Zoonotic Emergency Preparedness & Intervention *essential for a sustainable animal production*

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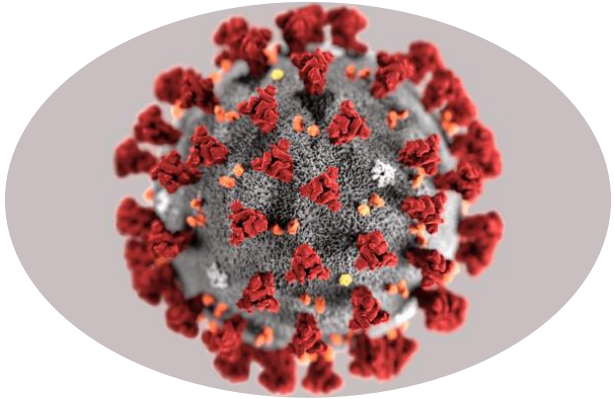
with contributions from Wim van der Poel, Mart de Jong, Jeroen Kortekaas, Annemarie Rebel, Andries Koops, Frank van Langevelde, Willem Jan Knibbe, Roel Jongeneel, Petra Berkhout & Krijn Poppe



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GASL From Crisis to Action – Lessons from COVID-19 for Building a Better Future through Sustainable Livestock

Take-stock of impacts of pandemic on four areas of development and the role of livestock

1. Food and nutrition security (Michael Lee)
2. **Livelihoods and economic growth**
3. Animal health and welfare (Stefano Messori)
4. **Climate and natural resource use**

GLOBAL AGENDA FOR SUSTAINABLE LIVESTOCK

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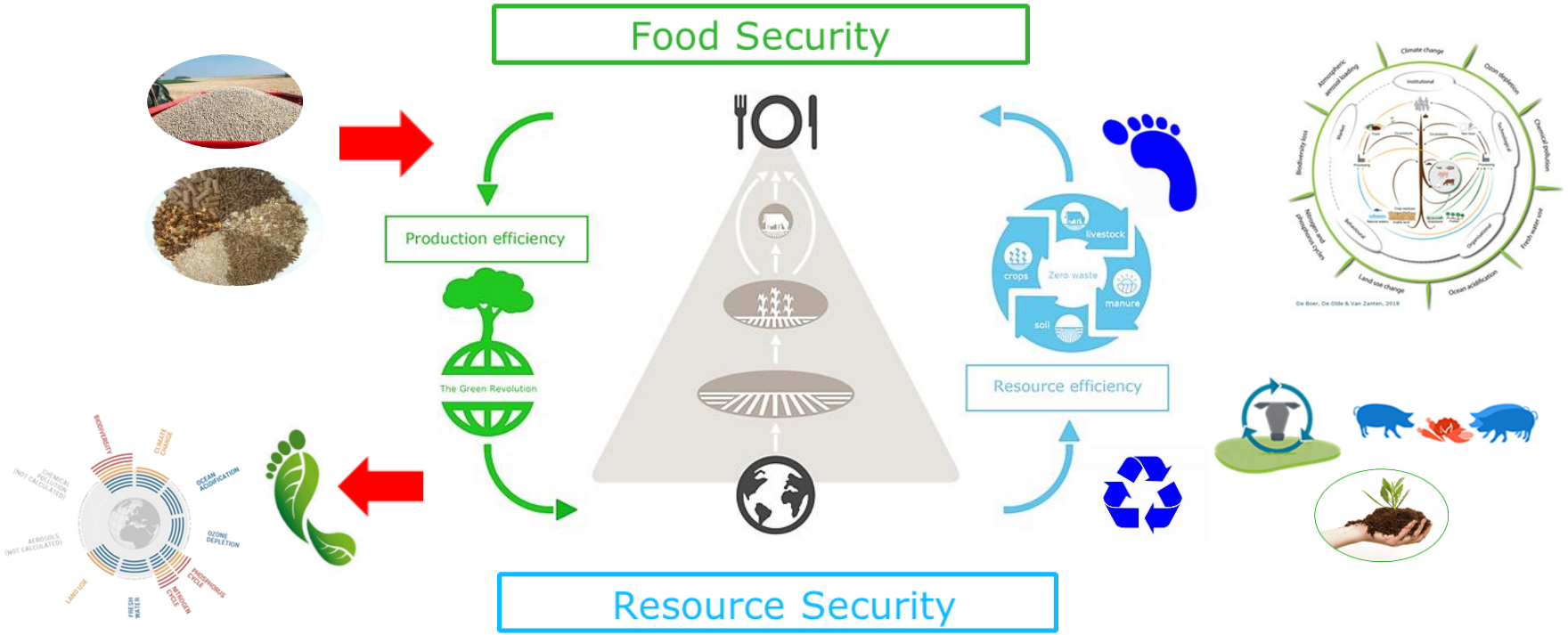
Future Food System: Connected Circularity



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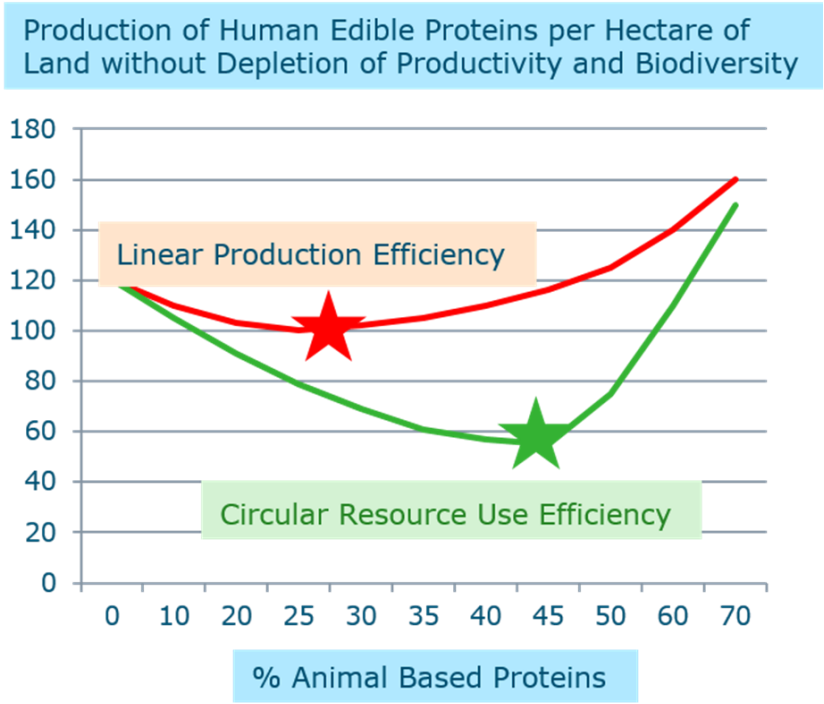
Livestock is criticized, but essential

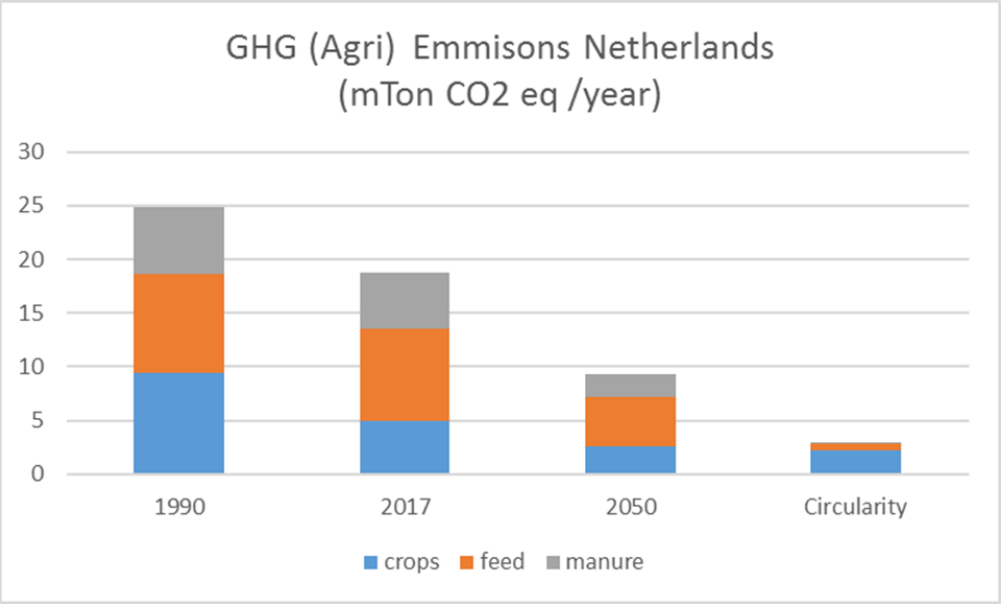


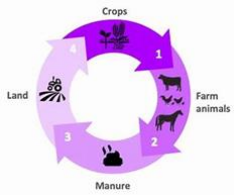
The role of livestock is:

1) to convert non-food biomass in nutritious food,
2) to produce circular, natural fertilizers produced from manure.

In this role livestock also provide agroecological services.

Connected Circularity is Climate Smart





Manure: valorisation as compost (feces fraction) and mineral concentrates (urine fraction) saving use of artificial fertilizers

Feed: using 100% forage and coproducts from crop residues and food in animal feed instead of producing and importing specific **feed** crops;

Crops: changing land use with a focus on mixed food with feed production instead of separate one-culture food and feed crop production land.

2050 = what can be achieved with standard mitigation measures

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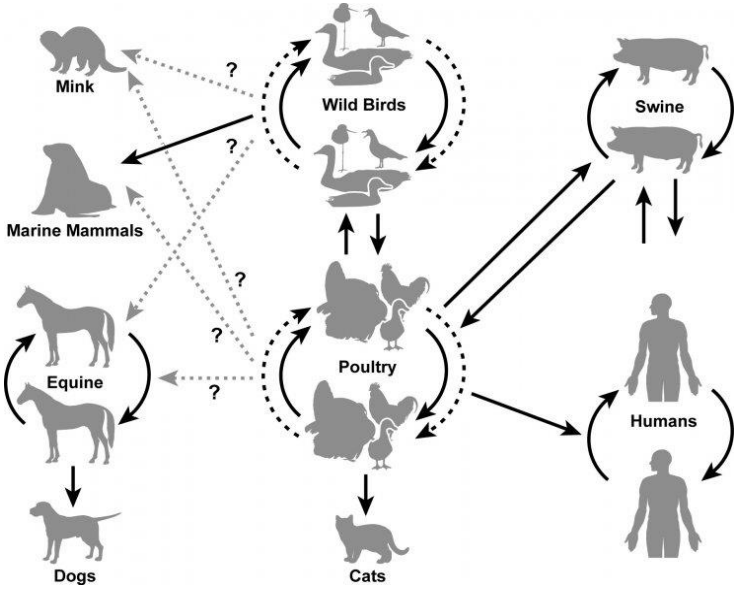
Connected circularity with livestock requires safety by design from a One Health Perspective



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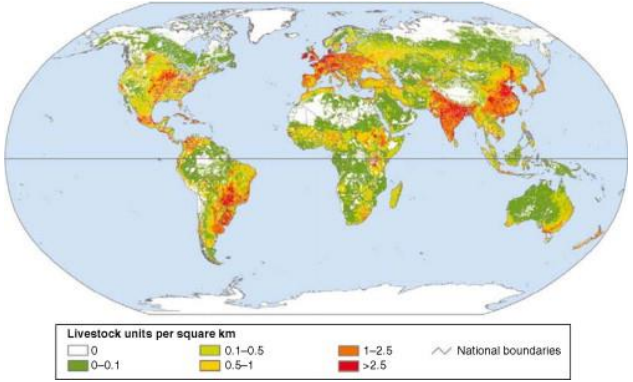
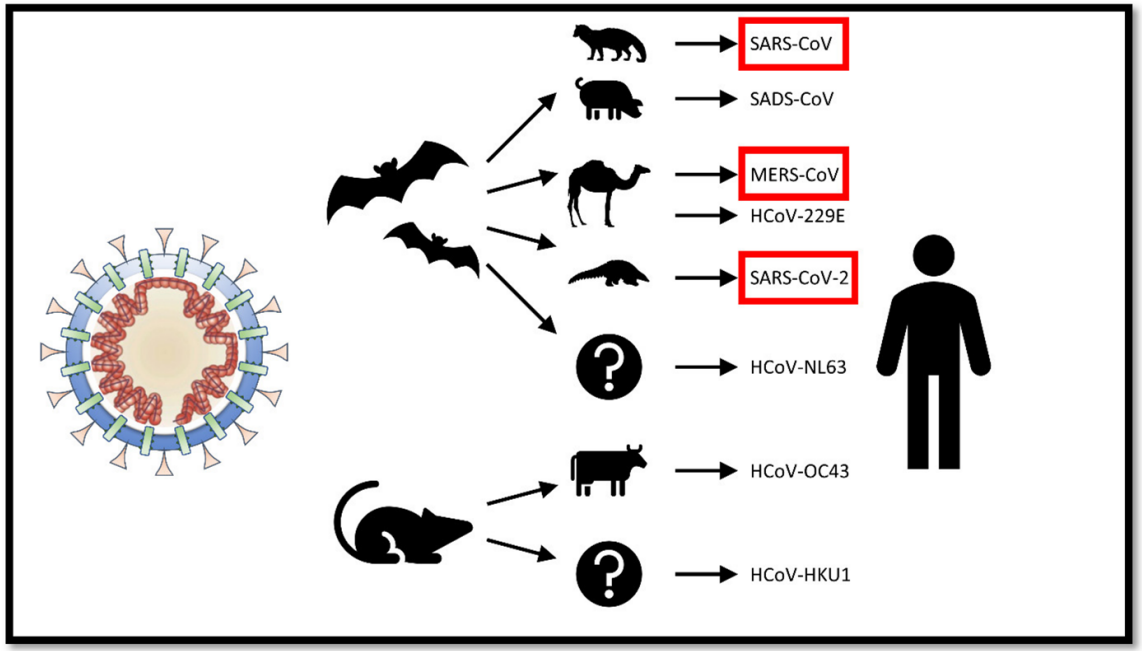
SOCIETAL CONCERNS RELATED TO LIVESTOCK

Public health concerns related to antimicrobial resistance and zoonotics
Next to concerns about animal stewardship, climate action and foot print

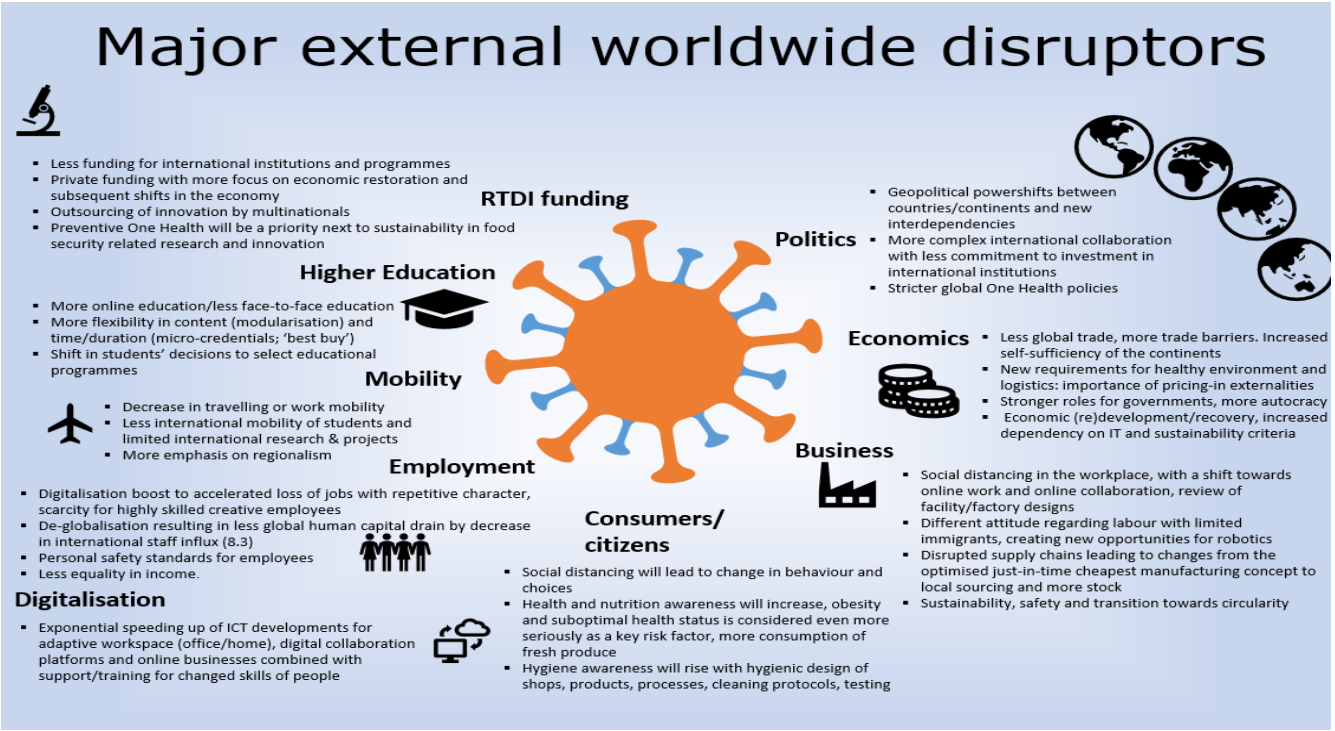
- Intensive connectivity with Society: hot spot concentrations
- Global connectivity by international trade



Disease X: a Zoonotic SARS-CoV-2 Virus causing the COVID-19 Pandemic, what's next?



A pandemic like Covid-19 is a major disruptor



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Signals of short term economic consequences of Covid-19 on animal production sector

- EU Food System & EU Single Market are relatively resilient
- Food service related retail market under pressure
- Interference with consequences of AFS at world market
- Economic recession will result in reduced prices for meat and dairy

GLOBAL IMPACT COVID PANDEMICS

- 27 million confirmed cases, 1 million deaths
- 188 countries affected
- Economic loss of 500 billion€ per month
- Investment in producing > 2 billion vaccine doses

EU crisis policy framework

COVID-19 AFTERMATH: FORECAST

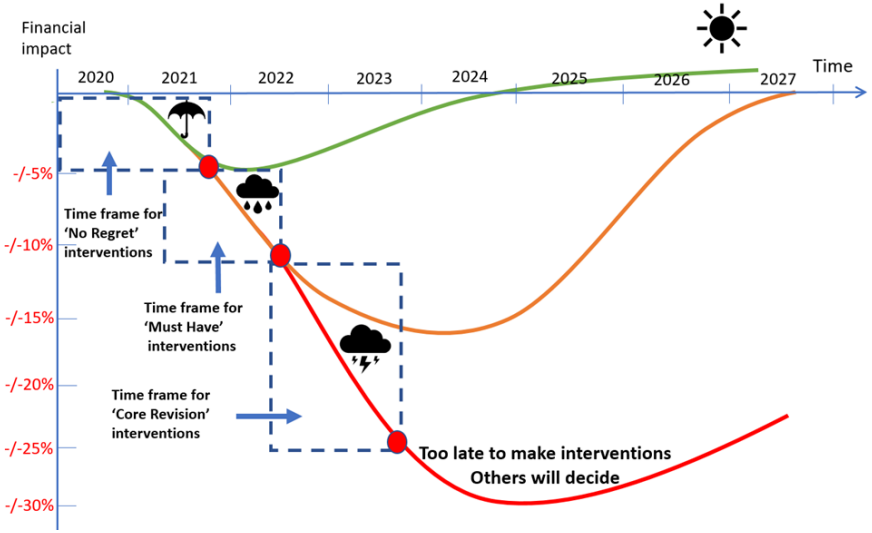
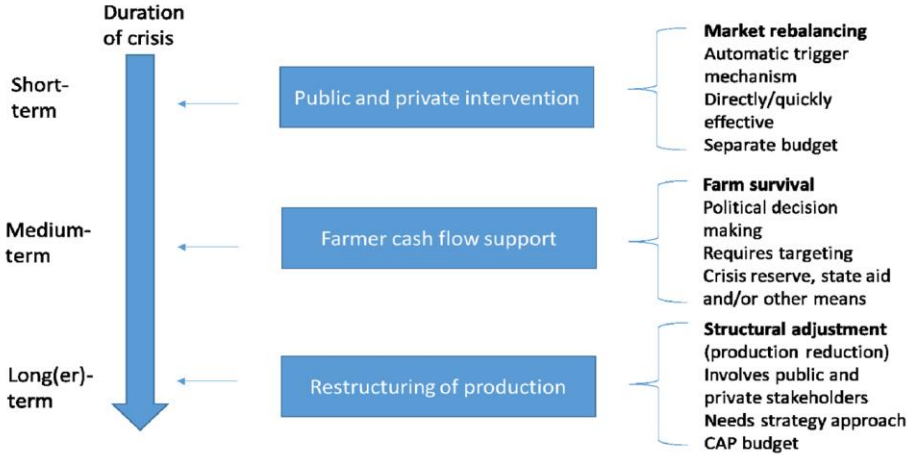
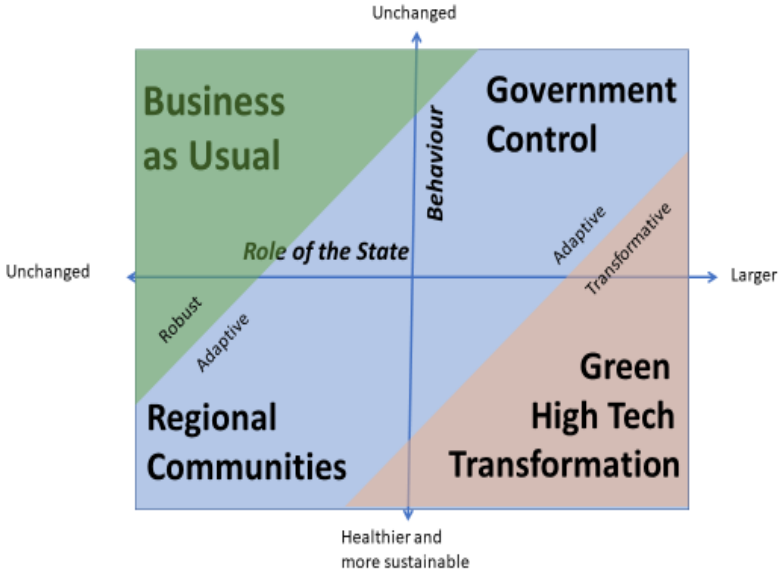


Figure: Three-layer crisis policy frame-work



Scenario's for longer term economic impact of Covid-19 on animal production sector



Business recovery in a free global market	Preventive governmental control
Shift towards regional business models	*Flipping the switch towards a radical transition by policies*

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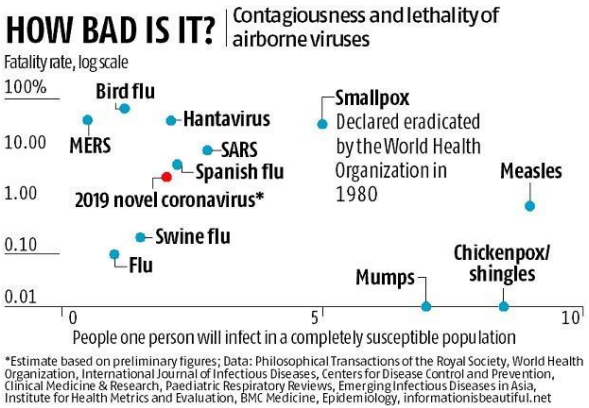
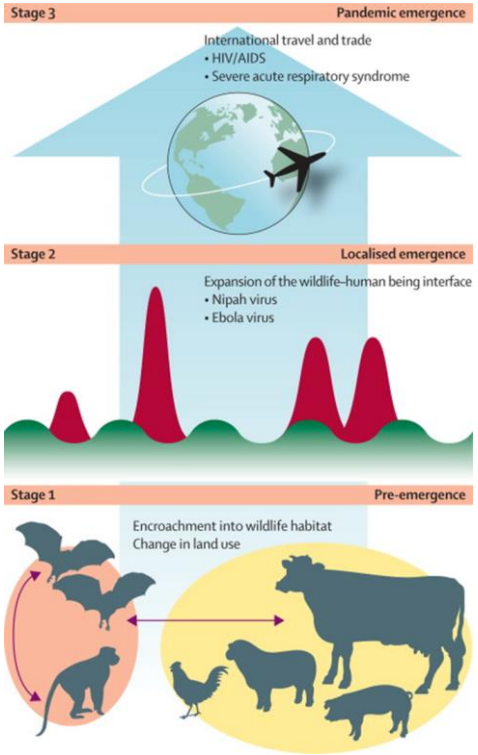
CONNECTIVITY: A GLOBAL ONE HEALTH





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Disease X-next: Preparedness & Intervention

ZEPI: Zoonotic Emergency, Preparedness & Innovation

Early Prediction

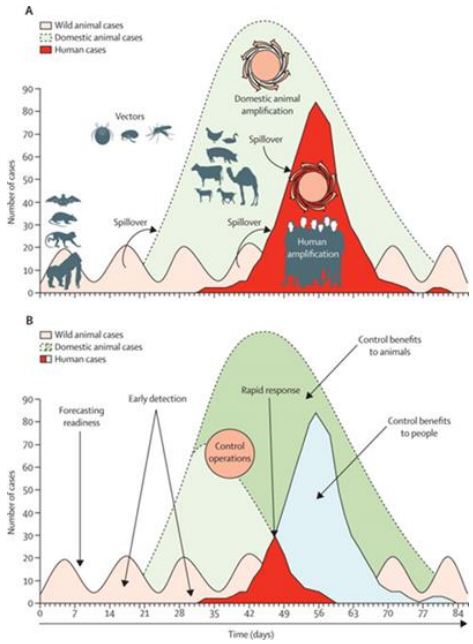
- Wildlife as zoonotic reservoirs and dispersing agents
- Zoonotic transmission and propagation in society

Preventive Intervention

- Contingency planning
- Vaccin development
- Public health care

Responsive Detection

- Early hazard identification
- Real-time monitoring
- FAIR sharing of complex data



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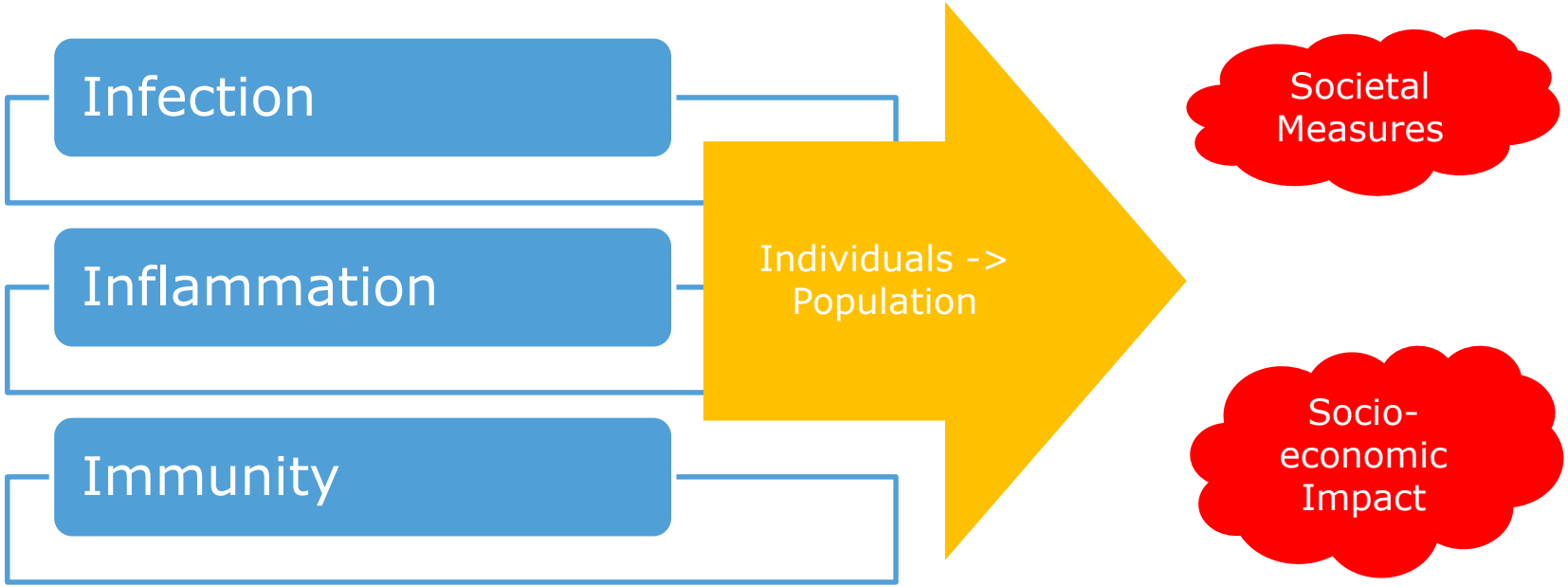
Understanding zoonotic emergencies requires an transdisciplinairy approach



As well as global connectivity in information

ZEPI: Zoonotic Emergency, Preparedness & Innovation

Early Prediction

- Global mapping of potential hotpots for emergence of zoonoses
- Global monitoring of presence, transition and dispersal of zoonoses
- Geographical modelling to forecast zoonotic infections

Preventive Intervention

- Sound and interconnected contingency plans
- Platforms for rapid vaccine development
- Capacity building for preparedness to intervene

Responsive Detection

- National infrastructures for data collection
- Tools for smart virome sequencing
- Toolbox for validated Point of Care Tests (PoCT)
- Integrated pandemic risk assessment models

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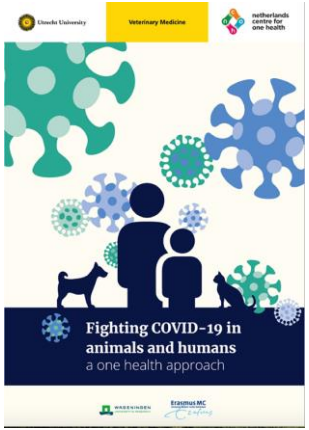
Preparedness & Intervention of zoonotic emergencies requires concerted action



netherlands centre for one health

One HEALTH EJP

CEPI

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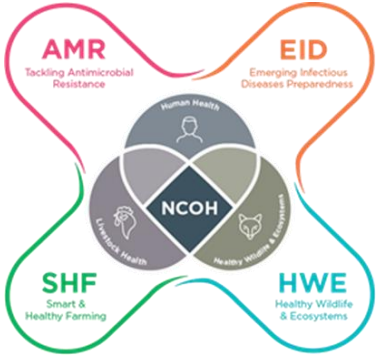
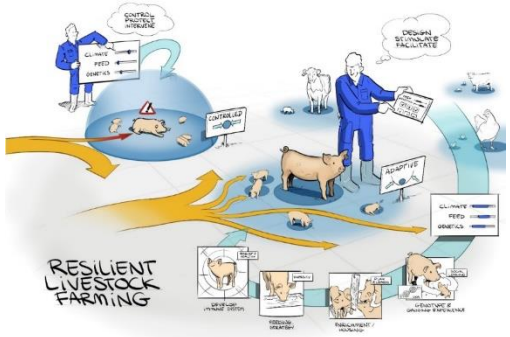
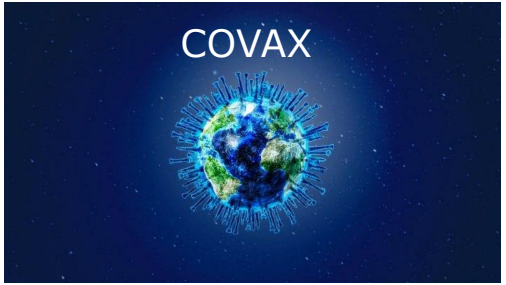
Prevent transfer through livestock: resilience by diversity, farming with care and rapid vaccination





CEPI



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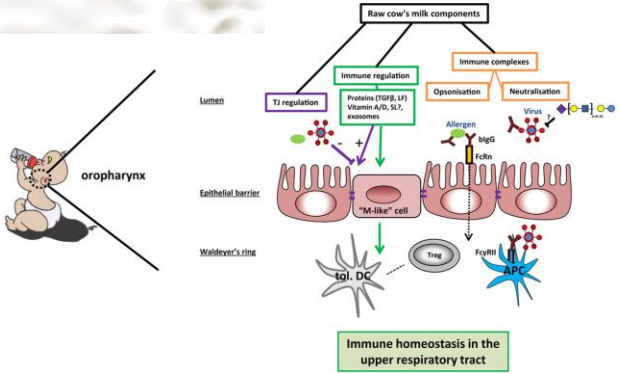
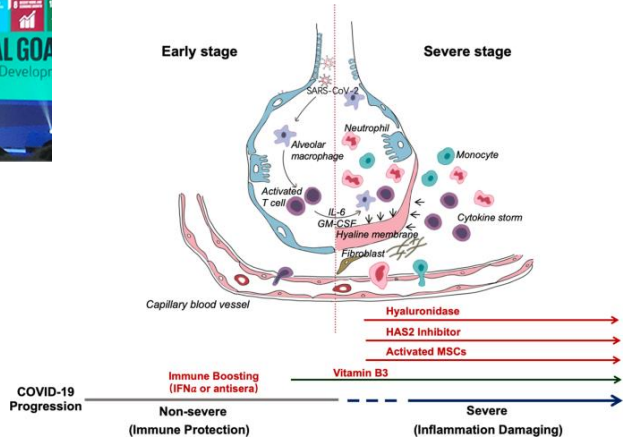
Unlock interventive capacity of livestock: antiviral immune modulation by functional dairy proteins





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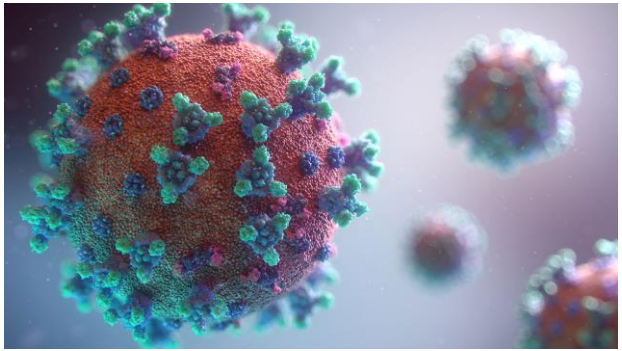

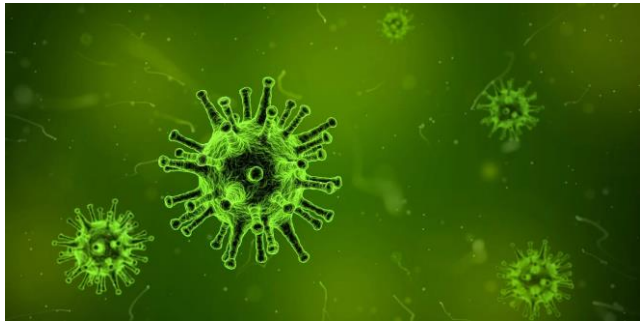

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