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Network for Evaluation of One Health

Evaluating One Health – An Integrated Approach

insitghts into interdisciplinary and cross-sectoral integration

Belgian One Health Symposium 2019

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NEOH is supported by

cost EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

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Outline

- Introduction to the Network for Evaluation of One Health
- System thinking and transdisciplinarity
- The NEOH evaluation framework
- Case Studies
- Conclusions

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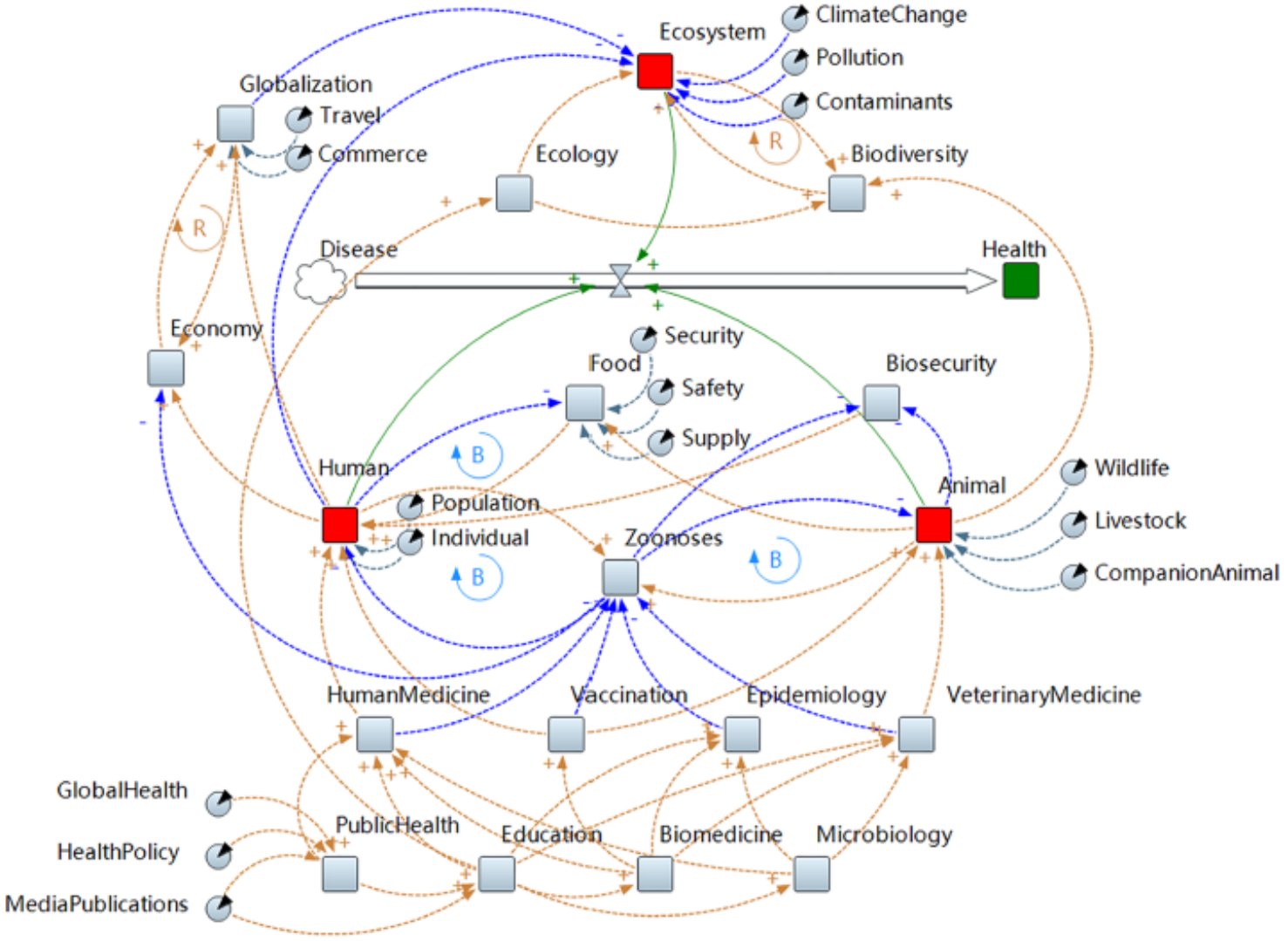
The One Health Cosmos



Xie et al. (2017) A system dynamics approach to understanding the One Health concept PLoS One 1–11. doi:10.1371/journal. pone.0184430

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Introduction

The Network for Evaluation of One Health (NEOH)

Evolution of One Health

Drivers

- Social
- Economic
- Environmental

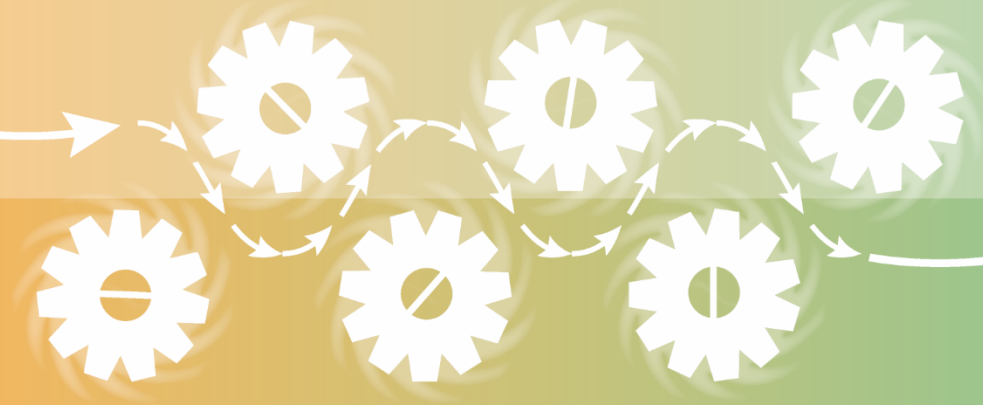
The Approach

One Health Operations

Thinking
- Globally
- Multidisciplinary
- Multisectorial
- Multiple scales

Planning
- Common Aims, Problems & Financing

Working
- Transdisciplinary
- Transsectorial
- Teamwork
- Participation



Sharing
- Data
- Knowledge
- Resources
- Staff

Learning
- Knowledge Exchange
- Institutional Memory
- Feedback
- Self-Regulation

Systemic Organisation
- Polycentric
- High Connectivity
- Synchronisation
- Multidimensional

Supporting Infrastructures

The Promise

Outcomes

- Sustainability
- Health & Well-being
- Interspecies Equity & Stewardship
- Effectiveness & Efficiency

Rüegg et al. (2017) A blueprint to evaluate One Health. Front. Public Heal. 5, 1–5. doi:10.3389/fpubh.2017.00020 A

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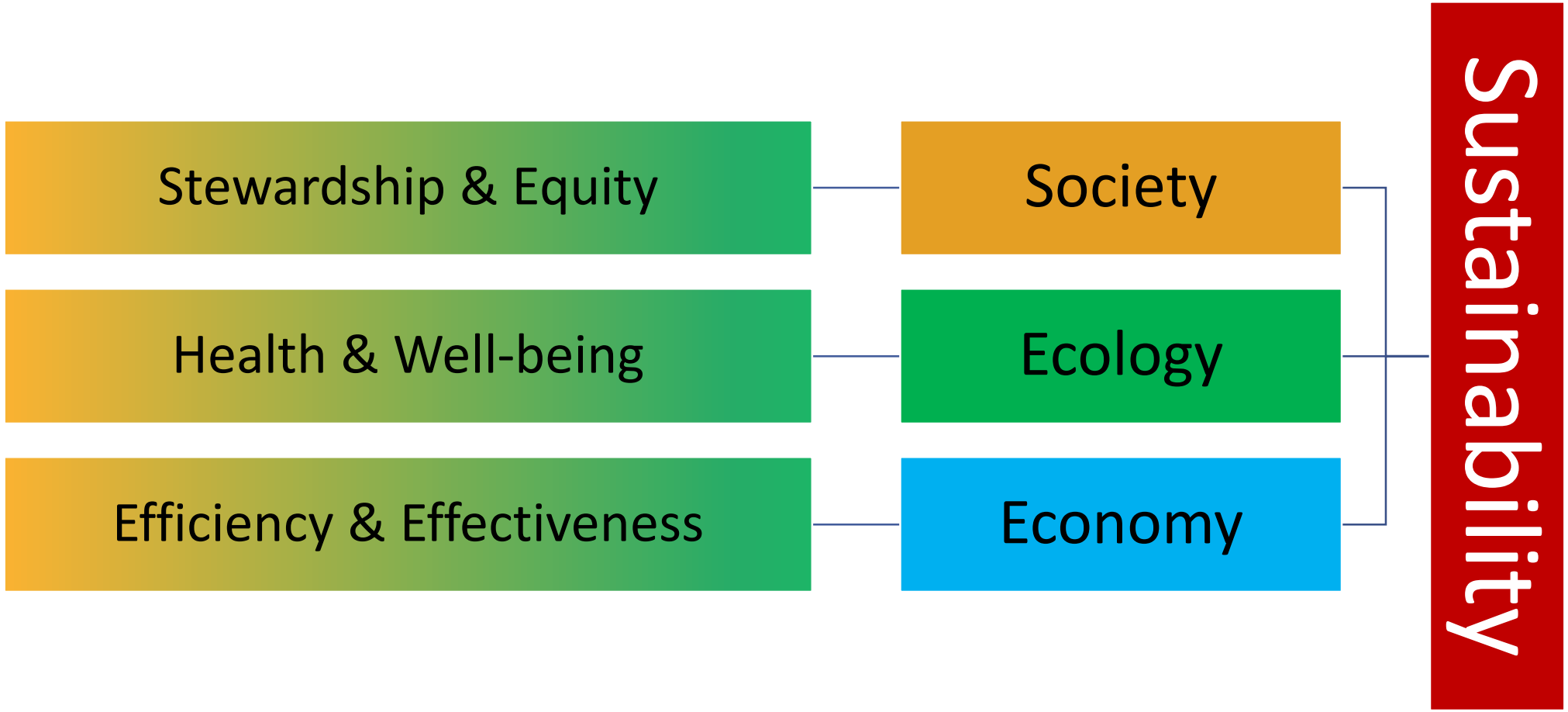
SUSTAINABLE DEVELOPMENT GOALS

Expected Outcomes of One Health



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Why a systems approach?

- One Health problems are «wicked problems».
- Multiple paths and interacting components.
- Cause-effect relationships are not apparent.
  - No one is in control
- Some type of «selection process» at work on these components and the results of their interaction.
- Variation and novelty are being added into the system over time.
- System generates its own behaviour.
  - Feedback loops
  - Unpredictable, intractable

Adapted from
Timothy Ehlinger, 2015
University of Wisconsin-Milwaukee

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One Health as an Approach

Six Aspects of Knowledge Integration

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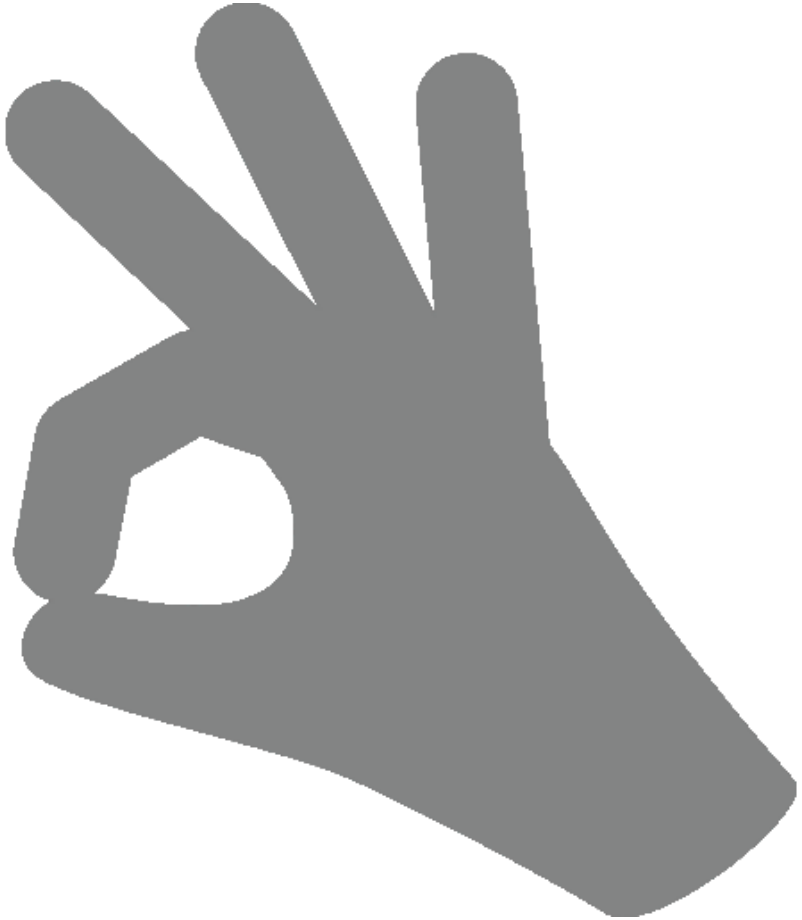
Systems Thinking



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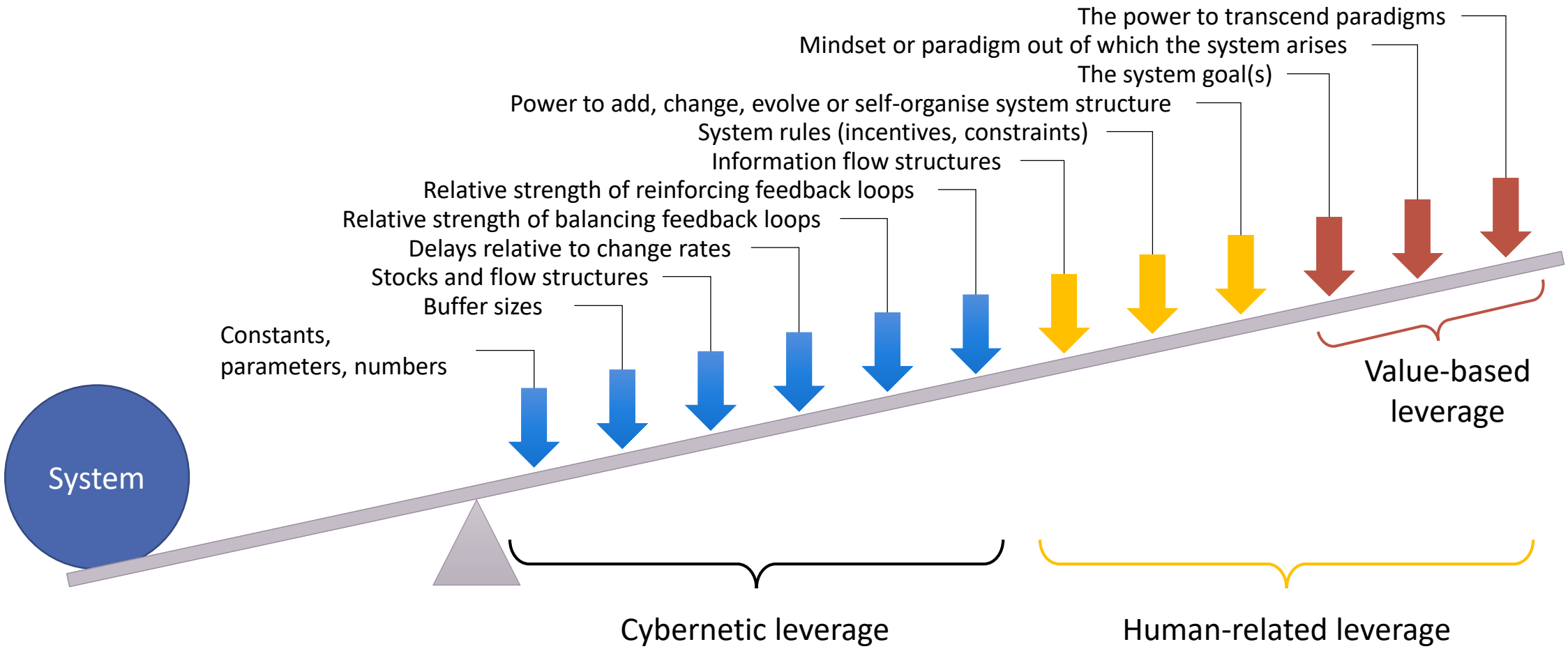
Leverage points in Complex Adaptive Systems



Adapted from https://csl4d.wordpress.com/2014/03/19/thinking-in-systems/

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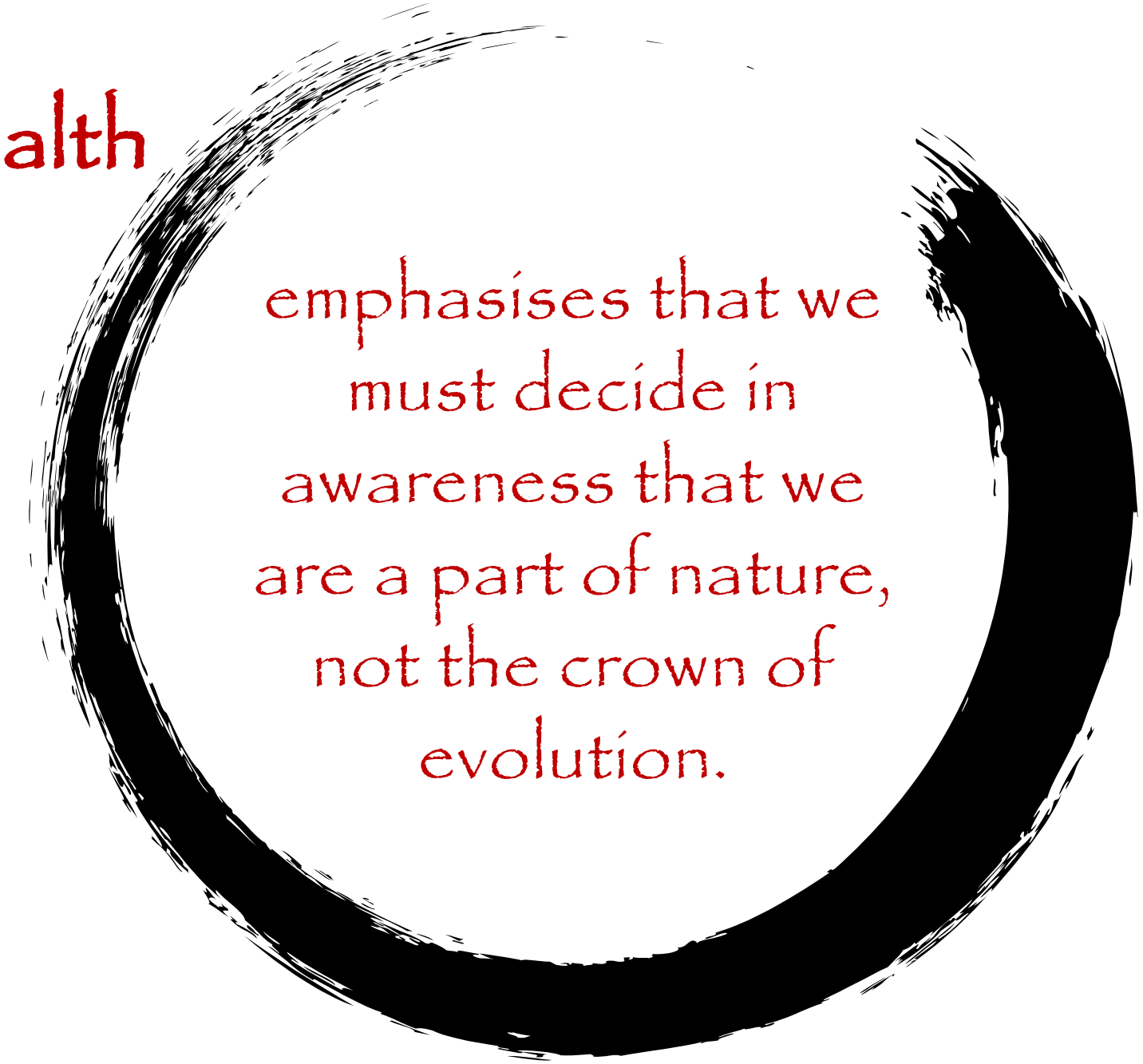
One Health



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Systems Thinking in One Health

- Understand the context.
- Acknowledge and use **hierarchies** in socio-ecological systems.
- Consider beliefs about evidence, values about health, cultural grounding.
- Reflect on how and where the initiative is placed in relation to the system.
- Match / balance dimensions and scales in system and initiative.

  → Integrated approach to health.
- Target **underlying structures** of the system to affect **patterns** and **events.**
- Consider development over time, delayed effects and feedback loops.
- Consider the **three pillars of sustainability**

  → Ecosystem/environment, economy and society

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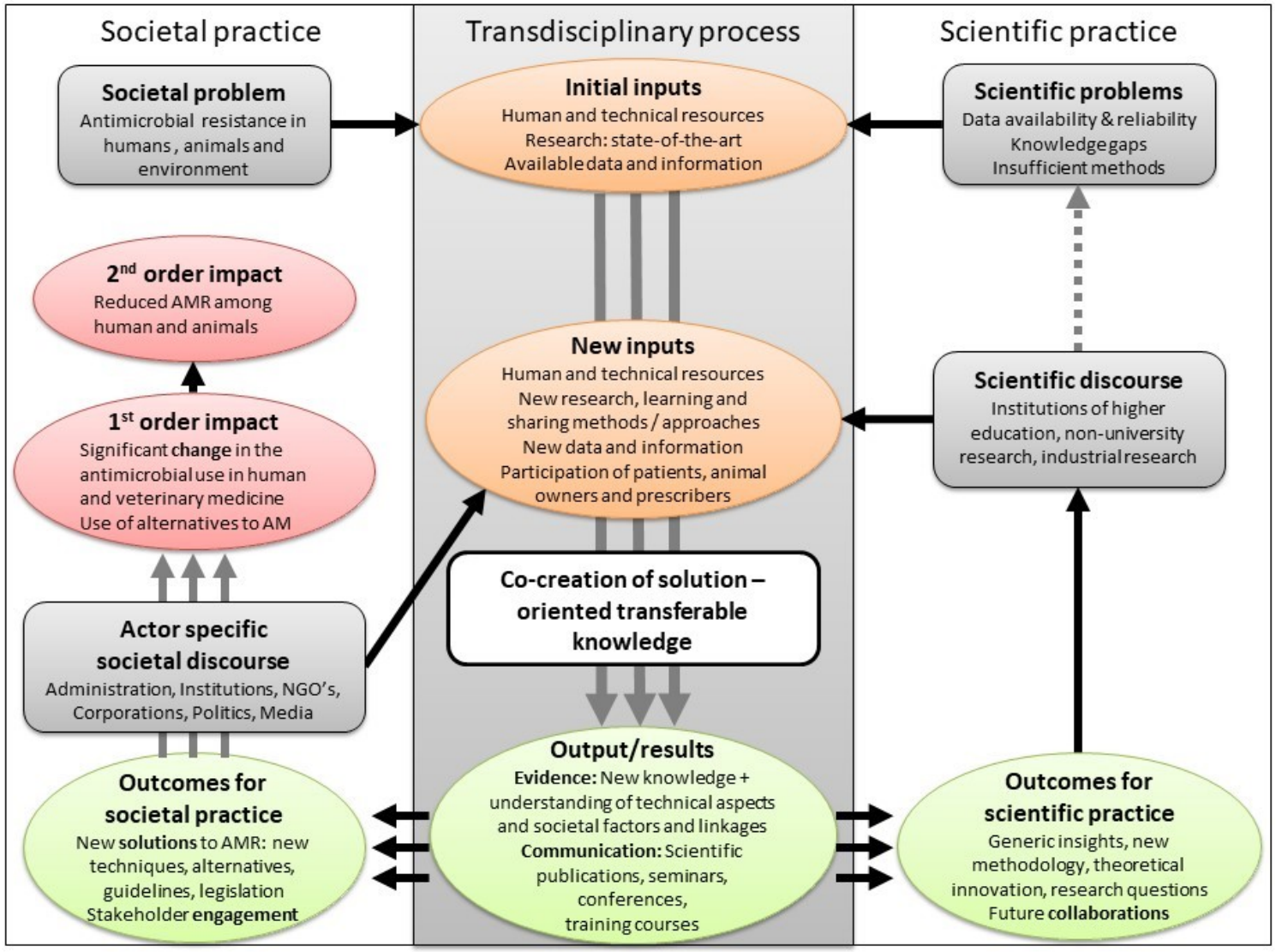
Transdisciplinarity



Rüegg et al. (2018) «A One Health Evaluation Framework» in «Integrated approaches to healt: handbook for the evaluation of One Health» www.wageningenacademic.com/neoh

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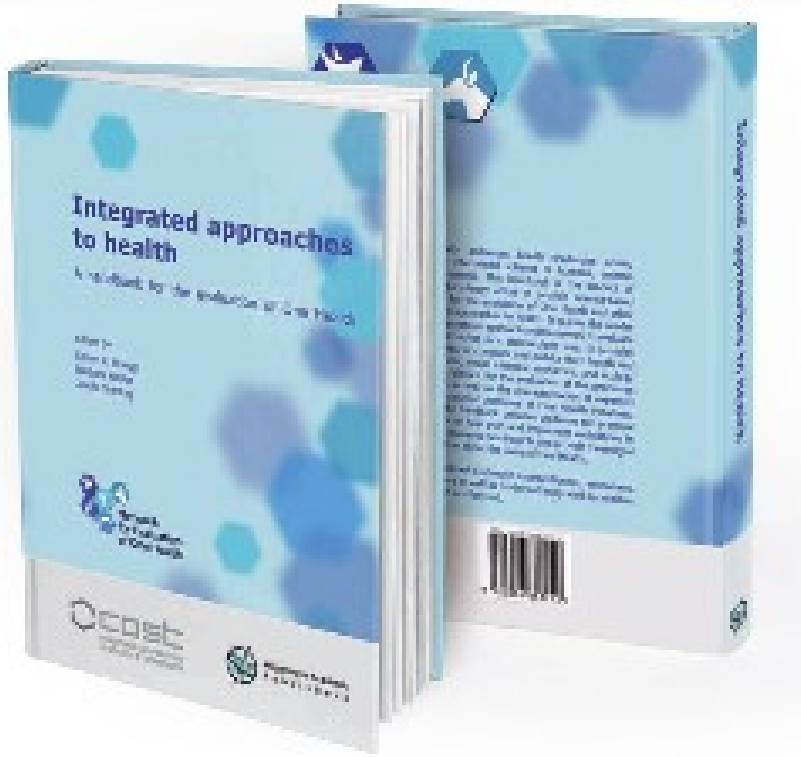
free PDF & worksheets



The Evaluation Framework

Integrated approaches to health: a handbook for the evaluation of One Health

http://www.wageningenacademic.com/neoh

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The Systems Approach

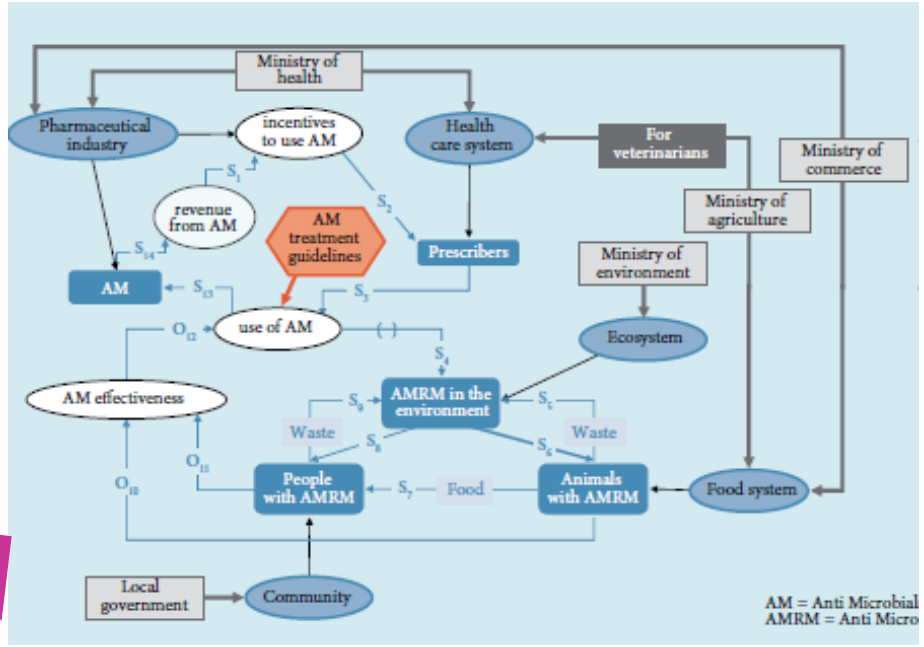

Table 3.1. An overview of how to describe the system at which the One Health initiative is targeted, i.e. the context of the initiative (adapted from Boriani *et al.*, 2017).

Aspect	Description	Secondary questions	Evolution
Aims	What is the context of the OH initiative - why does this system exist? What does it produce? For social-ecological systems that have no explicit aim, what are indicators that the system is intact/healthy?	Perspectives • What does the system aim to do? Are there different declarations? • What do the actors and stakeholders perceive the system does and how do those perceptions differ? (For social-ecological systems: how do the actors and stakeholders perceive/evaluate that the system is intact/operational?) • Are there measurable outcomes/indicators of the system? • How do the declared, perceived and measured aims/outcomes relate?	Do the various aims/indicators change as the system evolves with time?
Actors	Who are the actors? Who acts within the system?	Relationships • How do they affect the other actors/stakeholders and the aim of the system? • How are they affected by the other actors/stakeholders and the aim/indicators of the system? • How are the relationships distributed/arranged? • Which are the most important links? • What are the processes between the related components? • How can the links be characterised (slow/fast, strong/weak)?	Do the actors change their activity and behaviours as the system evolves (new trade-offs)? Does the system have secondary effects on the actors?
Stakeholders	Who are the stakeholders? Who is affected by the system?	Relationships • How are they affected by the actors and the dynamics of the system? • How are the relationships distributed/arranged? • Which are the most important links? • What is the nature of the processes between the related components? • How can the links be characterised (slow/fast, strong/weak)?	Does the system have secondary effects on the stakeholders?

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NEOH Framework

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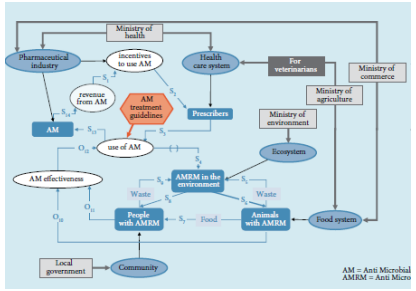

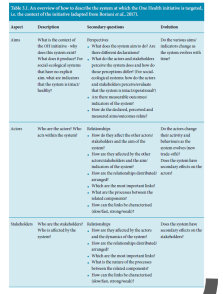

The Promise

Theory of Change including Outcomes

Selection and Design of

- Non-Linear Impact Evaluation
- Economic Evaluation
- Impact Evaluation

Capture unexpected outcomes

Selection of metrics for different Outcomes

- Disciplinary
- Interdisciplinary
- Systemic

Conduct Evaluation

The Approach

Assessment of the One-Health-ness

Compare One Health-ness and Outcomes

One Health Index

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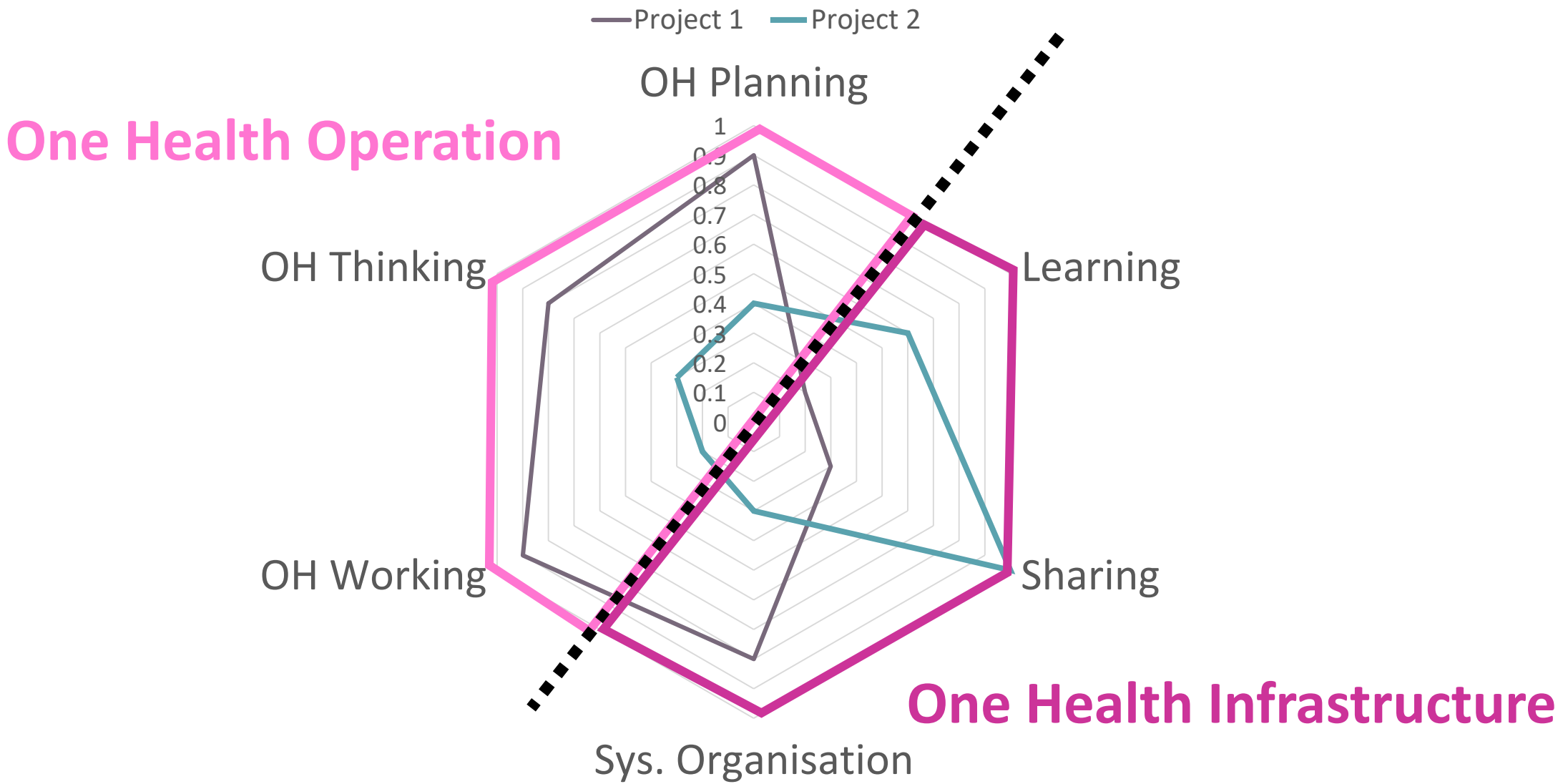
One Health Index and Ratio



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The NEOH Case Studies

Published in Frontiers: http://www.frontiersin.org/research-topics/5479

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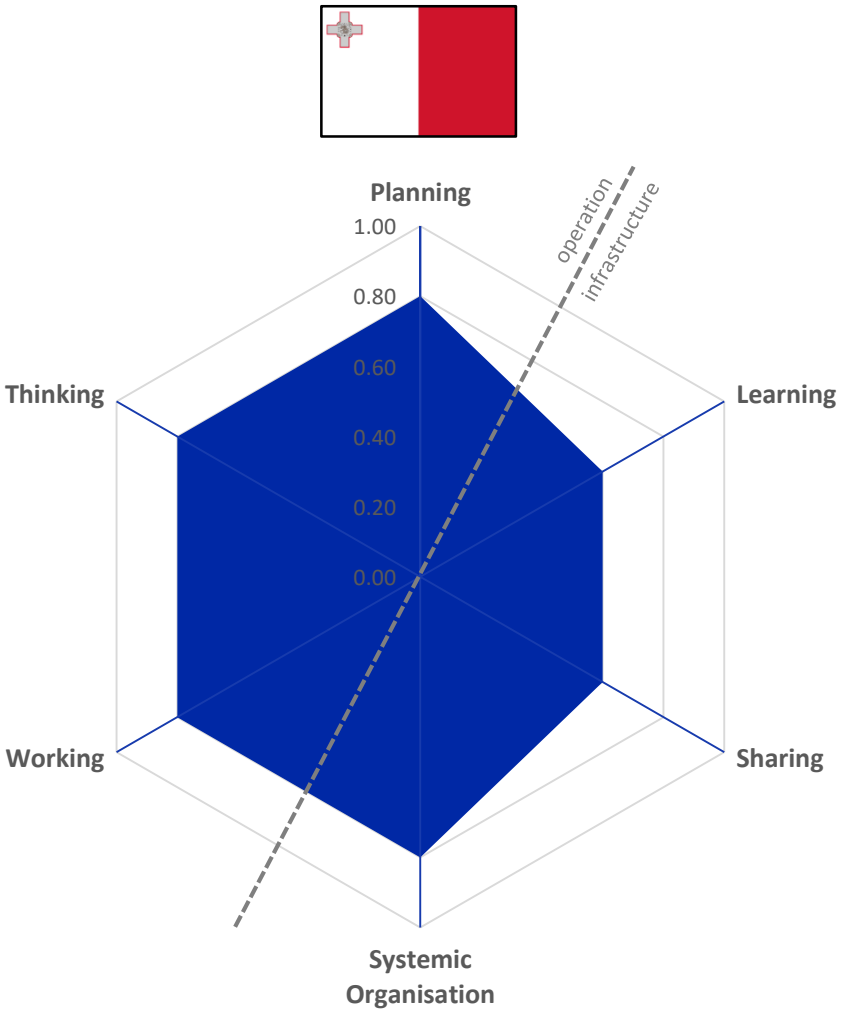
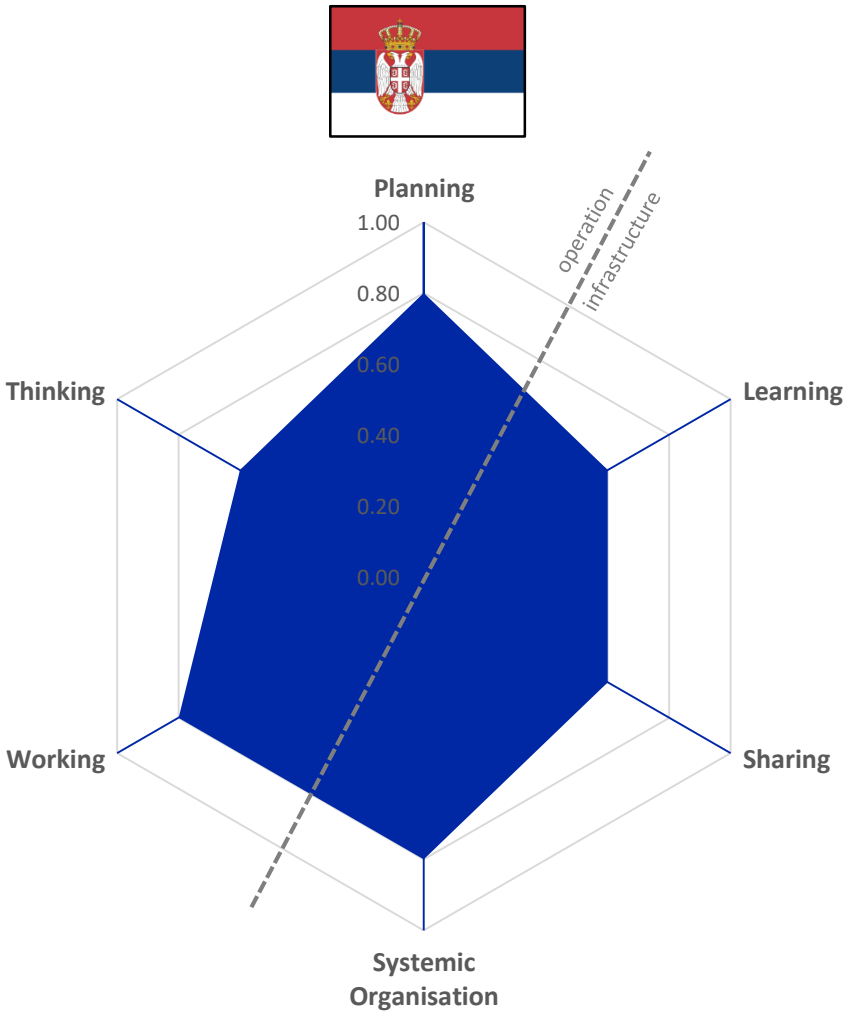
Brucellosis control in Malta and Serbia





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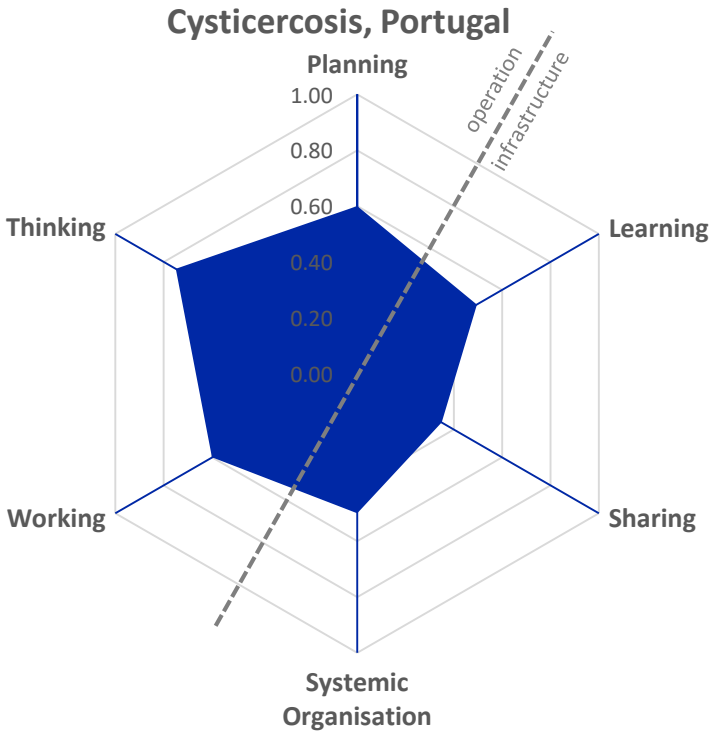
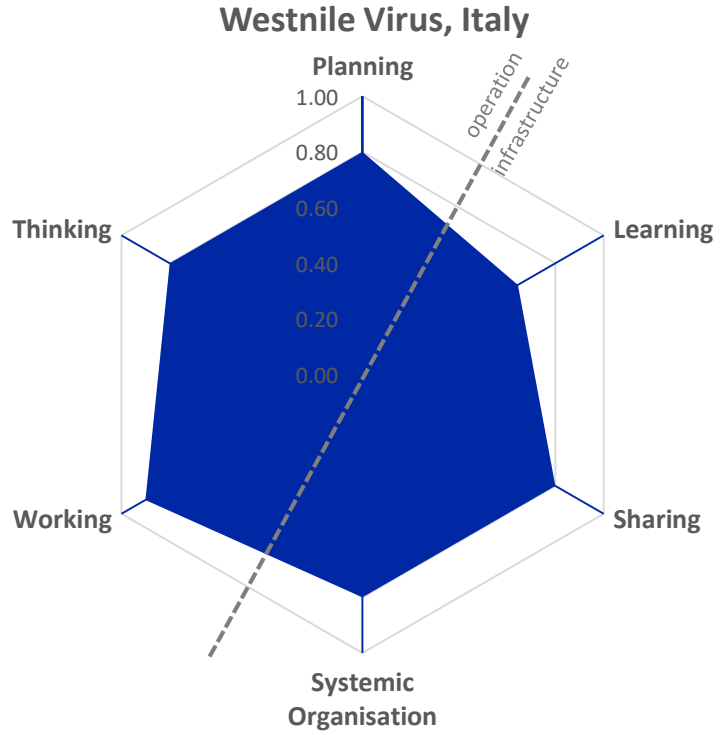
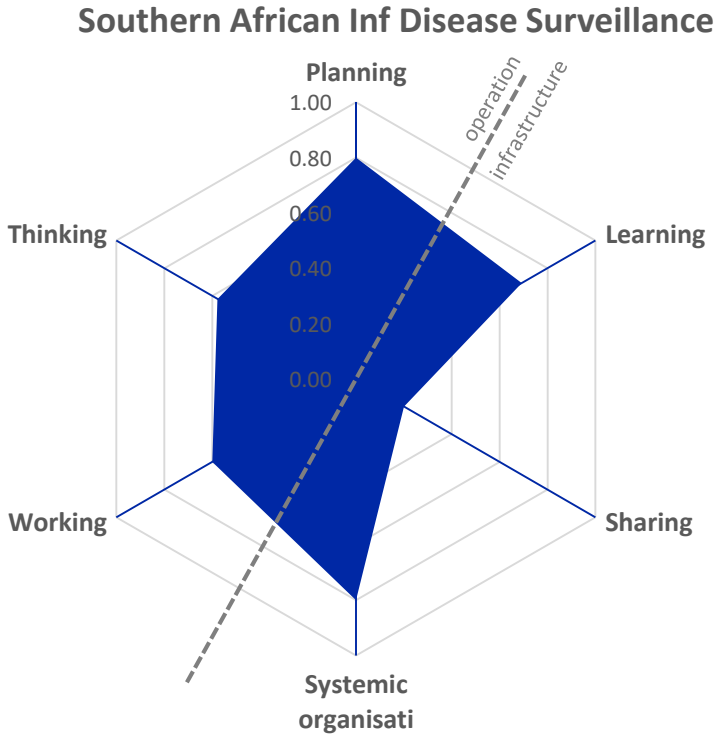
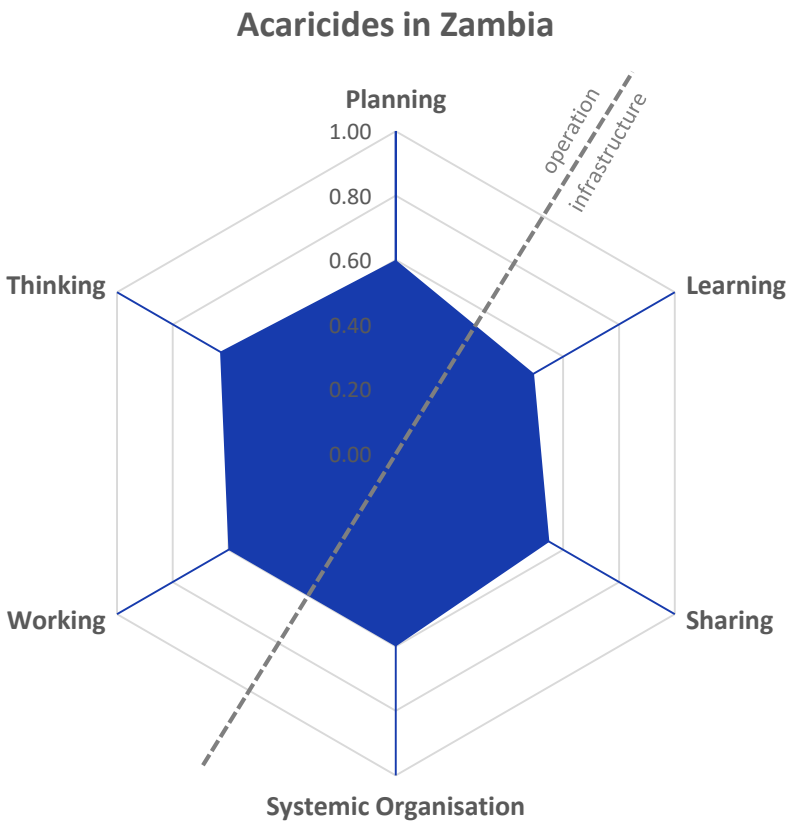
One Health Surveillance

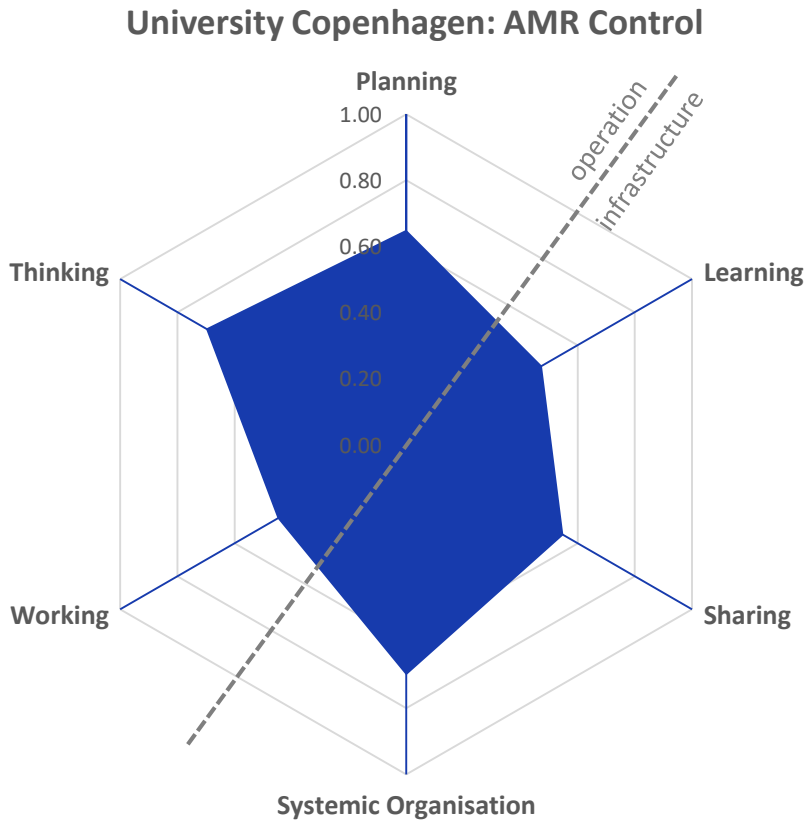






Development aid and academic programme





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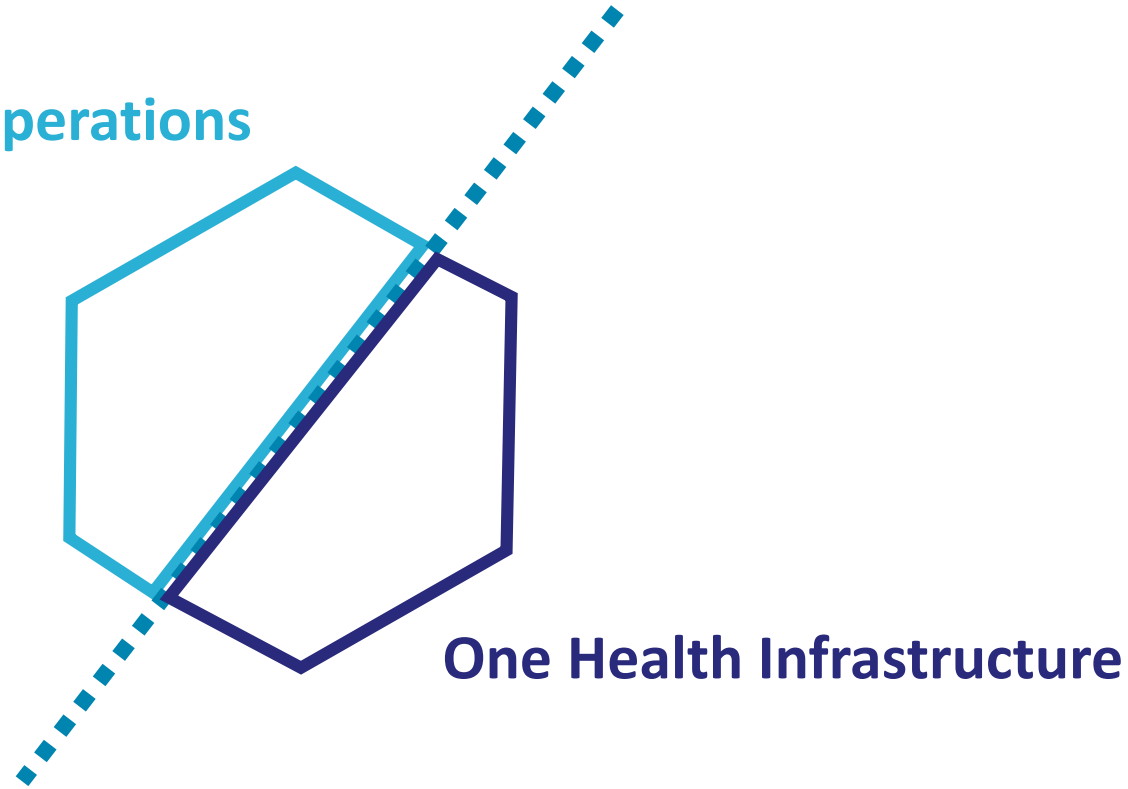
Balance Operations: Infrastructure

ID	OH-Ratio
H	1.37
	1.14
I	1.97
J	1.50
K	1.14
L	1.10
M	1.22
N	1.10
O	1.75



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Lessons learnt

- Knowledge Integration capacity is strongly context specific.
- Beyond evaluation, the NEOH framework is useful for planning integrated approaches to health.
- The scoring relies on individual perceptions.
  - Can we generalise?

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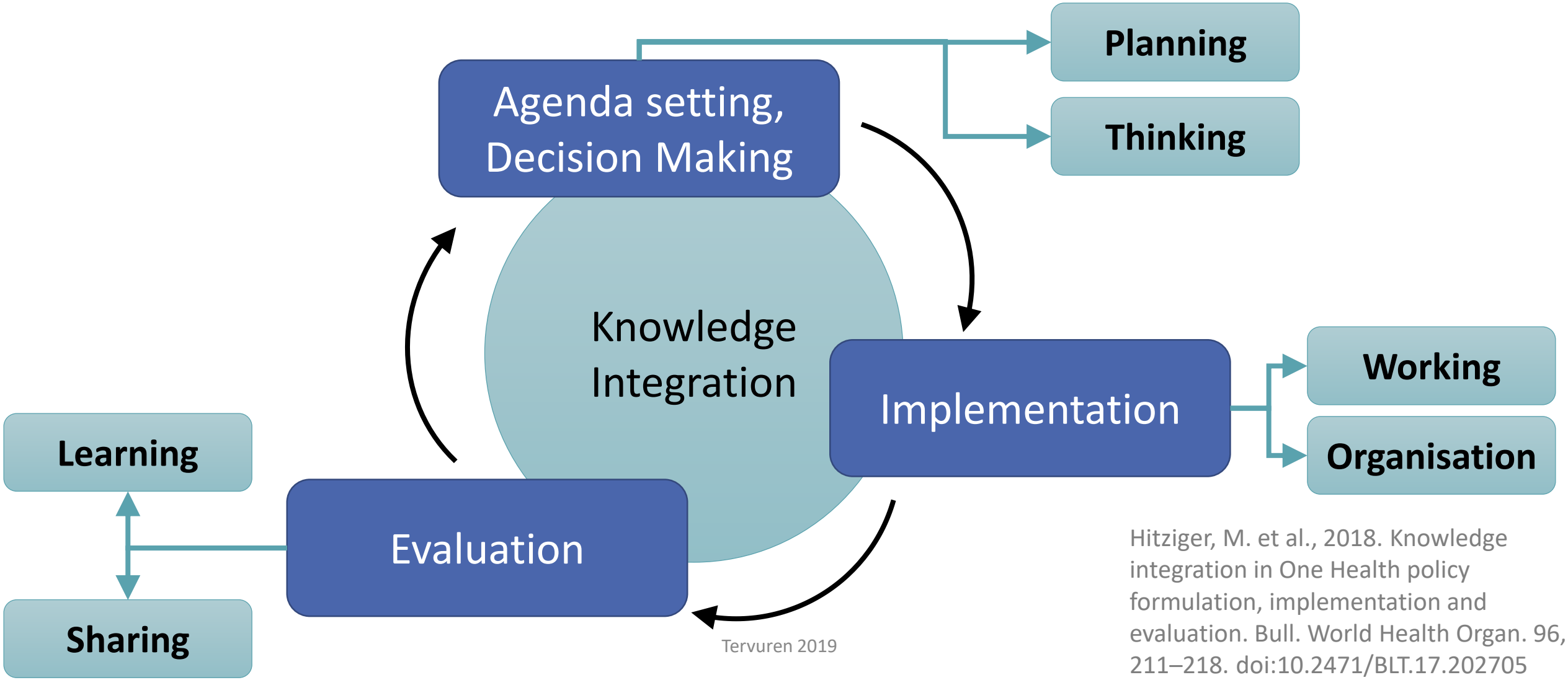
One Health and the Policy Cycle



Tervuren 2019

Hitziger, M. et al., 2018. Knowledge integration in One Health policy formulation, implementation and evaluation. Bull. World Health Organ. 96, 211–218. doi:10.2471/BLT.17.202705

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	Agenda setting, Decision Making		Implementation		Evaluation	
ID	Thinking	Planning	Organization	Working	Sharing	Learning
A	0.83	0.75	0.83	1.00	0.66	0.66
B	0.83	0.58	1.00	0.83	0.50	0.33
C	0.33	0.75	0.50	0.66	0.75	0.66
D	0.50	0.58	0.67	0.66	0.50	0.33
E	0.50	0.79	1.00	1.00	0.83	0.66
F	1.00	0.92	0.83	0.66	0.66	0.66
G	0.66	0.75	0.66	0.71	0.83	N/A
H	0.80	0.80	0.80	0.80	0.60	0.60
	0.60	0.80	0.80	0.80	0.60	0.60
I	0.75	0.60	0.50	0.60	0.35	0.50
J	0.56	0.80	0.80	0.60	0.20	0.74
K	0.63	0.60	0.60	0.55	0.55	0.50
L	0.70	0.65	0.70	0.45	0.55	0.48
M	0.90	0.89	0.77	0.77	0.83	0.67
N	0.50	0.45	0.80	0.70	0.45	0.28
O	0.79	0.75	0.70	0.70	0.46	0.47

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Conclusions

- The framework
  - provides a basis for **comparing** different One Health initiatives.
  - allows evaluation before, during and after a One Health policy or intiative.
  - is useful for **planning** One Health policies or intiatives.
- System Thinking
  - **requires time** and training.
- Policy Making
  - seems to **emphasise operational aspects** over infrastructure.
  - tends to **neglect evaluation**.

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One Health - a peace building project

- Evaluation is a reason to talk
- We are NOT at war with the microbes
- We are NOT competing between
  - Disciplines
  - Companies
  - Cultures
  - Languages
  - Religions
  - Genders
  - …

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