

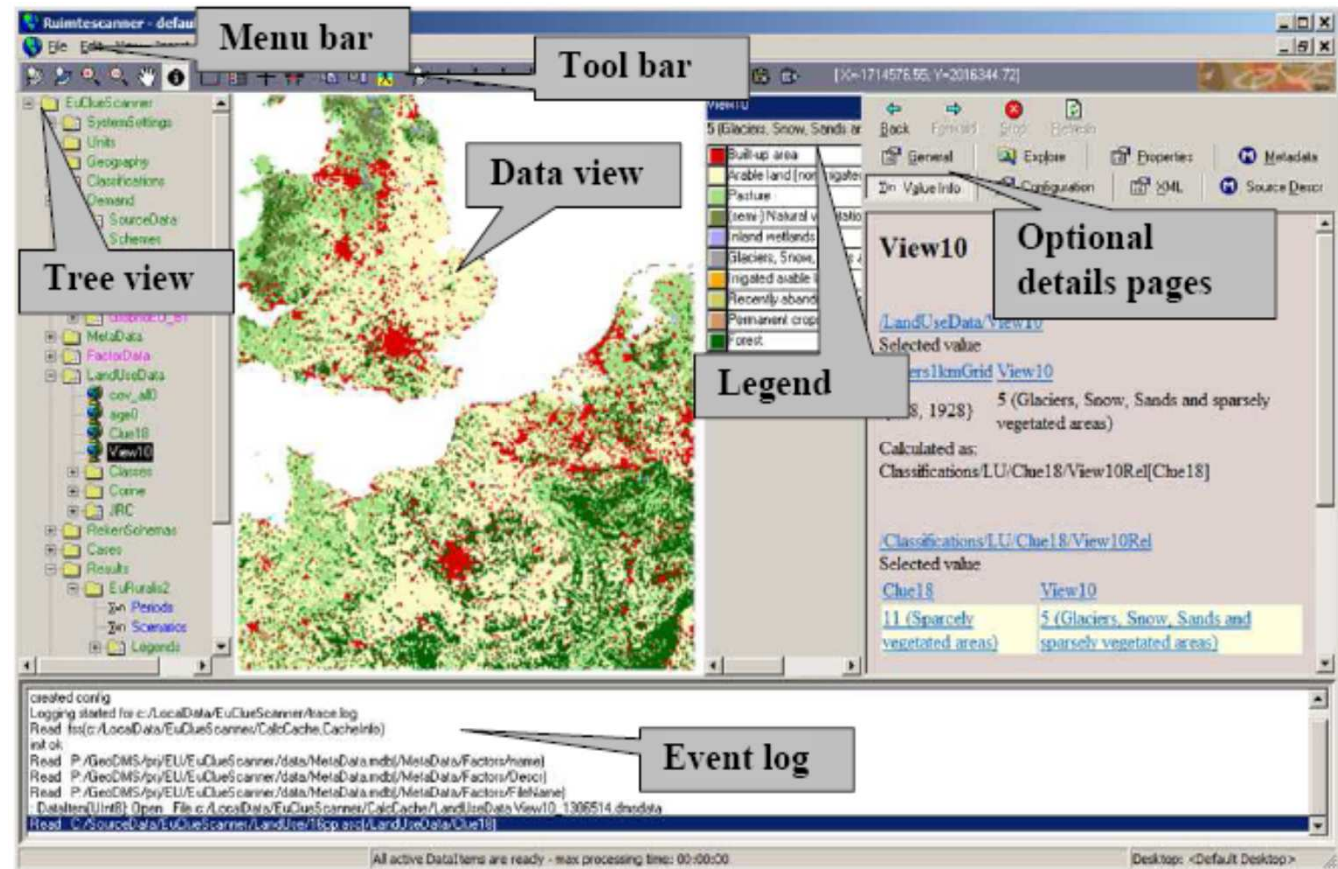
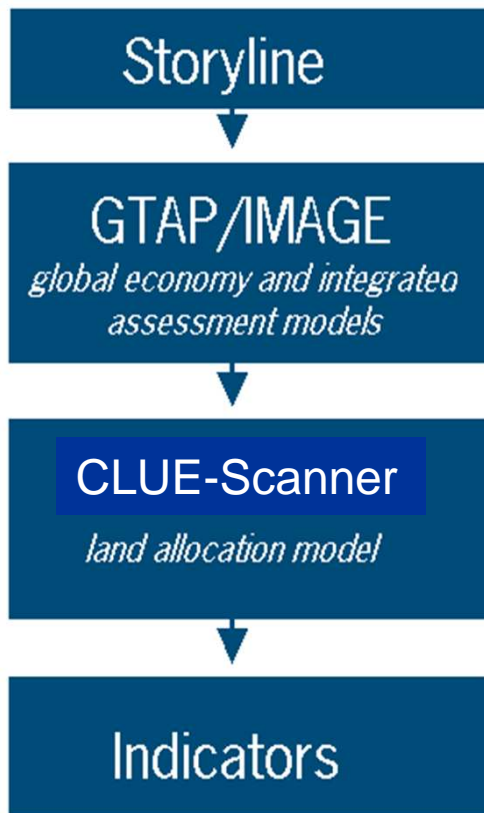


Linking global and local dimensions to analyze competing claims for land use

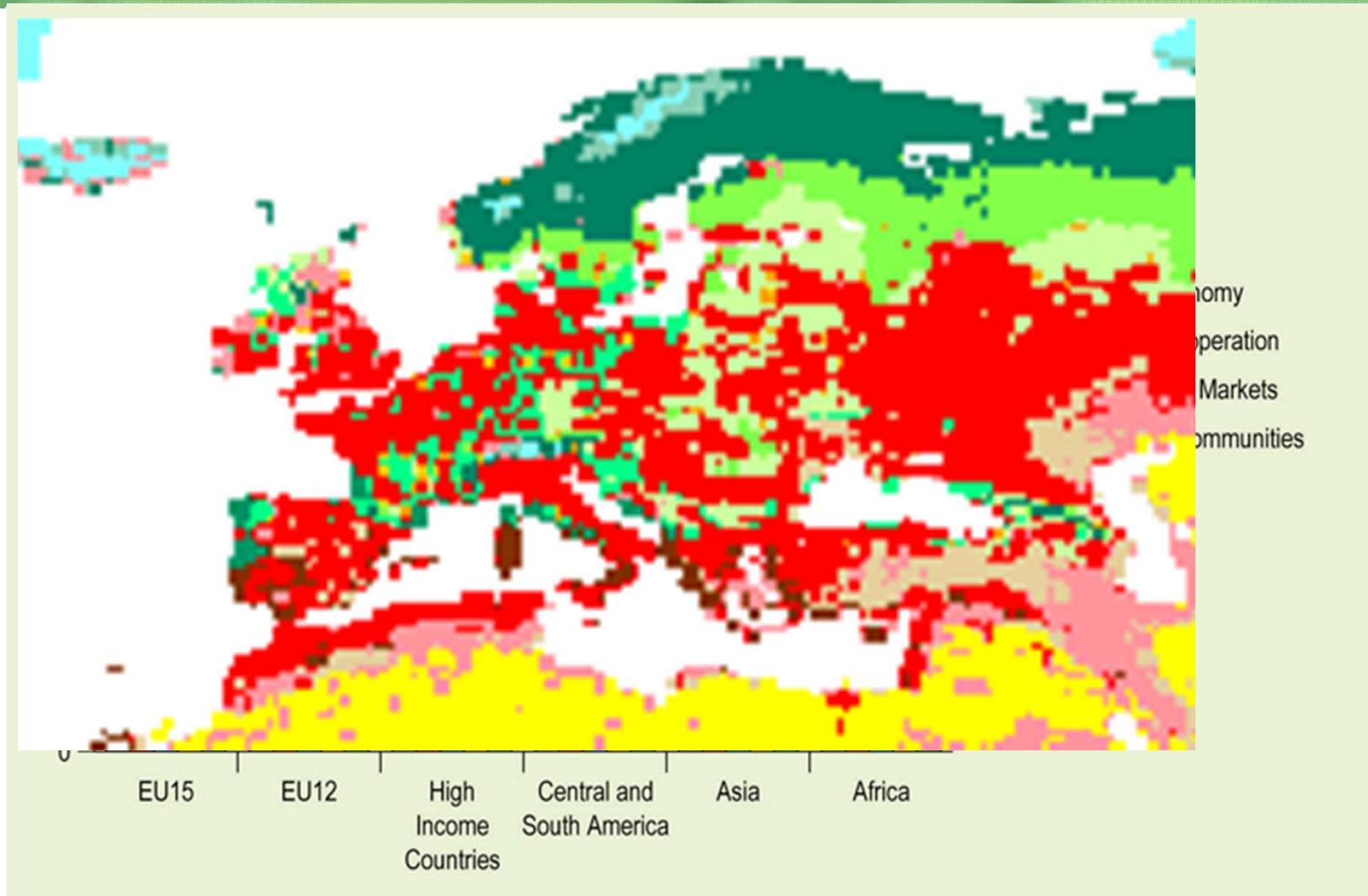
Peter Verburg

Modelling...a multi-scale, multi-model approach

Global models → Regional models → Indicator models
 → Ecosystem services

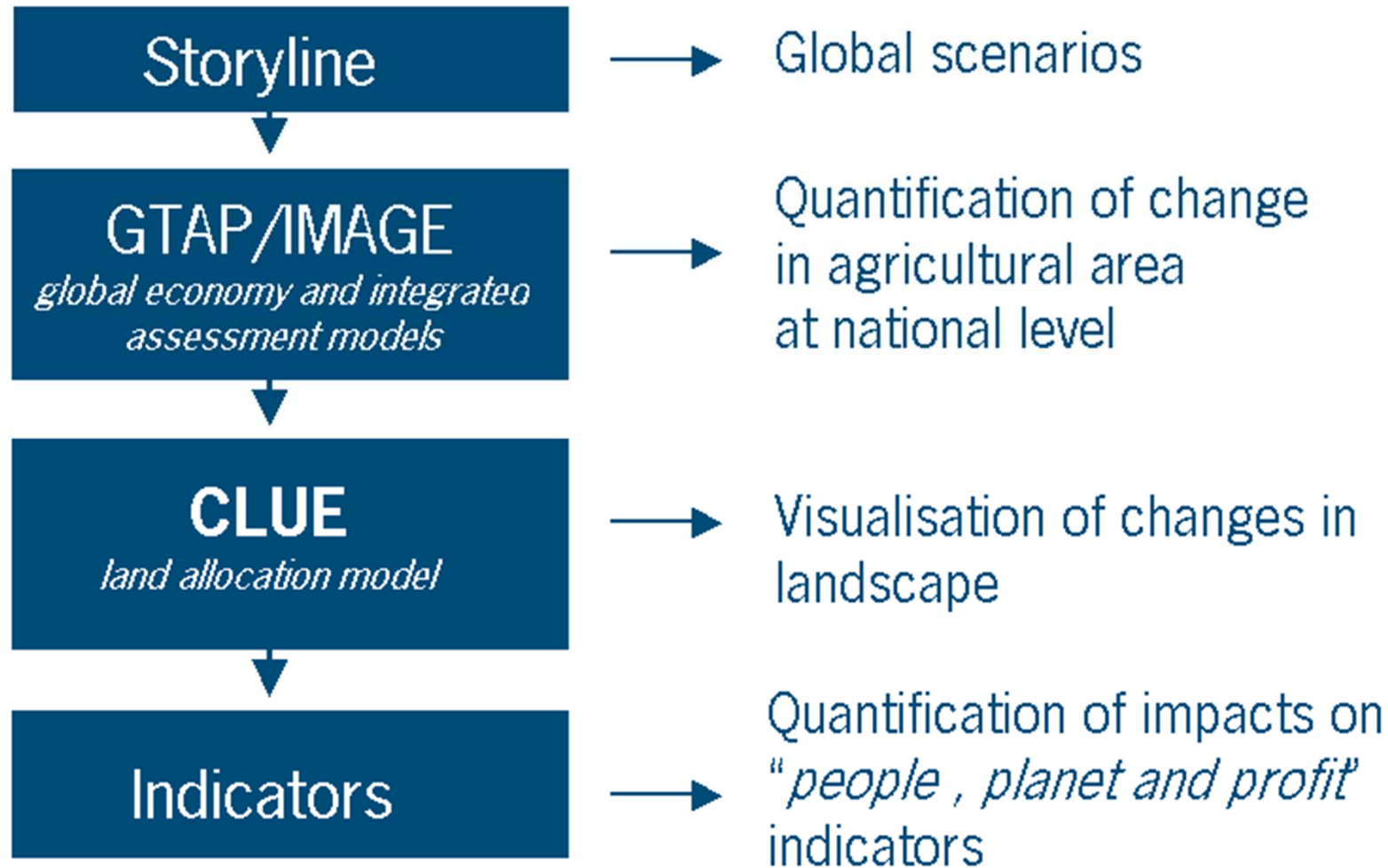


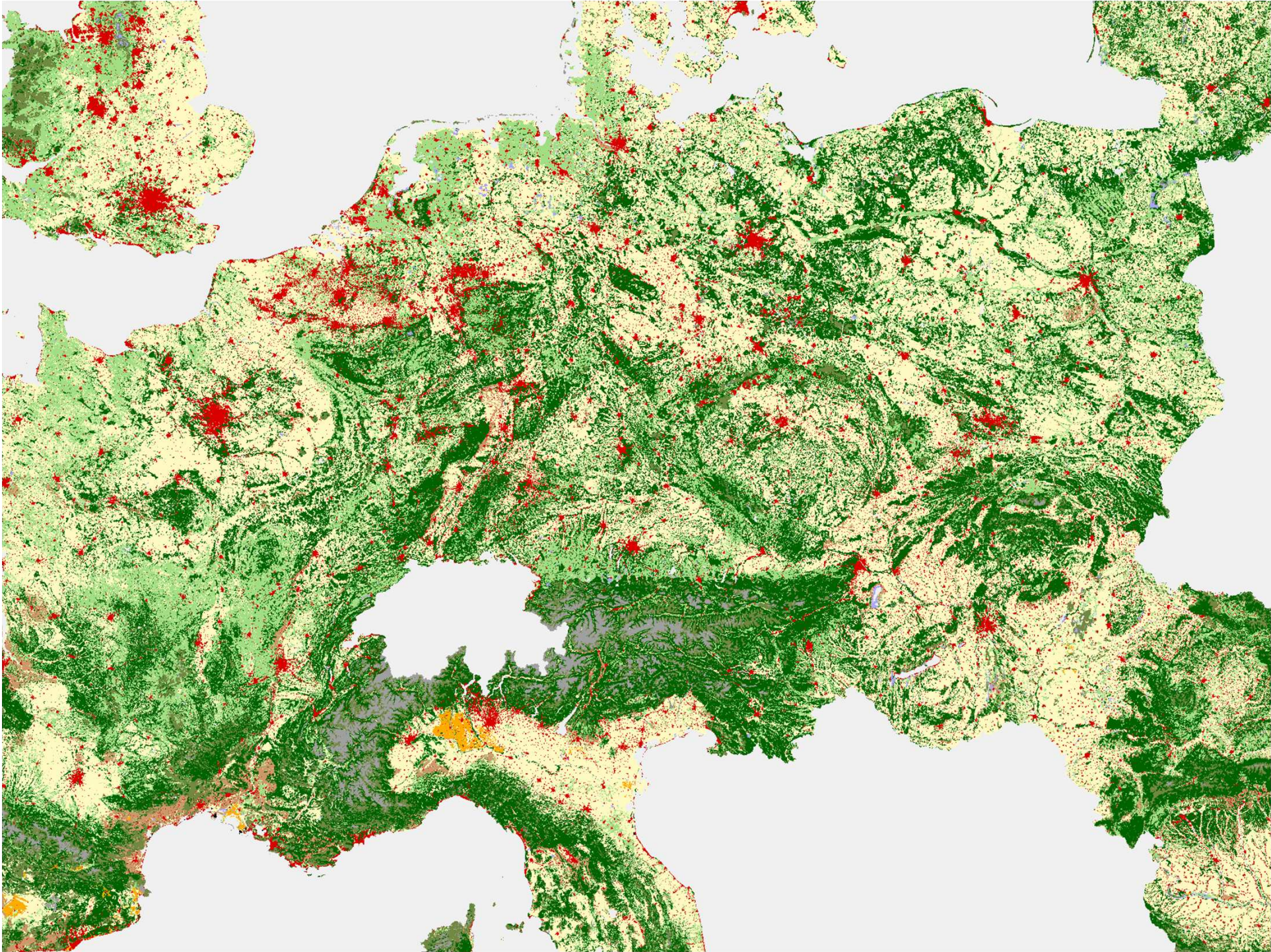
Global model results

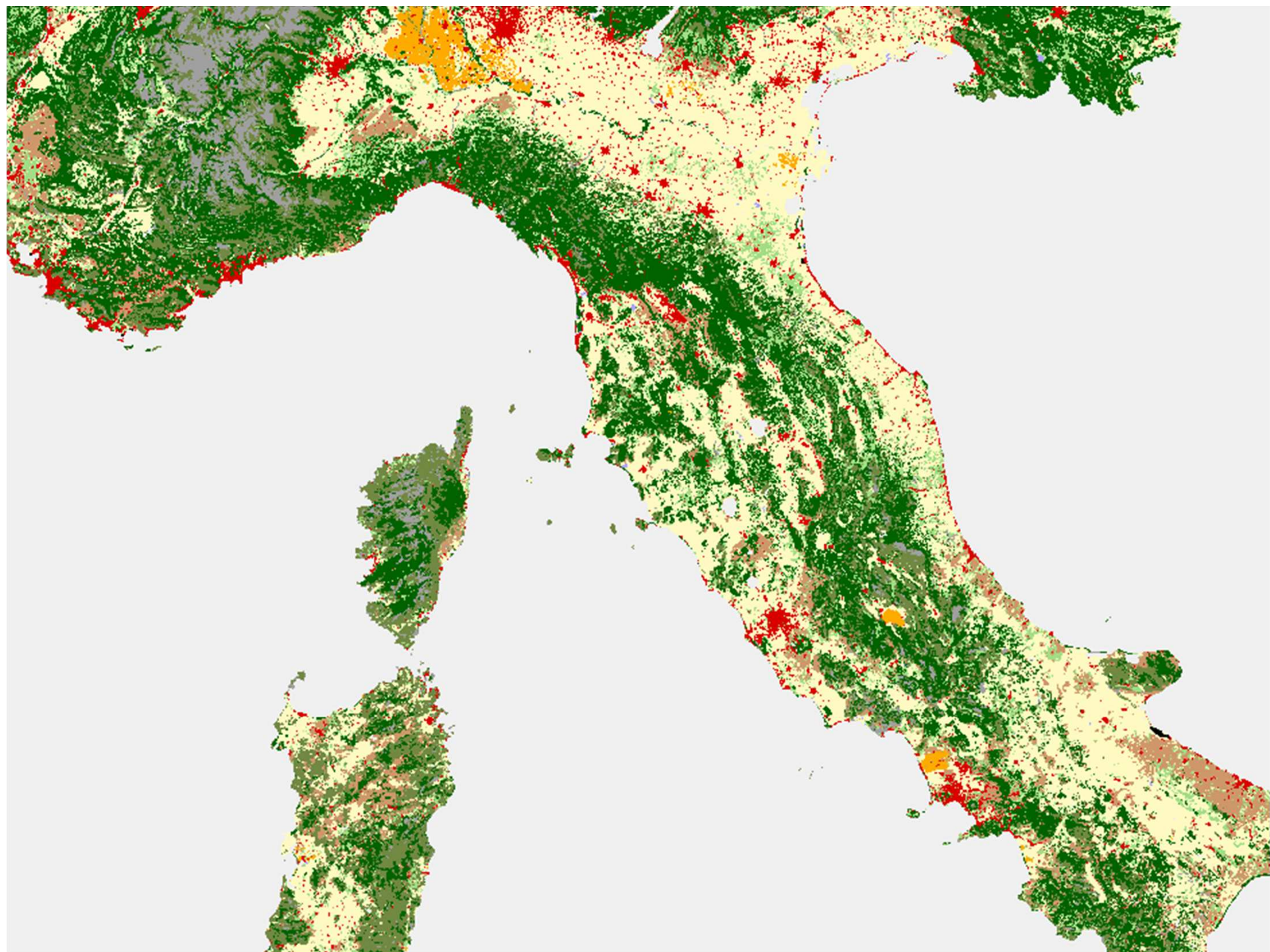


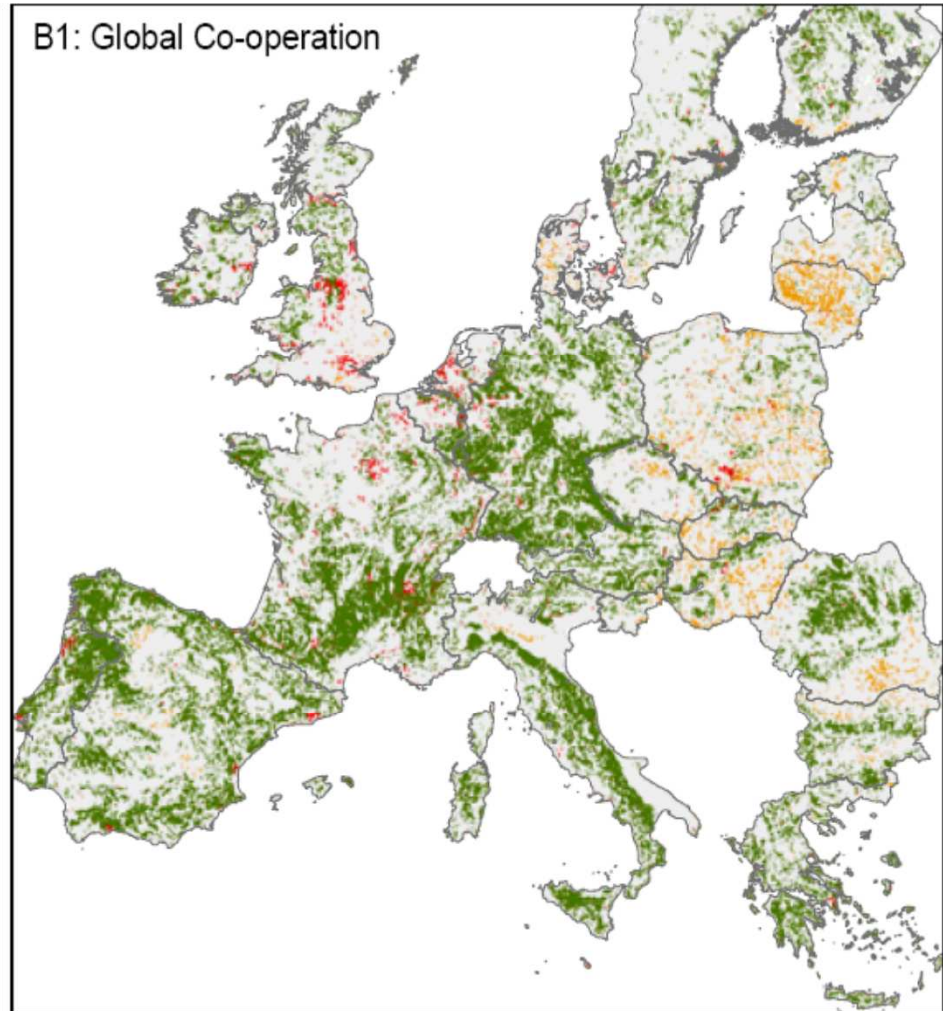
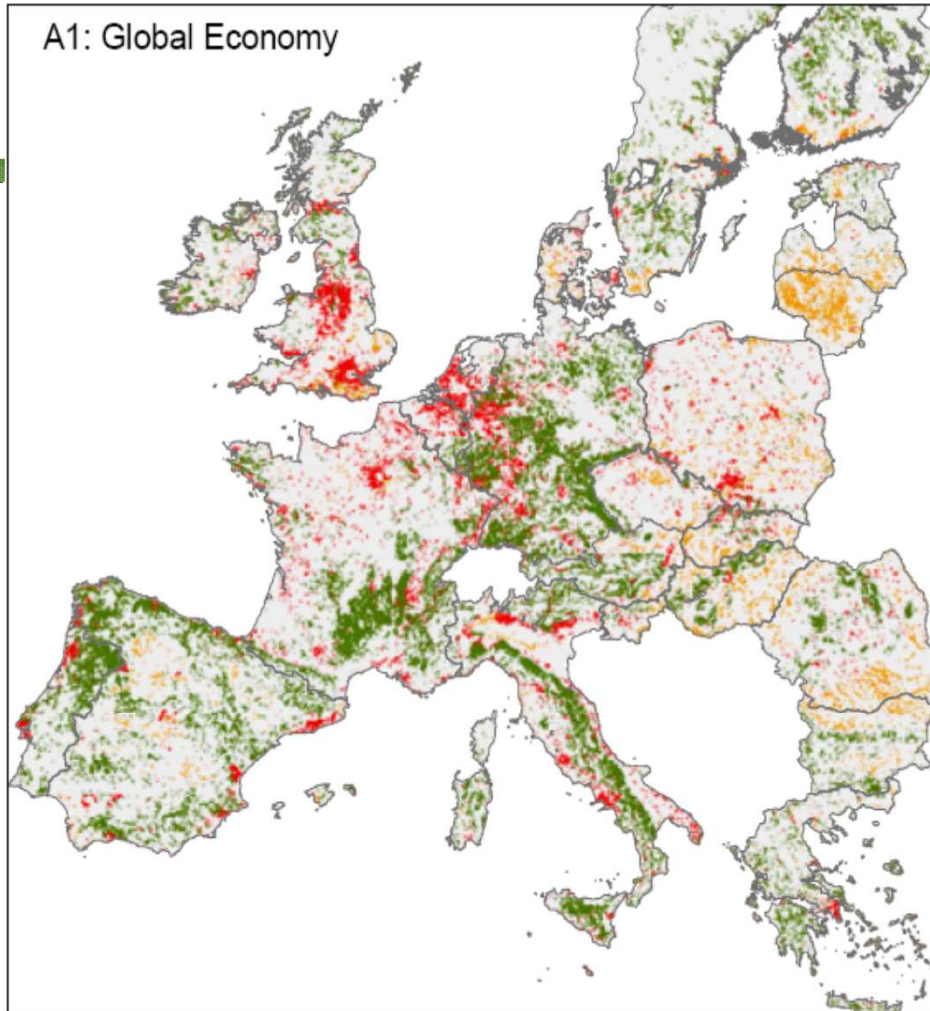
Eickhout and Prins (ed.) 2008

Methodology





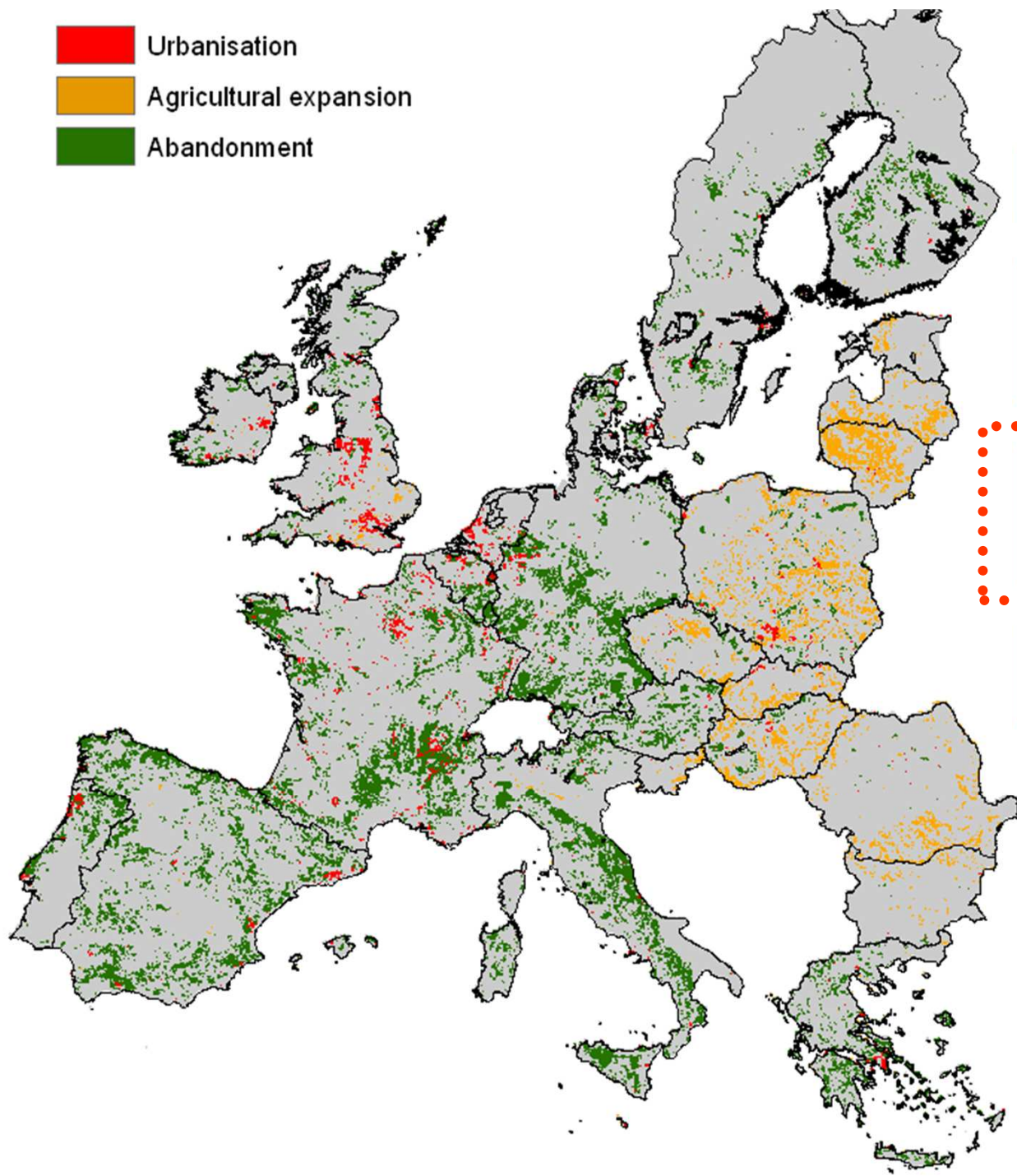




Legend

- Stabile
- Abandonment
- Agricultural expansion
- Urbanisation
- Urbanisation and abandonment
- Urbanisation and agricultural expansion

- Urbanisation
- Agricultural expansion
- Abandonment



Storyline

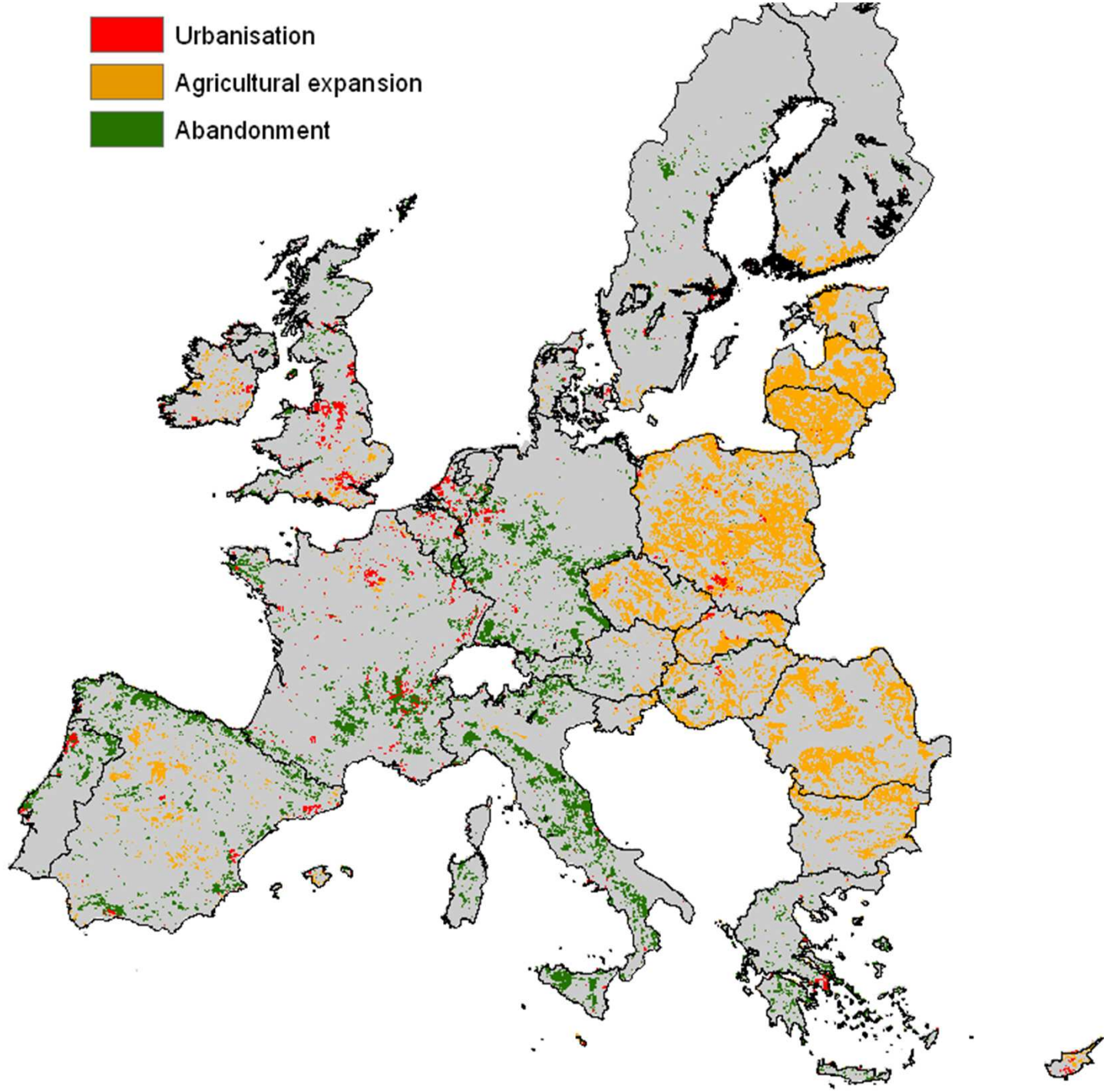
GTAP/IMAGE
global economy and integrated assessment models

CLUE
land allocation model

Indicators

Referer
(2000-2)

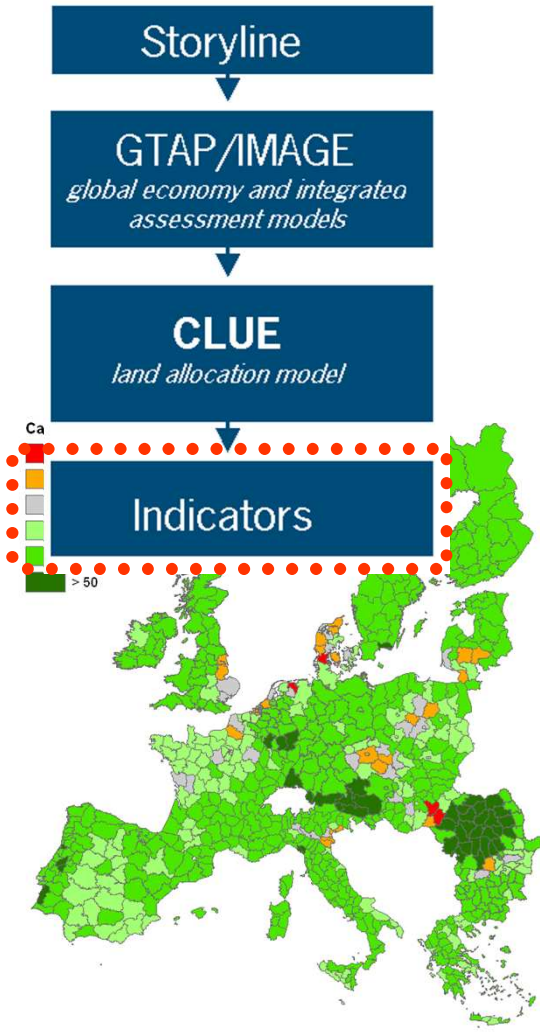
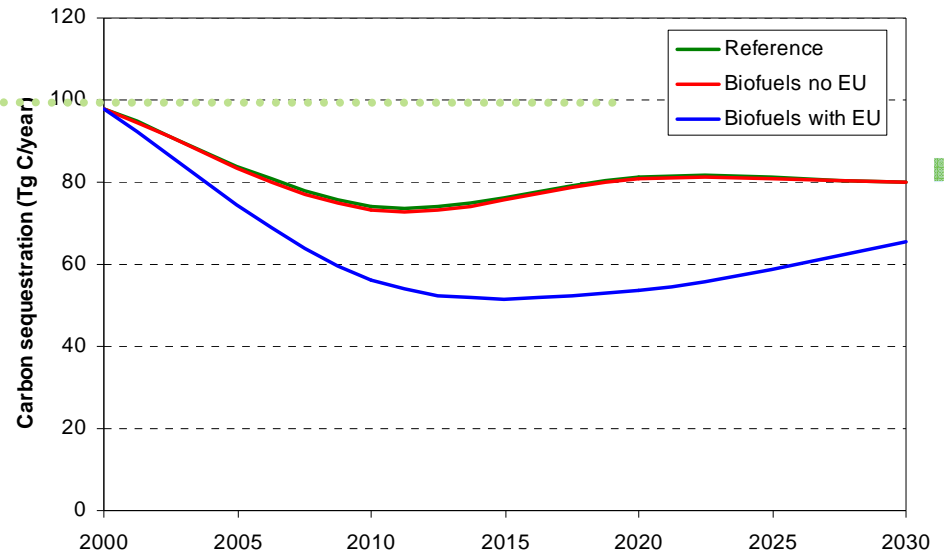




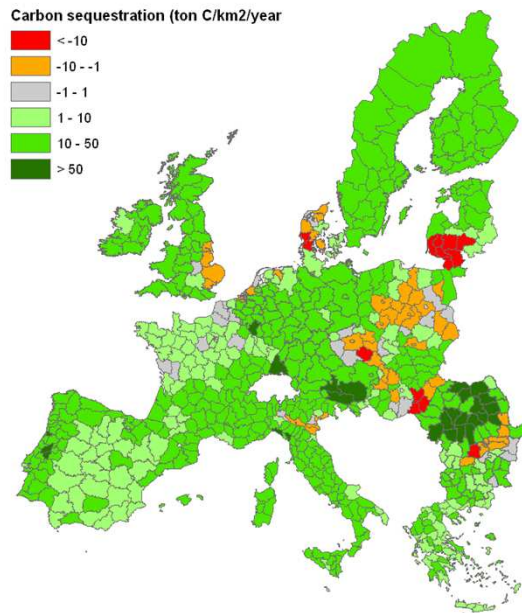
Global and European directives (2000-2030)

Carbon sequestration

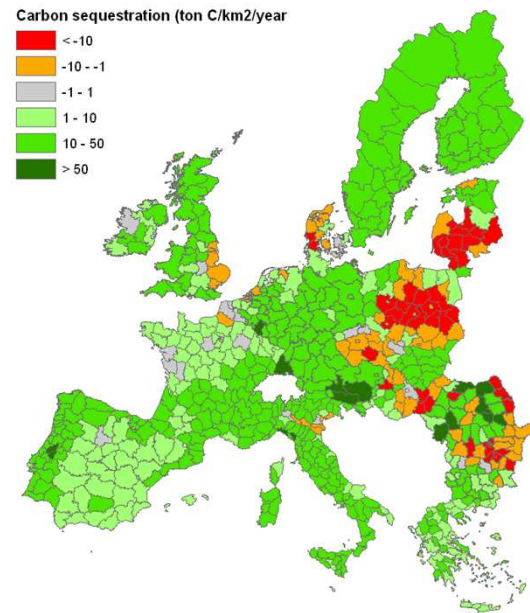
Current
C-sequestration
LULUFC



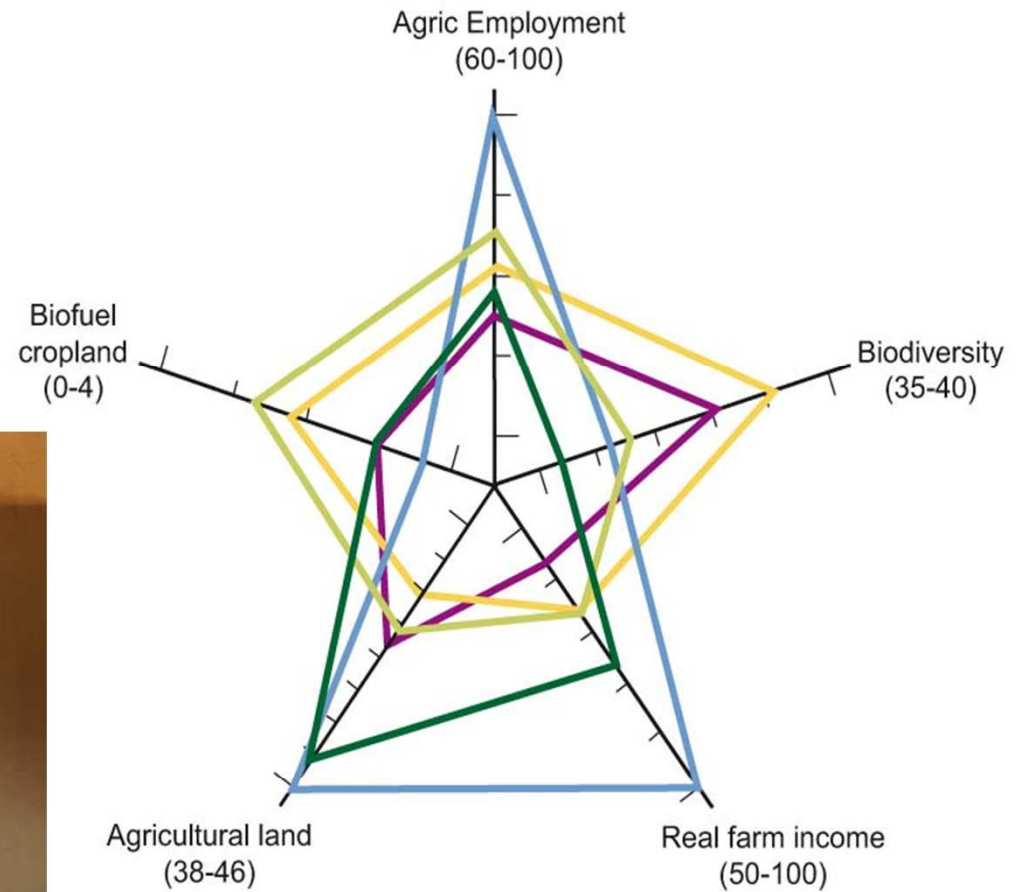
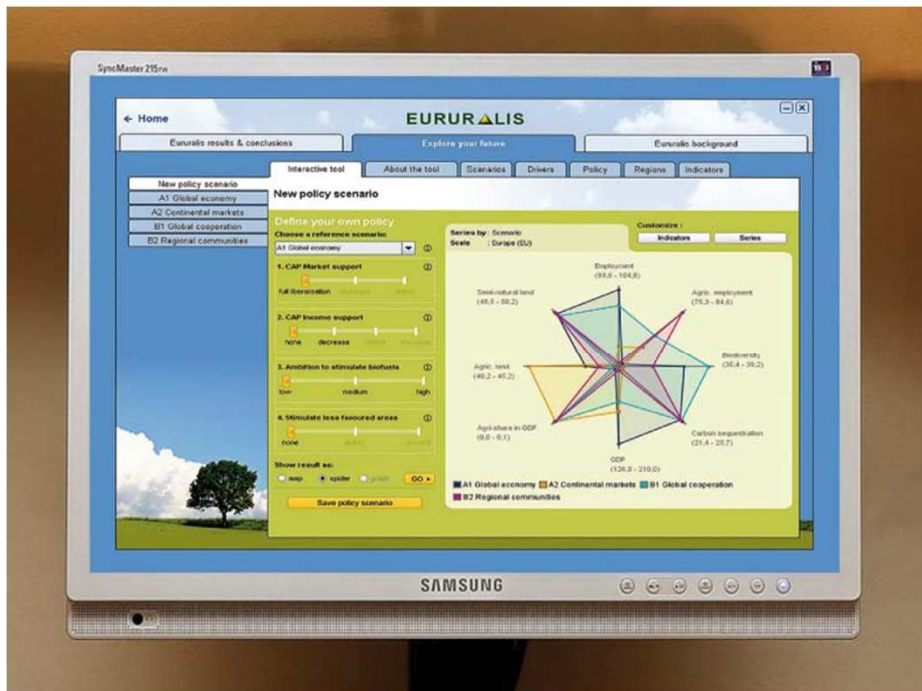
2030 Reference



2030 Biofuel policies



Trade-off analysis



- 2000
- Global Economy
- Continental Markets
- Global Co-operation
- Regional Communities

Spatial policy areas

Policy relevant areas

Natura 2000 areas currently cropped*

HNV farmland currently cropped

LFA areas currently cropped

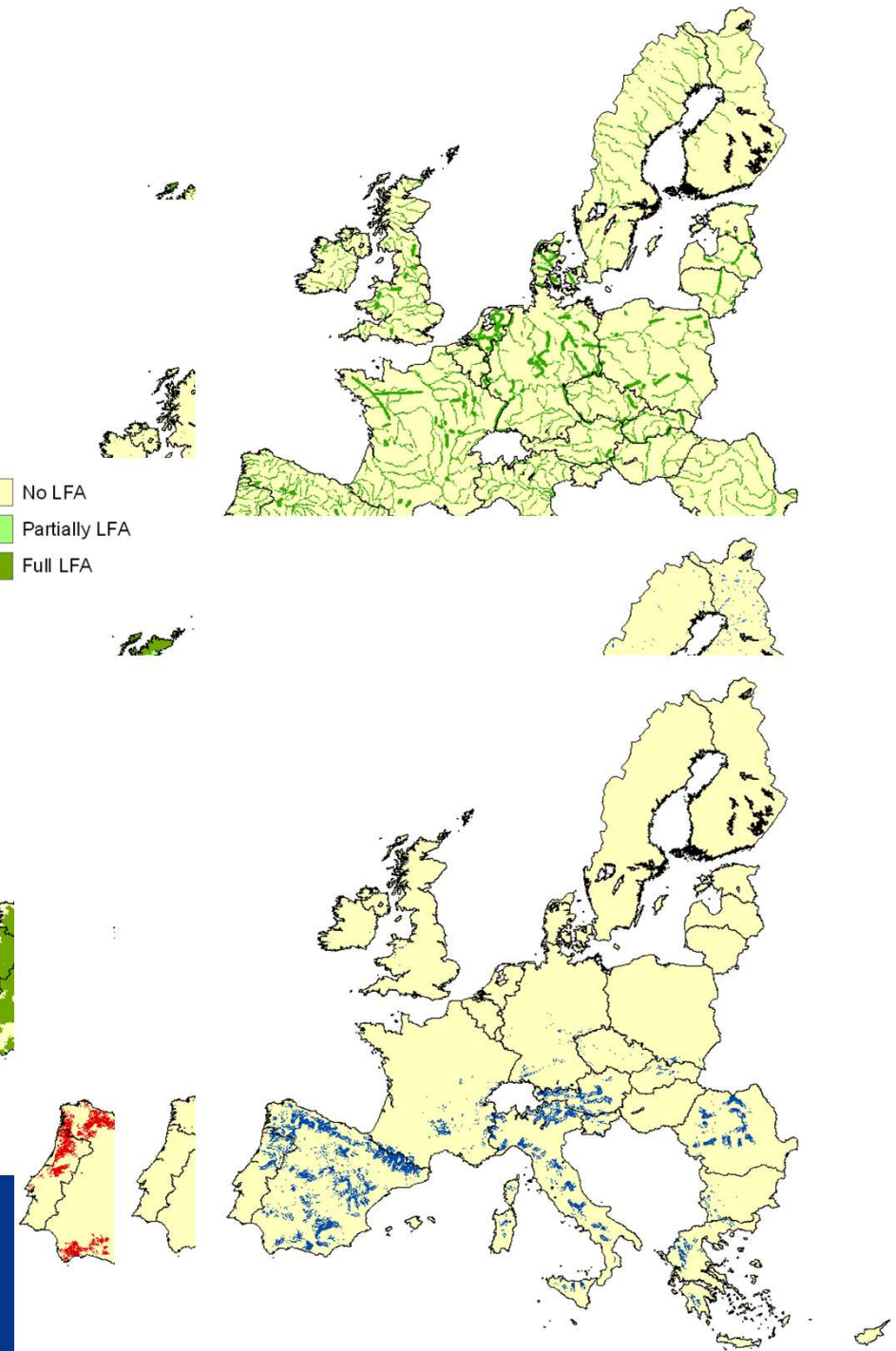
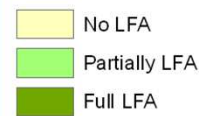
Erosion sensitive locations

Ecological corridor areas

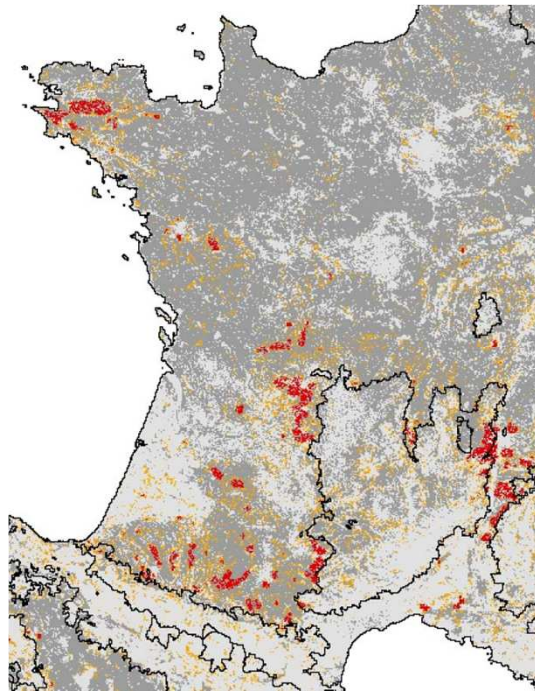
Peatland areas

River flood prone areas

Upstream areas



LFA compensation effect on land abandonment



1. CAP Market support ⓘ

full liberalisation | decrease | stable

2. CAP Income support ⓘ

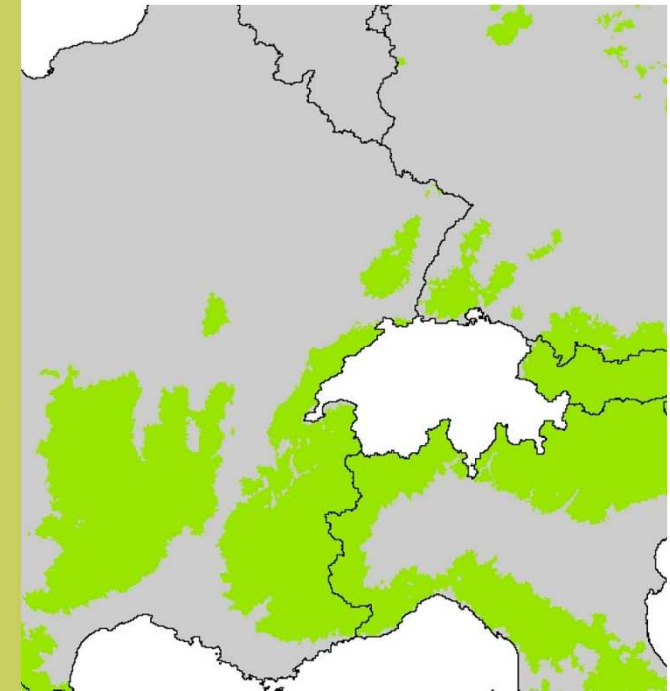
none | decrease | stable | increase

3. Ambition to stimulate biofuels ⓘ

low | medium | high

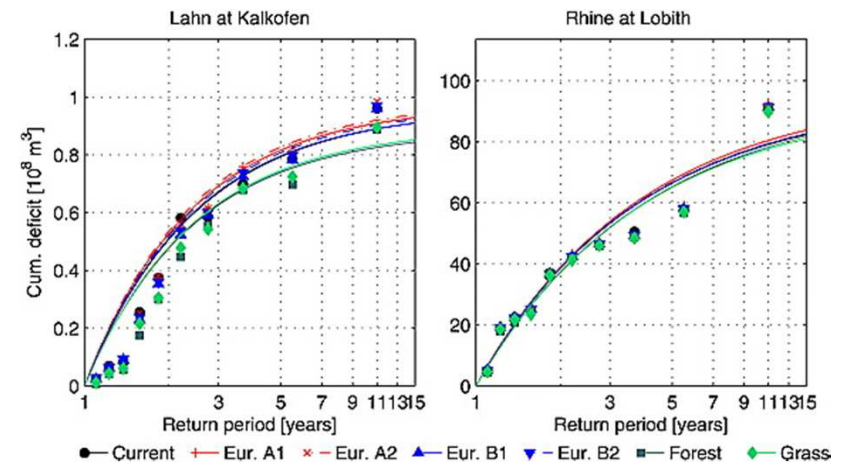
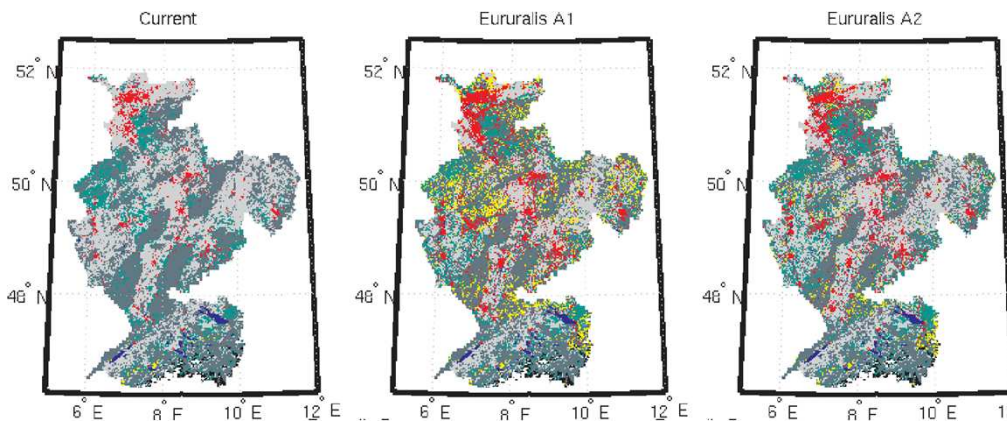
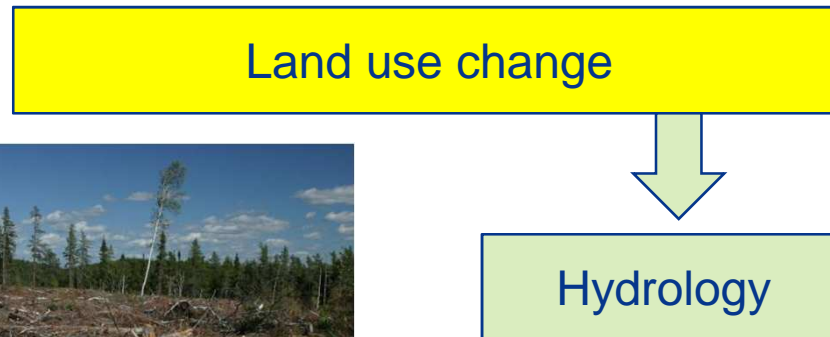
4. Stimulate less favoured areas ⓘ

none | limited | current



areas
LFA areas
LFA areas

Role of land use change in climate change



Role of land use in environmental char

Land use change

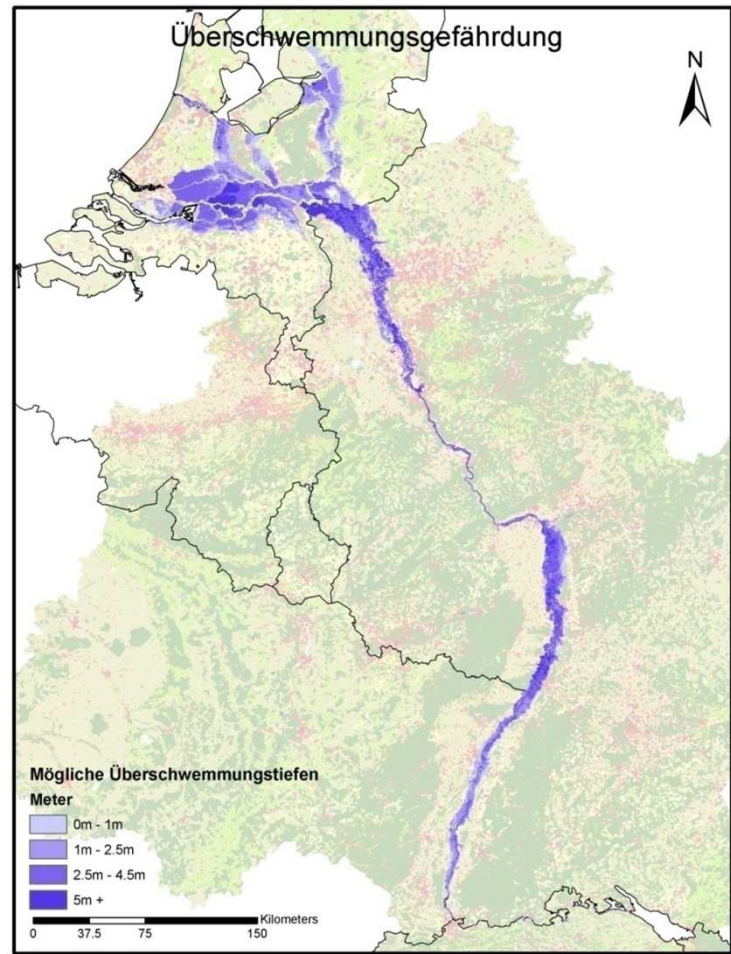
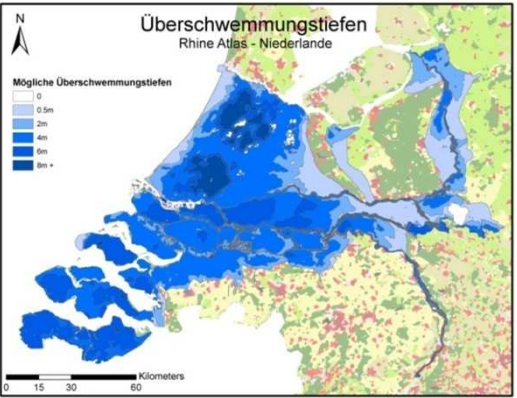
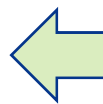


Hydrology

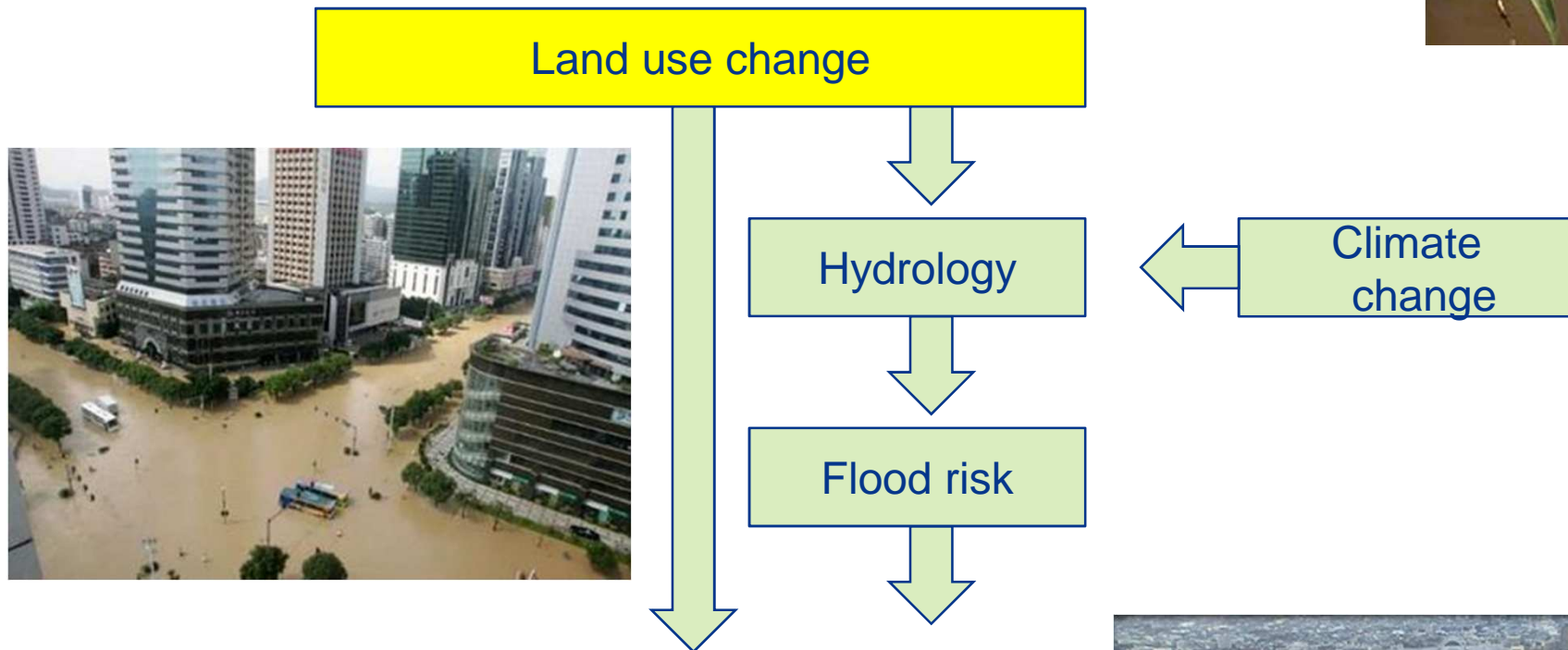


Flood risk

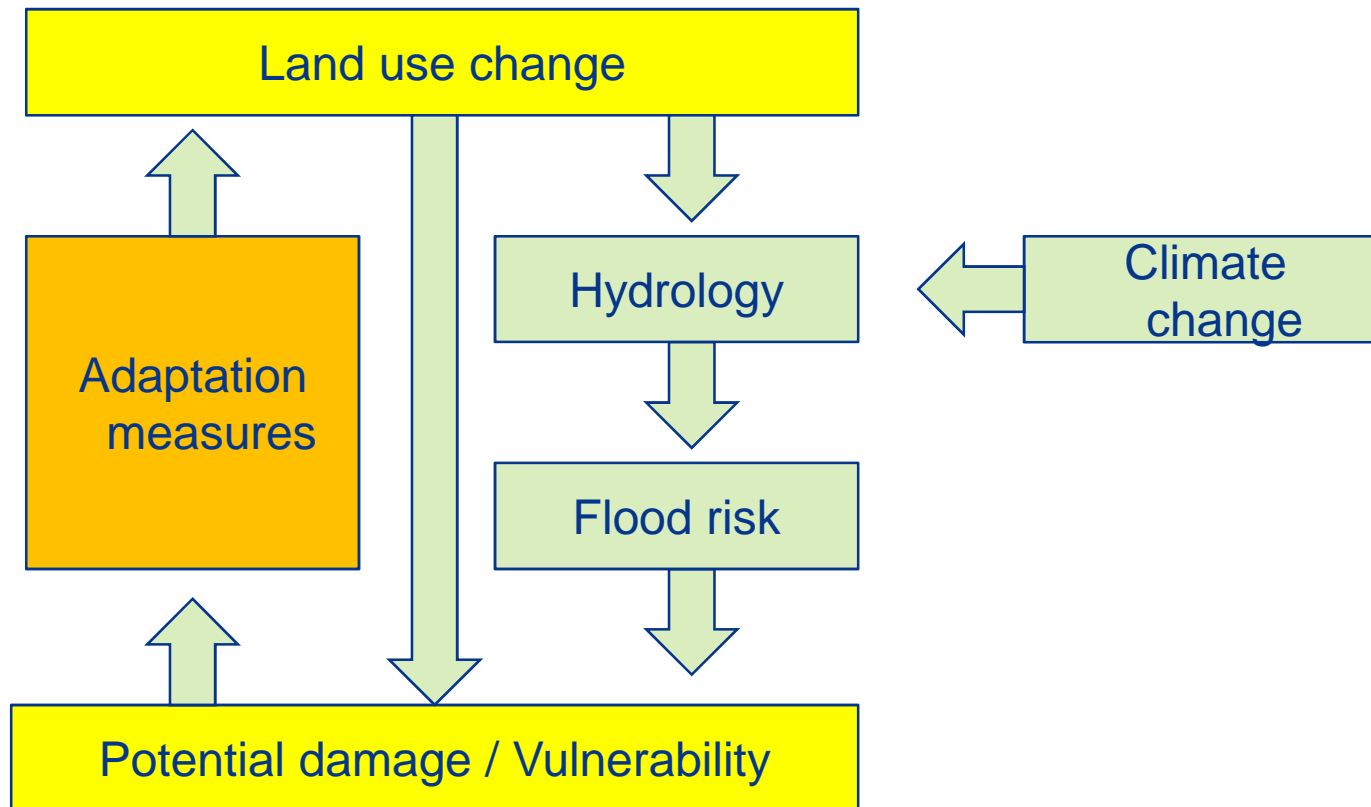
Climate change



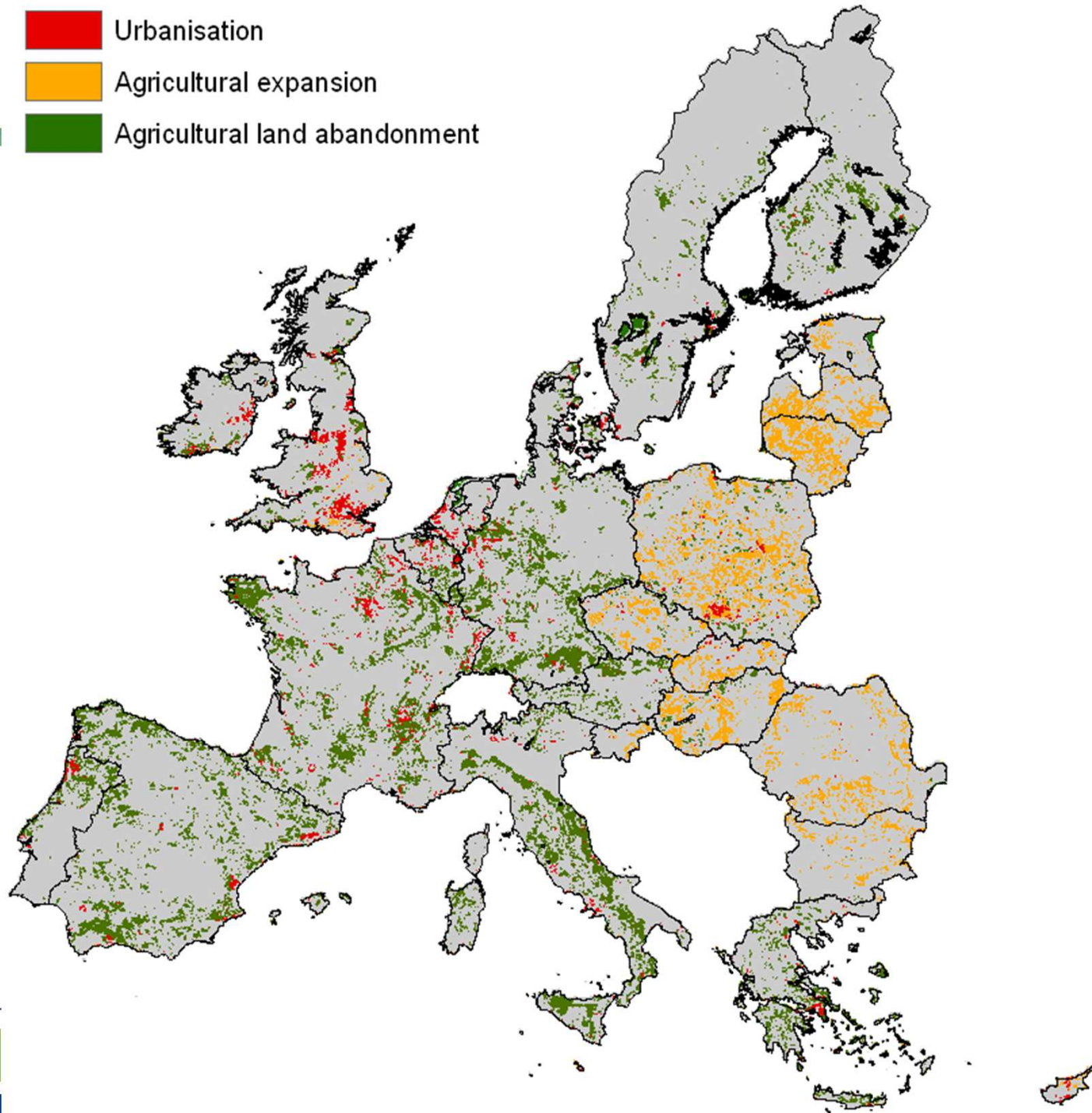
Role of land use in environmental change



Role of land use in environmental change



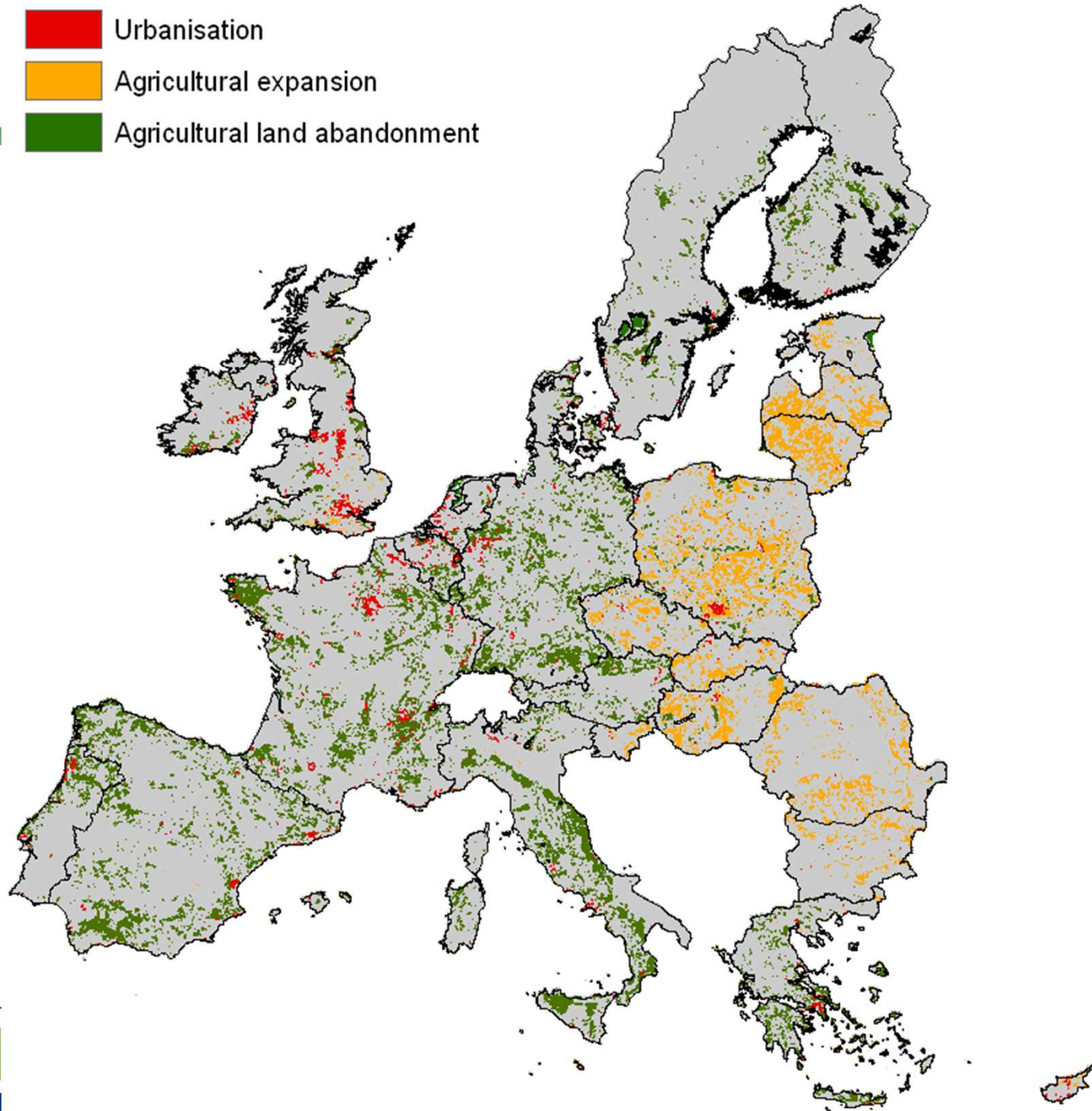
- Urbanisation
- Agricultural expansion
- Agricultural land abandonment



Reference scenario (2000-2030)



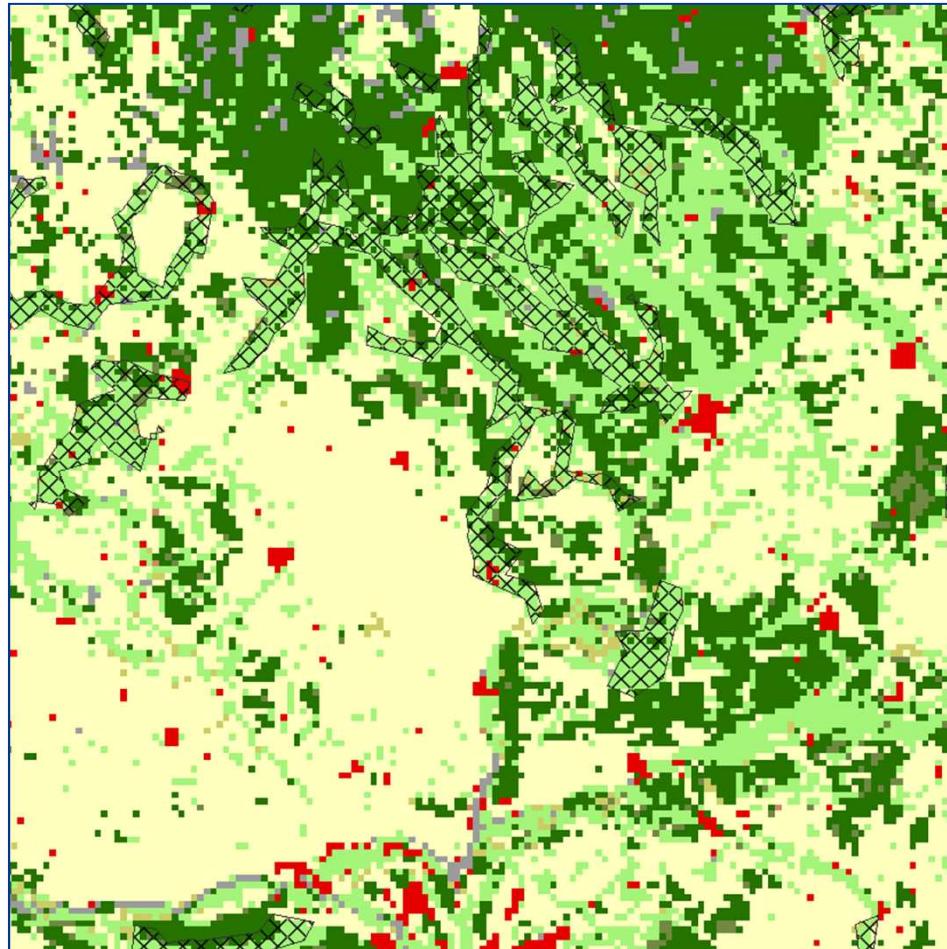
- Urbanisation
- Agricultural expansion
- Agricultural land abandonment



Soil and climate change alternative (2000-2030)



Protection peatland

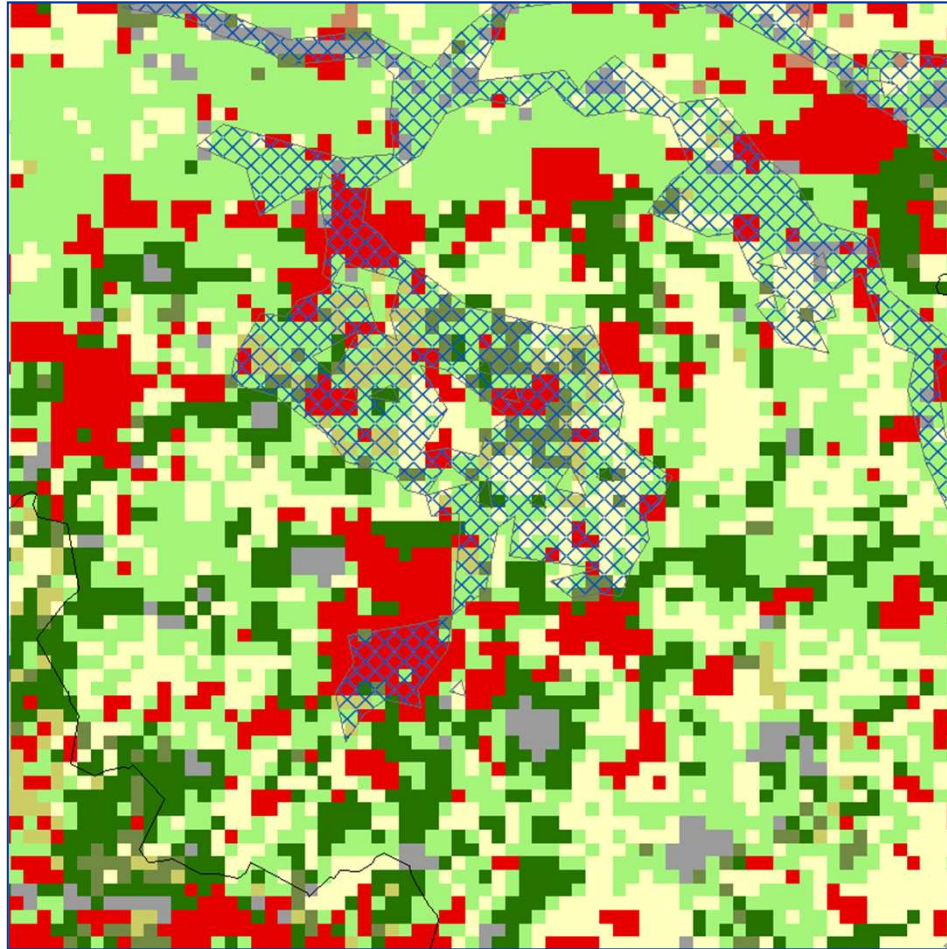


Poland

Soil and CC alternative

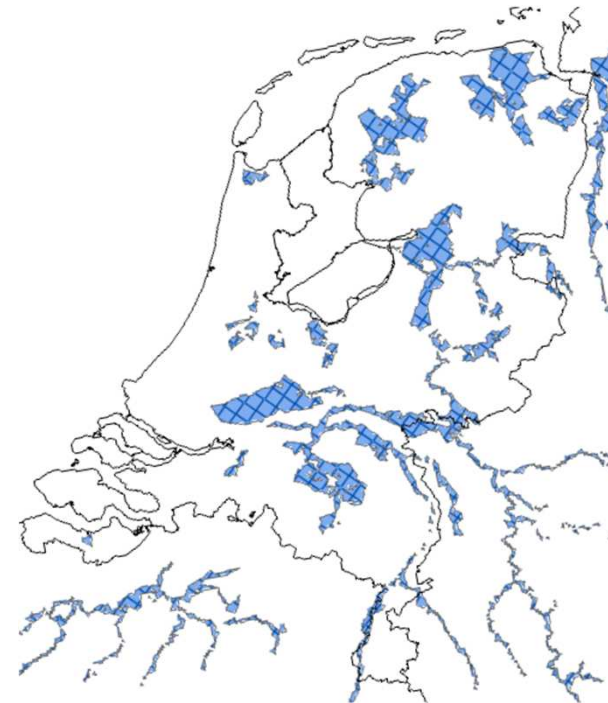


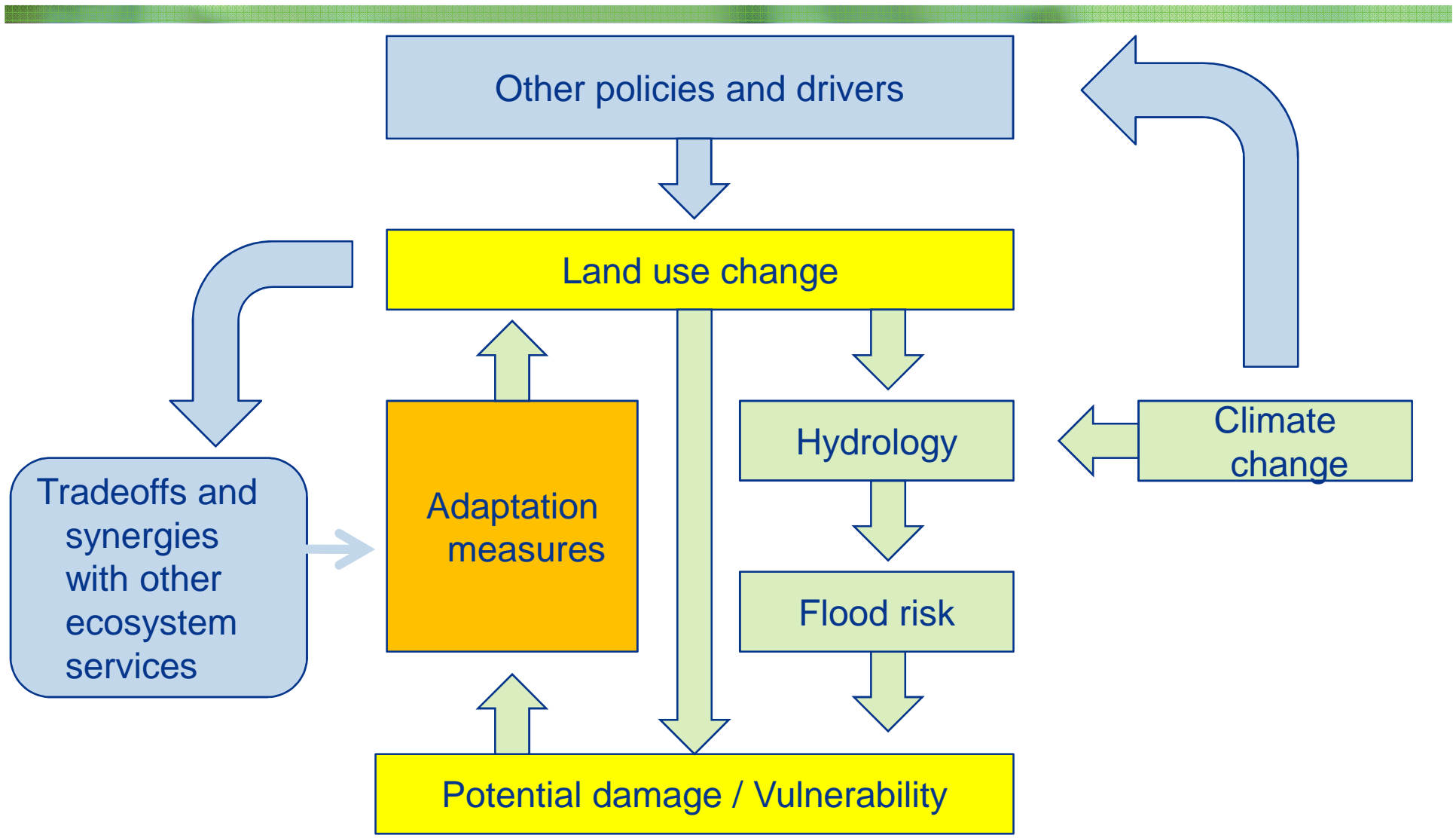
Flood damage reduction



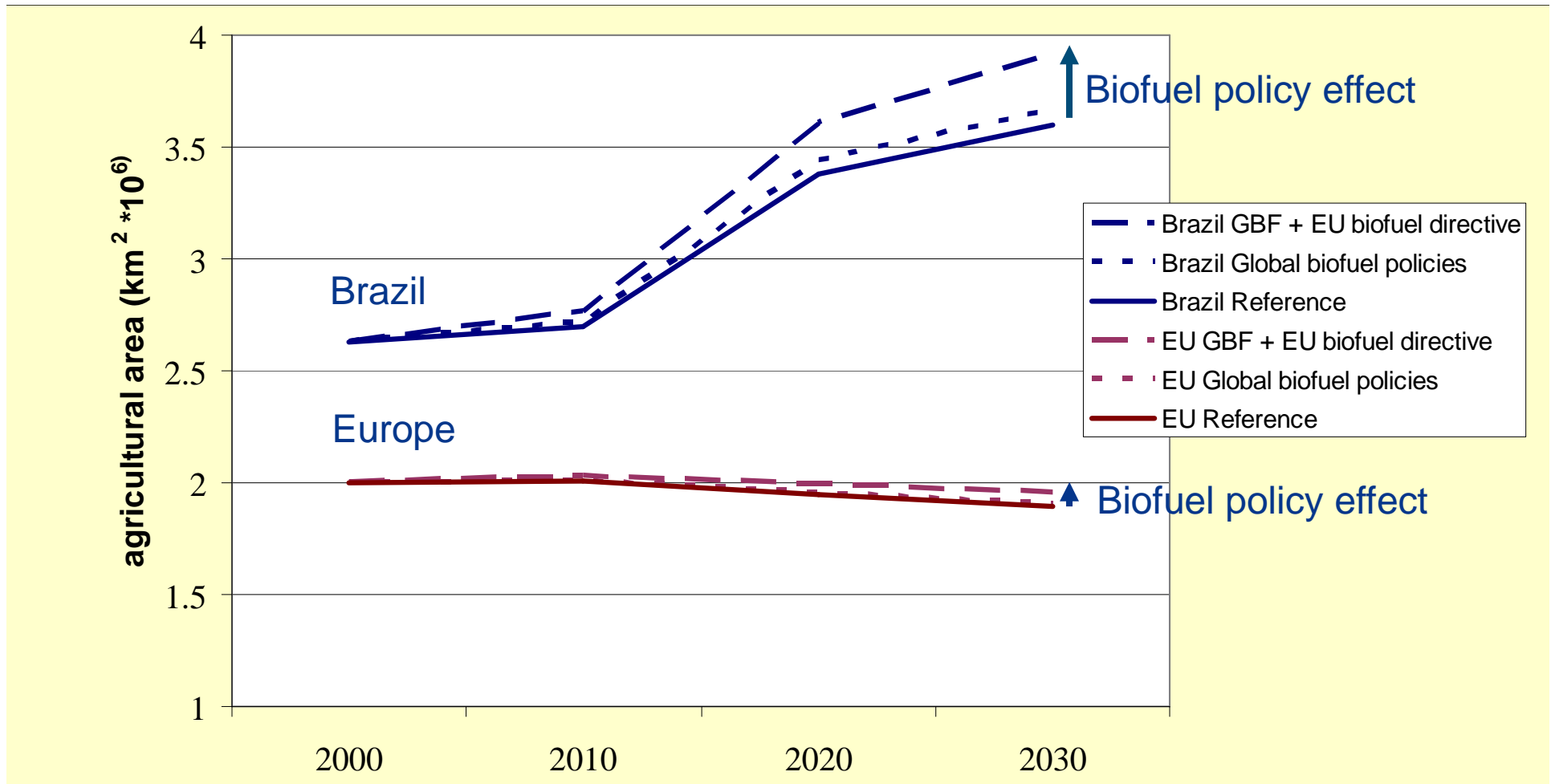
The Netherlands

Soil and CC alternative



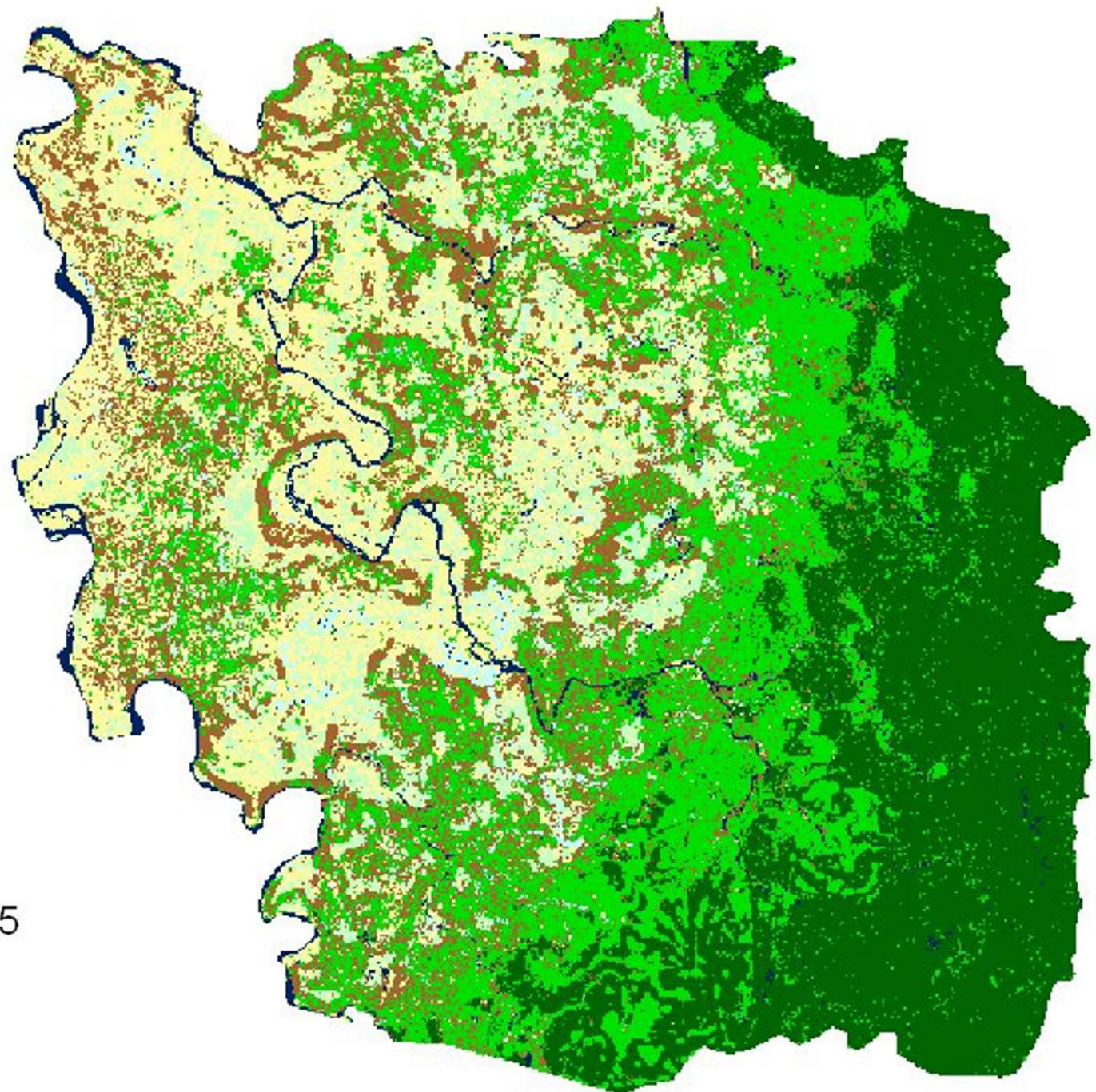


Competing claims: Europe and the rest of the world



Map of predicted agricultural expansion into forest





2015

Conclusion

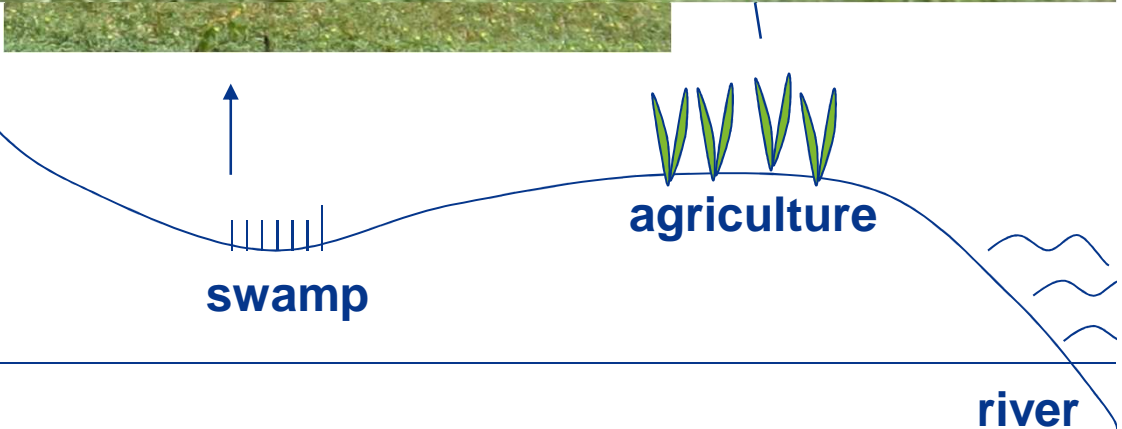
- Land use is both a result and effect of changes in the environment
- Land use change needs to account for:
 - Multiple processes at multiple scales
 - Multiple drivers: including socio-economics
 - Uncertainty about future developments
- Competing claims occur across multiple scales
- Combination of methods and models across different scales needed to link global and local dimensions

Global Economy
↔
Regional water
management
↔
Local impacts





Global Change
↔
Local adaptation



Thank you !

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VU University Amsterdam

The Netherlands

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