Enhancing the application of qualitative risk assessment to climate-driven changes in risk to animal health

Amber Parry, Verity Horigan (APHA), Clazien de Vos, Manon Swanenburg, Laura Tomassone, Laura Amato, Roberto Condoleo, Aya Zarea

Animal & Plant Health Agency

WOAH Collaborating Centre for **Risk Analysis & Modelling**

Objectives

To identify the role and relevance of environmental drivers in the occurrence of animal diseases and how climate change can affect these

Climate change: "Long-term shift in the Earth's average temperatures and weather patterns (Met Office, 2025)"

Driver: "External condition acting on a large scale which has the potential to directly or indirectly influence the (re)emergence of infectious diseases (Wentholt, 2012)"

1) Development

- Identify list of environmental drivers
- Map risk pathways to assess how drivers affect animal health risk (see figure 1)
- Develop list of criteria based on drivers against which to assess diseases
- Weights for criteria to determine ranges Uncertainty scores

2) Application

1) **Baseline:** Score criteria under present climate
2) **Climate scenarios:** Score criteria under expected climate change scenario*
3) **Weightings:** Independent group of experts assess criteria weightings for case study diseases

*Example of a climate change scenario:
Current Climate (act as a baseline)
+1.5 °C (UK government climate change risk assessment aims to limit warming to 1.5 °C)
+2 °C (Paris commitment to warming is 2 °C)
+4 °C (This warming could occur with little to no interventions)

3) Evaluation

- Combine and evaluate outputs for both baseline and scenarios
- Sensitivity/scenario analysis different weighting scenarios
- Compare results with current surveillance for case study diseases
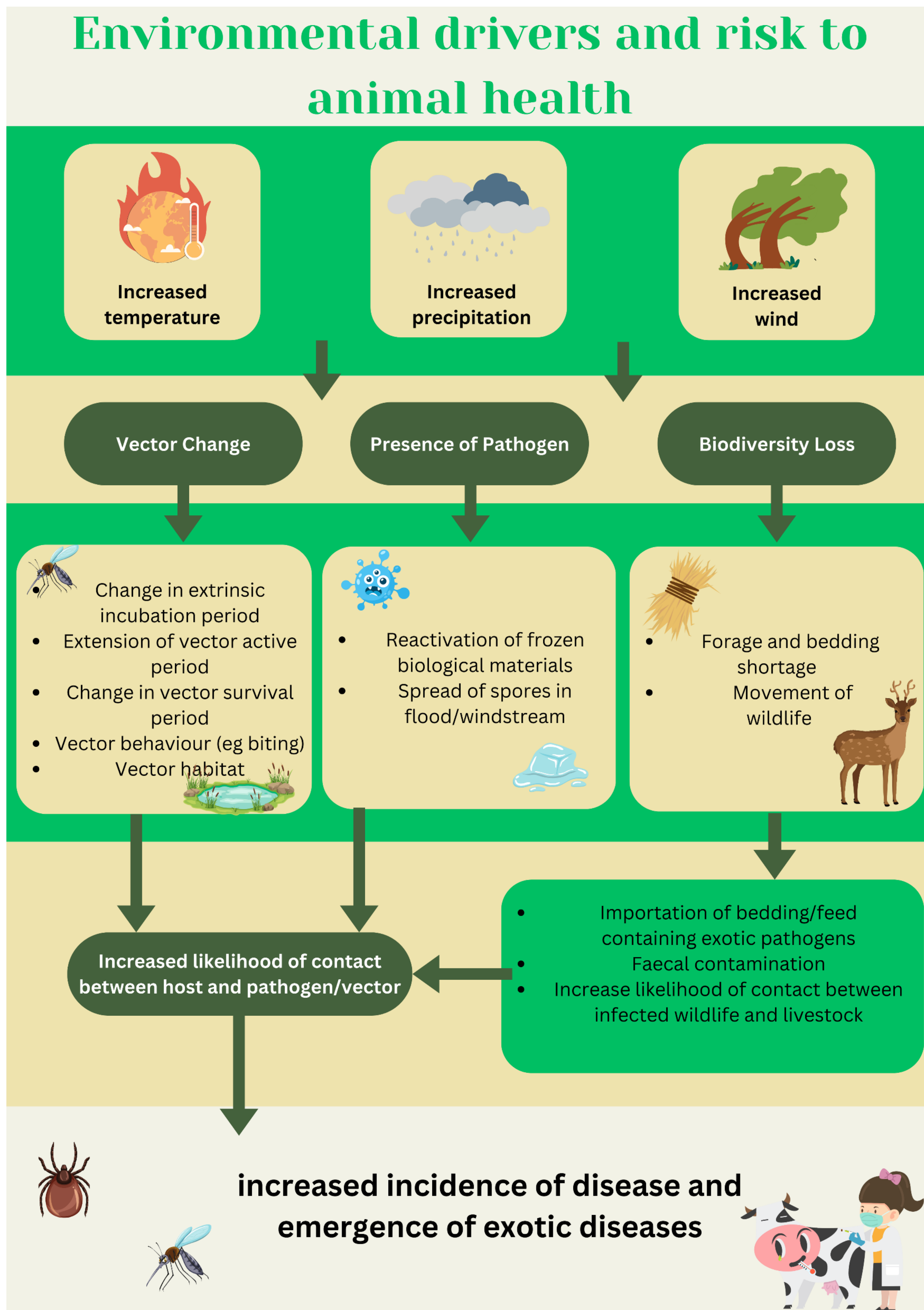
Mapping risk pathways

Figure 1. Mapping risk pathways to assess how environmental drivers affect animal health risk under climate change scenarios.

Outputs

Measurement of any difference in risk incorporating new dynamics of pathogen transmission as a result of climate change

Identification of specific drivers for enhanced early warning detection to ensure proportionate disease control through risk-based surveillance

References
Met Office (2025) *What is climate change?* Available at What is climate change? - Met Office (Accessed 5 March 2025)
M.T.A. Wentholt, S. Cardoen, H. Imberechts, X. Van Huffel, B.W. Ooms, L.J. Frewer (2012), Defining European preparedness and research needs regarding emerging infectious animal diseases: Results from a Delphi expert consultation, *Preventive Veterinary Medicine,* Volume 103, Issues 2–3, pp 81-92

EUP AH&W