear language”*

Network for Evaluation of One Health (NEOH)

<http://neoh.onehealthglobal.net/>



HOME + ORGANISATION AND PARTNERS + NETWORK PROGRAMME + EVENTS + RESOURCES AND LINKS + CONTACT & JOIN

Network for Evaluation of One Health (NEOH)

COST TD1404

Evaluation and Comparison of One Health Activities.

[Learn More](#)

LATEST NEWS:

Upcoming Events

Network for Evaluation of One Health (NEOH)

COST Action TD1404

Funded by COST from the 17 Nov 2014 to 16 Nov 2019

Human health and well-being are increasingly affected by global challenges such as malnutrition, emerging and endemic zoonotic diseases, antimicrobial resistance and climate change. A One Health approach has been proposed to tackle the challenges through accepting that their complexity requires interdisciplinarity.

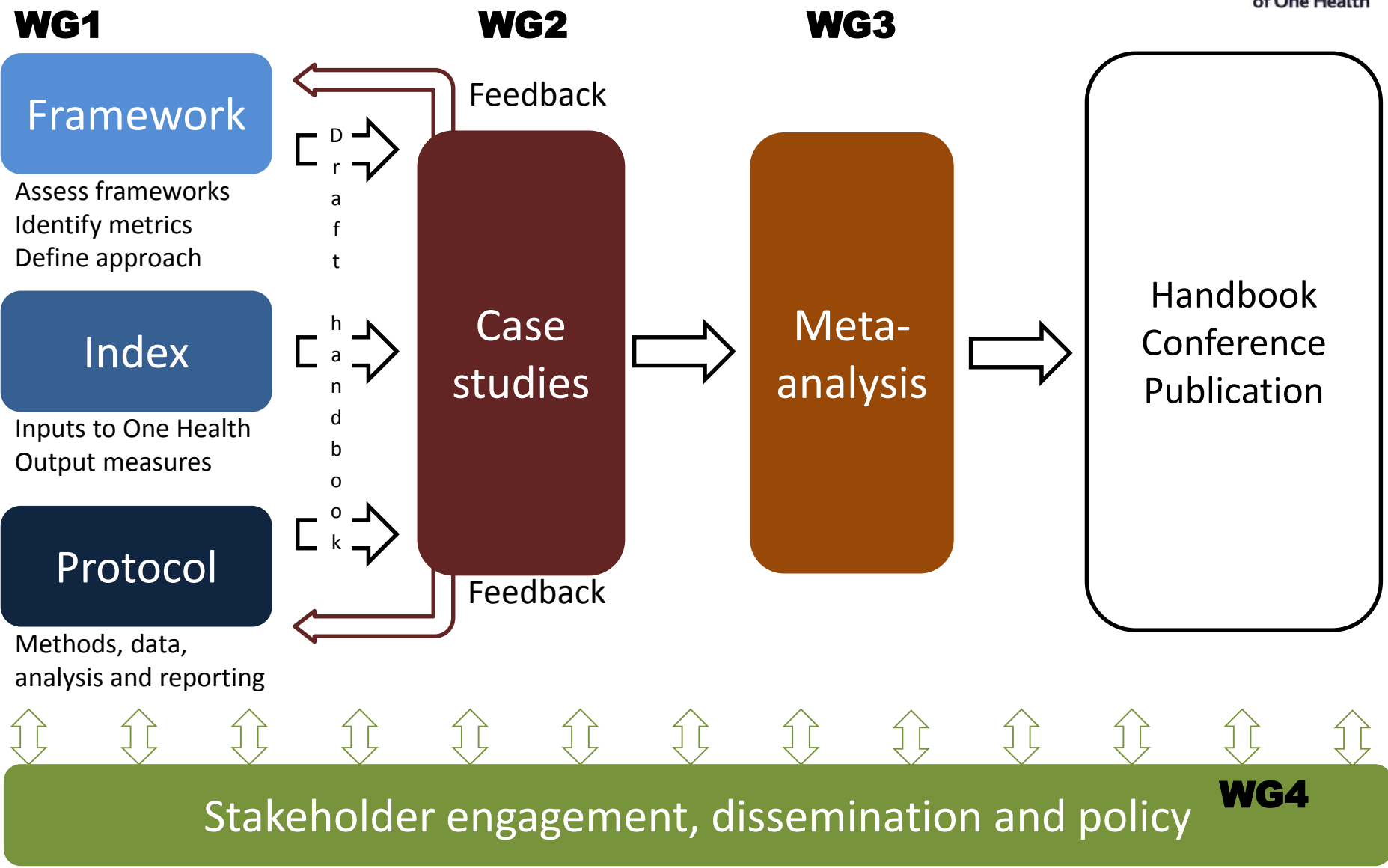
Several One Health initiatives have been launched but no standardised methodology exists for their evaluation. Therefore the Network for Evaluation of One Health (NEOH) will enable future quantitative evaluations of One Health activities by developing and applying a common evidence base by developing and applying a common community of experts (See our Memorandum of Understanding).

 **cost**
EUROPEAN COOPERATION
IN SCIENCE AND TECHNOLOGY



COST is supported by the EU Framework Programme Horizon 2020.

Working groups



Challenges encountered

- Very many **One Health initiatives**, e.g.
 - Research project
 - Educational programme
 - Development intervention
- **Differing perceptions** of One Health
- Range of **evaluation types** and **schools**

Conceptualisation

- **Need to define the elements of the health system**
- This started with: human; animal; public health
- Environment was added
- And on more discussion so was plant health



Ecological public health

Ecohealth

Agrihealth

Health has multiple, multi-layered connections and dimensions that need to be addressed

One Health

Eco-bio-social approaches

Planetary health

DESIGN

WATER

Goal in "Water quality"

Drivers

Longevity

Water quality & quantity

ENHANCING THE WATER RESOURCES

Efficient use

Water quality

Participation of people concerned

Water quantity

Actions

Water quality

Participation of people concerned

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Critical steps in the evaluation of One Health

1. Characterise the **One Health** initiative
2. Determine its **drivers, supporting infrastructure, operations** and (expected) **outcomes**
3. Define **evaluation question**
4. Select **evaluation type and outcomes** for the corresponding level of complexity
5. Identify **metrics and methods** suitable to the question and type of evaluation
 - Many of the outcomes are known as “soft outcomes” or do not have a market value, for example
 - Improved social interaction
 - Empowerment
 - Greater social cohesion
 - Resilience

Data...

Mapping of surveillance in RISKSUR showed that

- Lack of standardisation and transparency of methods
- Data availability heterogeneous
- Data access and sharing can be difficult due to confidentiality issues



**RISKSUR**

Mapping of surveillance systems,
animal populations, trade flows,
critical infrastructure and
decision making processes in
several European countries

UPDATED VERSION AUG 2014

<http://www.fp7-risksur.eu/project>

In the past twenty years, the European Union (EU) experienced several animal health crises that had dramatic adverse effects on the livestock sector and public health and resulted in significant disruptions

graphic, production, and trade characteristics. Moreover, data on critical infrastructure and existing decision-making processes for resource allocation to surveillance were collected in France, Germany, Great

Concluding remarks

- One Health perceived to be of value, but few studies available that measure **“added value”**
- Because of large heterogeneity of approaches, **characterisation of One Health** initiatives is important
- Work is needed to identify where we have gaps in **metrics and methods**
- With the approach we are developing we hope to contribute to studies that allow **comparison** and contribute to the **evidence base**, but we depend on **data**

Thank you for your attention!

