



Royal Veterinary College  
University of London

# Health, Biodiversity and Development

LA BIODIVERSITÉ ET LE DÉVELOPPEMENT, UN HÉRITAGE GLOBAL

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# Key Arguments

1. Sustainable Development Goals are conflicting
2. Health, biodiversity & environment inextricably linked
3. Capacity for renewal of natural resource is being undermined with current political economy
4. International Narrative is contradictory to the fact
5. Environment and biodiversity degradation are a product of weak governance, & power concentration divorced from the effects.
6. Neoliberal economics is the key driver of environmental change
7. Health & disease metrics showing current biological “distress” can leverage behavioural & economic shifts
8. Solutions must start with a change in narrative

# Natural environment

## Infrastructure

7. Ensure access to affordable, reliable, sustainable, modern energy for all

8. Promote sustained, inclusive, and sustainable economic growth

## Wellbeing

- 1. End poverty in all its forms
- 3. Ensure healthy lives and promote wellbeing
- 4. Ensure inclusive and equitable education
- 5. Achieve gender equality and empower women and girls
- 10. Reduce inequality within and among countries
- 16. Promote peaceful and inclusive societies for sustainable development

11. Make cities and human settlements inclusive, safe, resilient, and sustainable

15. Protect, restore, and promote sustainable use of terrestrial ecosystems

13. Take urgent action to combat climate change and its impacts

6. Ensure availability and sustainable management of water and sanitation for all

12. Ensure sustainable consumption and production patterns

9. Build resilient infrastructure; promote inclusive sustainable industrialisation

2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

14. Conserve and sustainably use oceans, seas, and marine resources

17. Strengthen the means of implementation and revitalise the global partnership for sustainable development

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# Biodiversity and human health

**Health** "is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

**Biological diversity** (biodiversity) is "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."

**Biodiversity underpins ecosystem** functioning and the provision of goods and services that are essential to human health and well being.

The links between **biodiversity and health** are manifested at various spatial and temporal scales. Biodiversity and human health, and the respective policies and activities, are interlinked in various ways.



**Direct drivers** of biodiversity loss include land-use change, habitat loss, over-exploitation, pollution, invasive species and climate change. Many of these drivers affect human health directly and through their impacts on biodiversity.

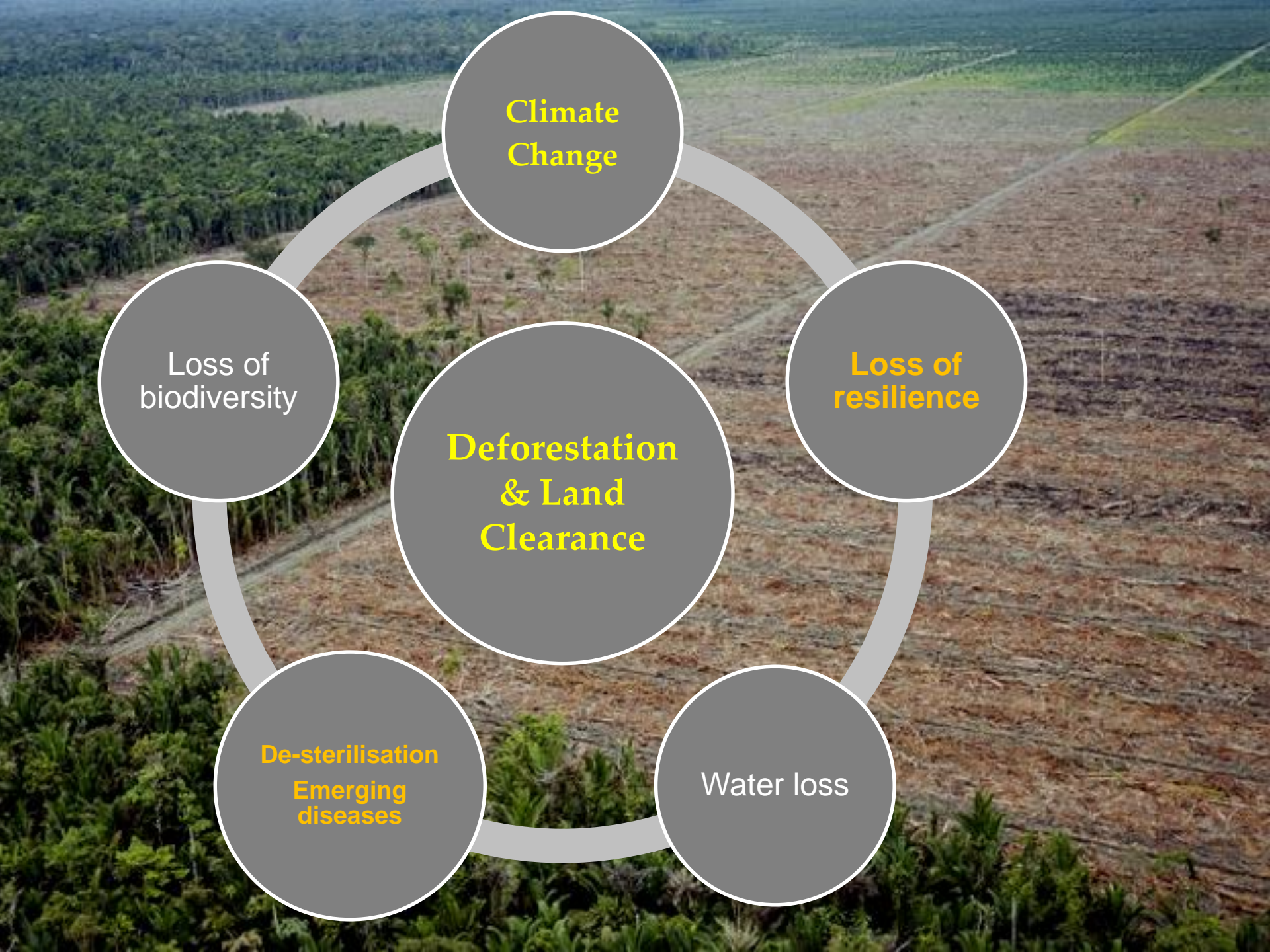
**Women and men** have different roles in the conservation and use of biodiversity and varying health impacts.

**Human population** health is determined, to a large extent, by social, economic and environmental factors.

**The social and natural** sciences are important contributors to biodiversity and health research and policy. Integrative approaches such as the Ecosystem Approach, Eco-health and One Health unite different fields and require the development of mutual understanding and cooperation across disciplines.

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**Climate  
Change**

Loss of  
biodiversity

**Loss of  
resilience**

**Deforestation  
& Land  
Clearance**

**De-sterilisation  
Emerging  
diseases**

Water loss

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Globalized Croplands

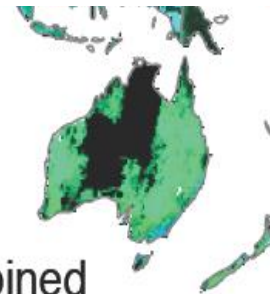
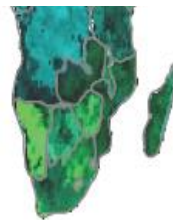
Globalized Pasturelands

Globalized Forests



40% EU-28 FOOD IMPORTED

Global Footprint - more than half of the Swiss environmental impacts occur abroad (Jungbluth et al. 2011; Frischknecht et al. 2014).



Globalized Landscapes, Combined

al Goods

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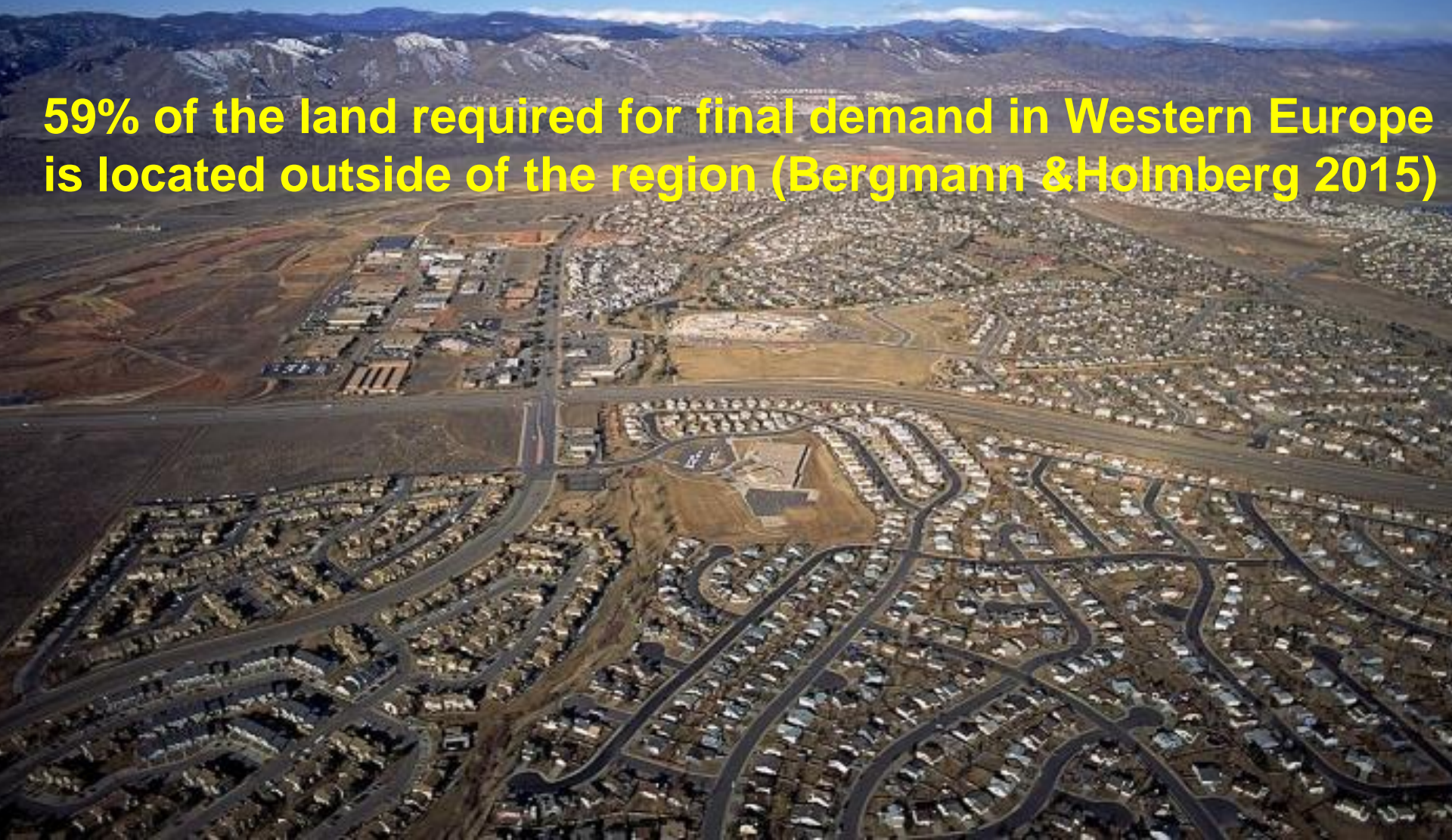
while emb within  
Manufactured Goods  
and Services

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More than 25% of U.S. land development has been in just the last 15 years

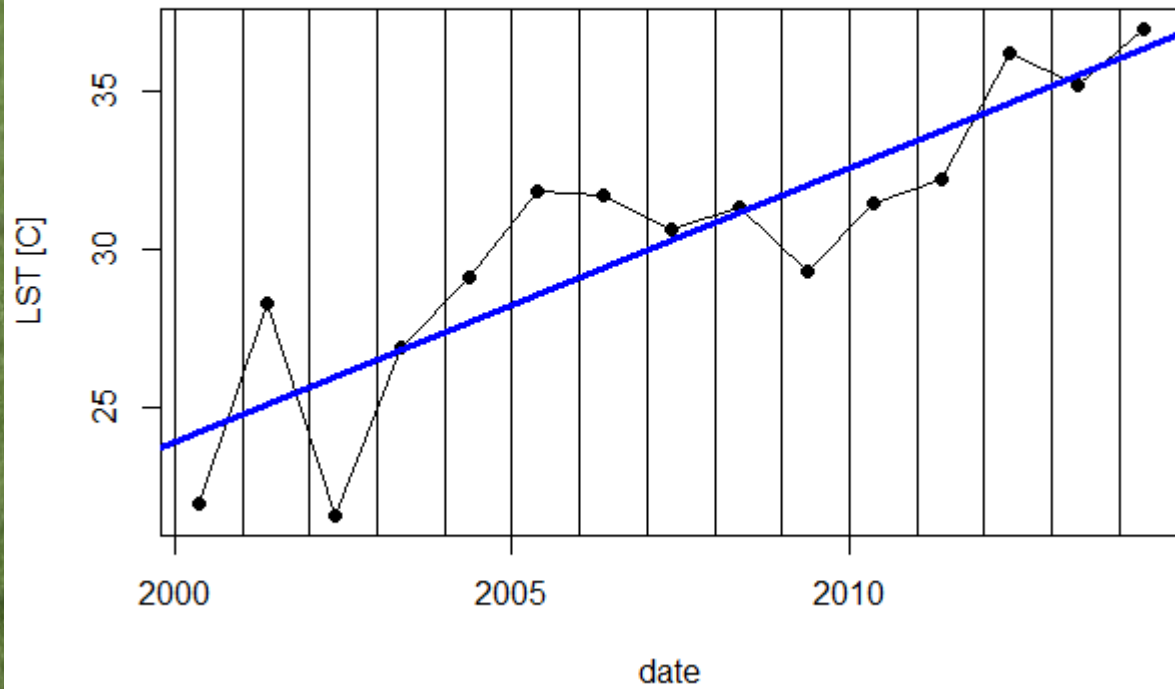
**59% of the land required for final demand in Western Europe is located outside of the region (Bergmann & Holmberg 2015)**

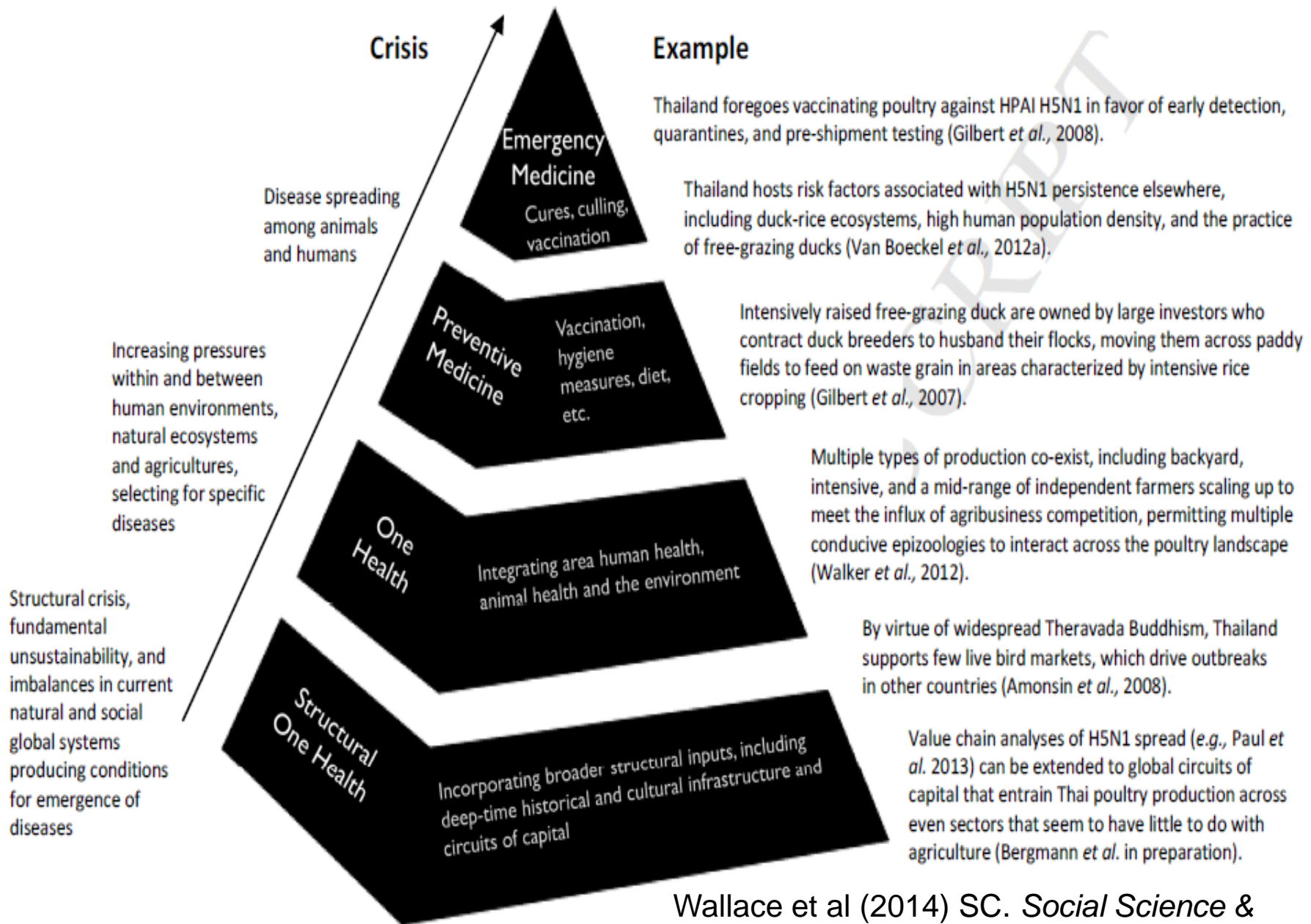


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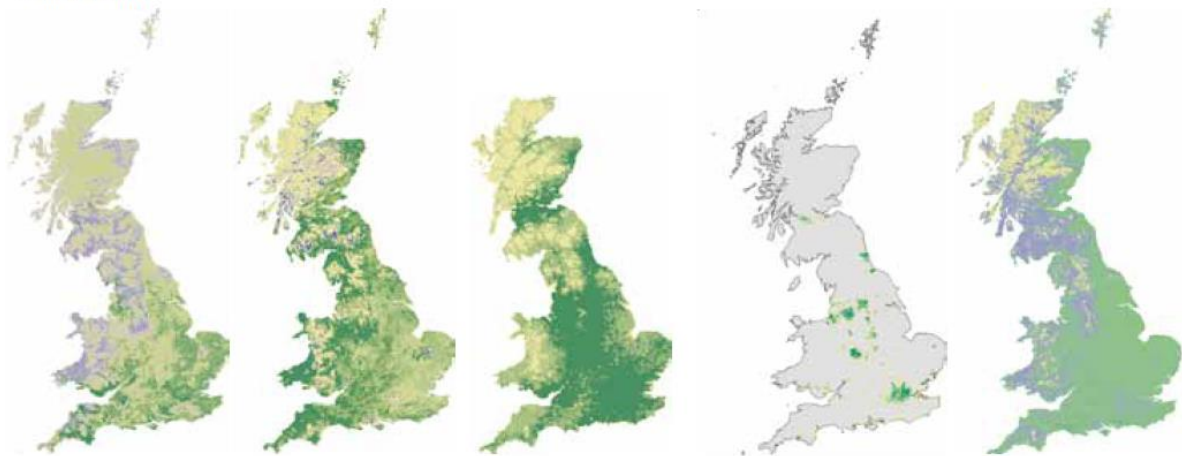
**Median temperatures at calving locations (May)**





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Change in agricultural values (FGM £/ha/yr)

- Gain > 200
- Gain 50 to 200
- Gain < 50
- No change
- Loss < 50
- Loss 50 to 200
- Loss > 200

Change in GHG emission values (£/ha/yr)

- > 60
- 41 to 60
- 21 to 40
- 1 to 20
- 0 to -19
- 20 to -39
- 40 to -59

Change in recreation value (£'000/5km cell/yr)

- Gain > 1000
- Gain 500 to 1000
- Gain 100 to 500
- Gain 10 to 100
- Loss 10 to Gain 10
- Loss 10 to 100
- Loss 100 to 500
- Loss 500 to 1000
- Loss > 1000

Change in urban greenspace values (£/household/yr)

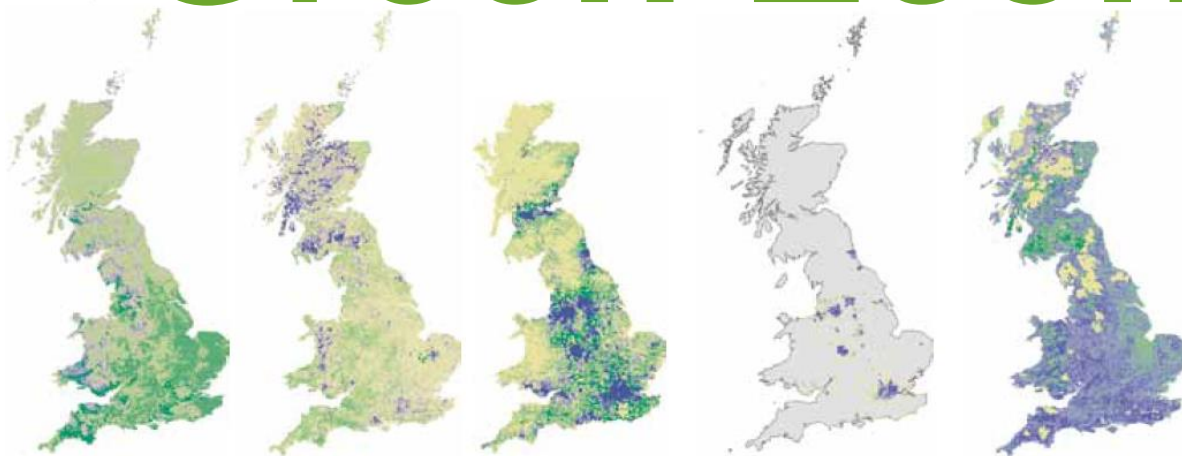
- Gain > £400
- Gain £200 to £400
- Gain £100 to £199
- Gain £50 to £99
- Gain £49 to Loss £50
- Loss £50 to £99
- Loss £100 to £200
- Loss > £200

Biodiversity index: Change in general bird diversity (%)

- > 1.5%
- 0%
- < -1.5%

# Green Economy

World Markets



## UK National Ecosystems Assessment 2011

Figure 22 Spatial distribution of changes from the baseline in five ecosystem service related goods (agricultural production (FGM: Farm Gross Margin); greenhouse gas (GHG) emissions; recreation; urban greenspace; biodiversity) under the *Nature@Work* scenario (upper row) and the *World Markets* scenario





Foley et al 2011  
Hutchison et al., 2007  
Wallace & Kock 2012

Thank you for listening

And to CEBios and Maarten  
Vanhove for inviting me.

