

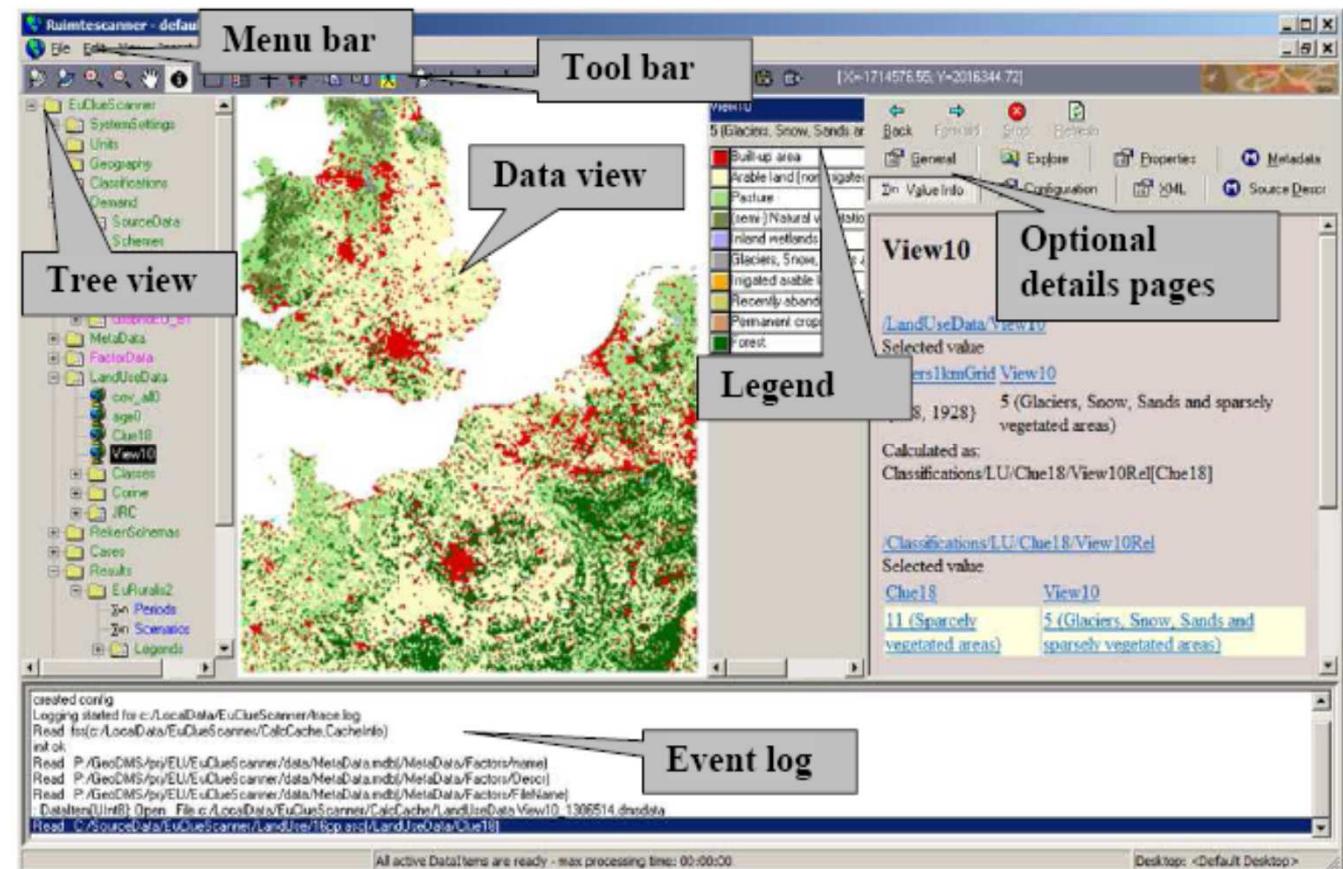
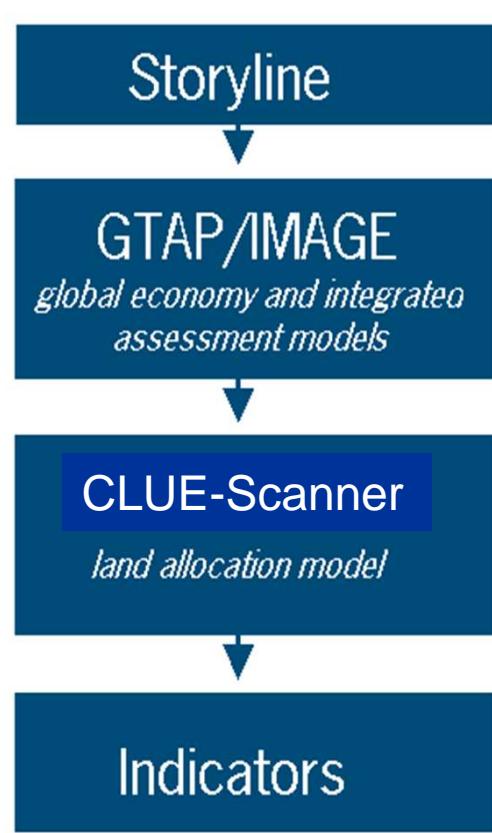


Linking global and local dimensions to analyze competing claims for land use

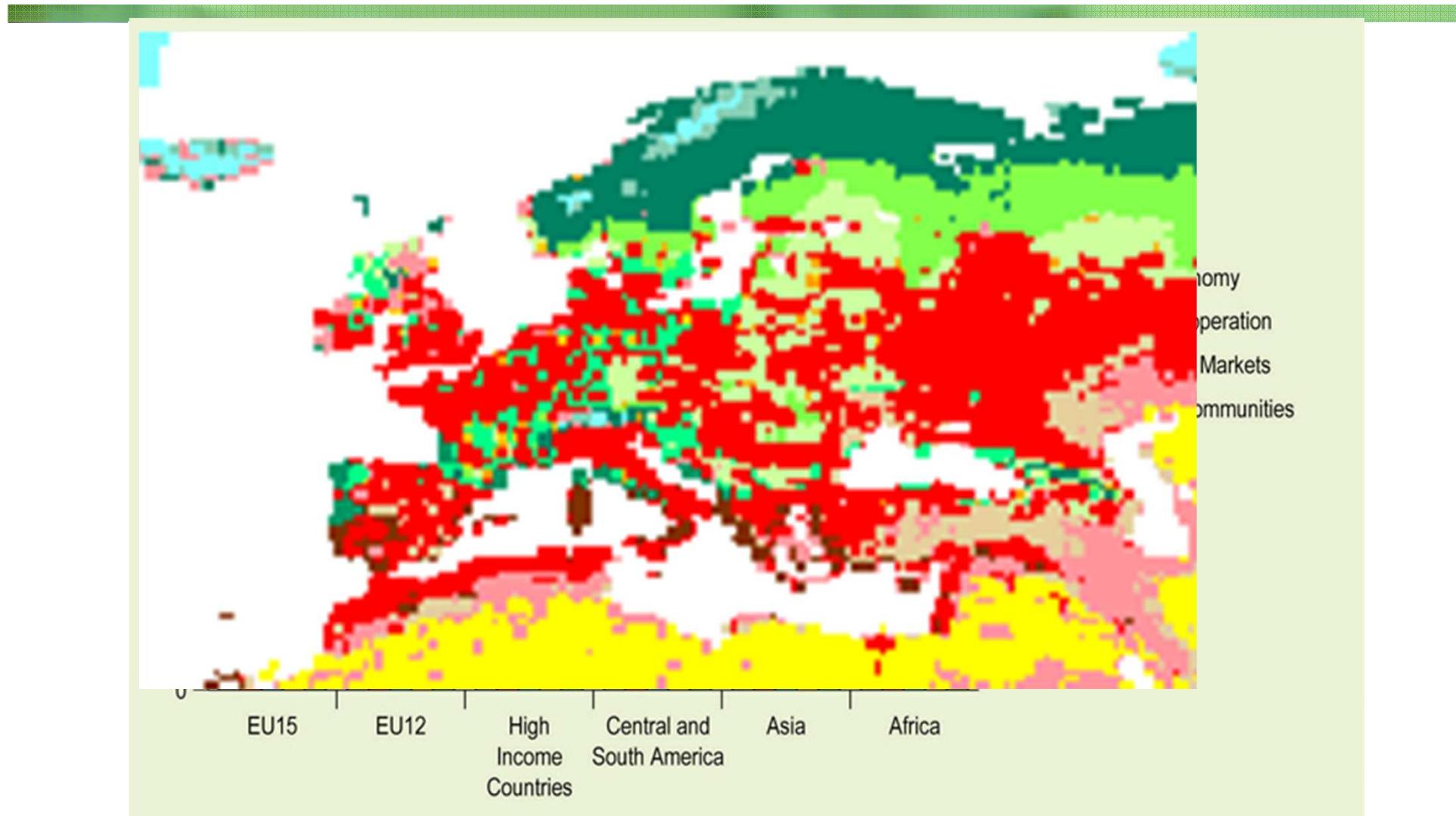
Peter Verburg

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

Global models → Regional models → Indicator models
→ Ecosystem services



Global model results



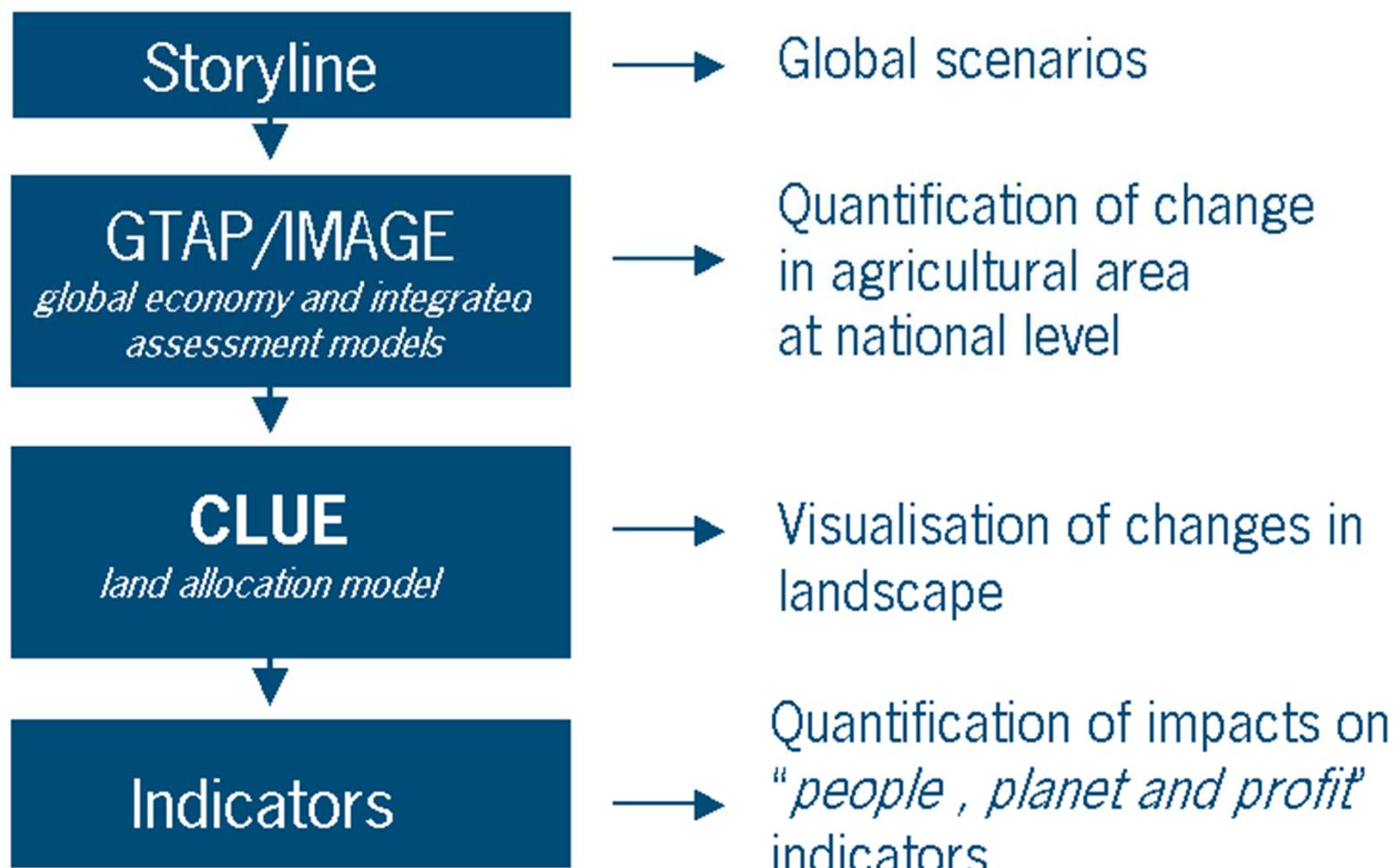
Eickhout and Prins (ed.) 2008

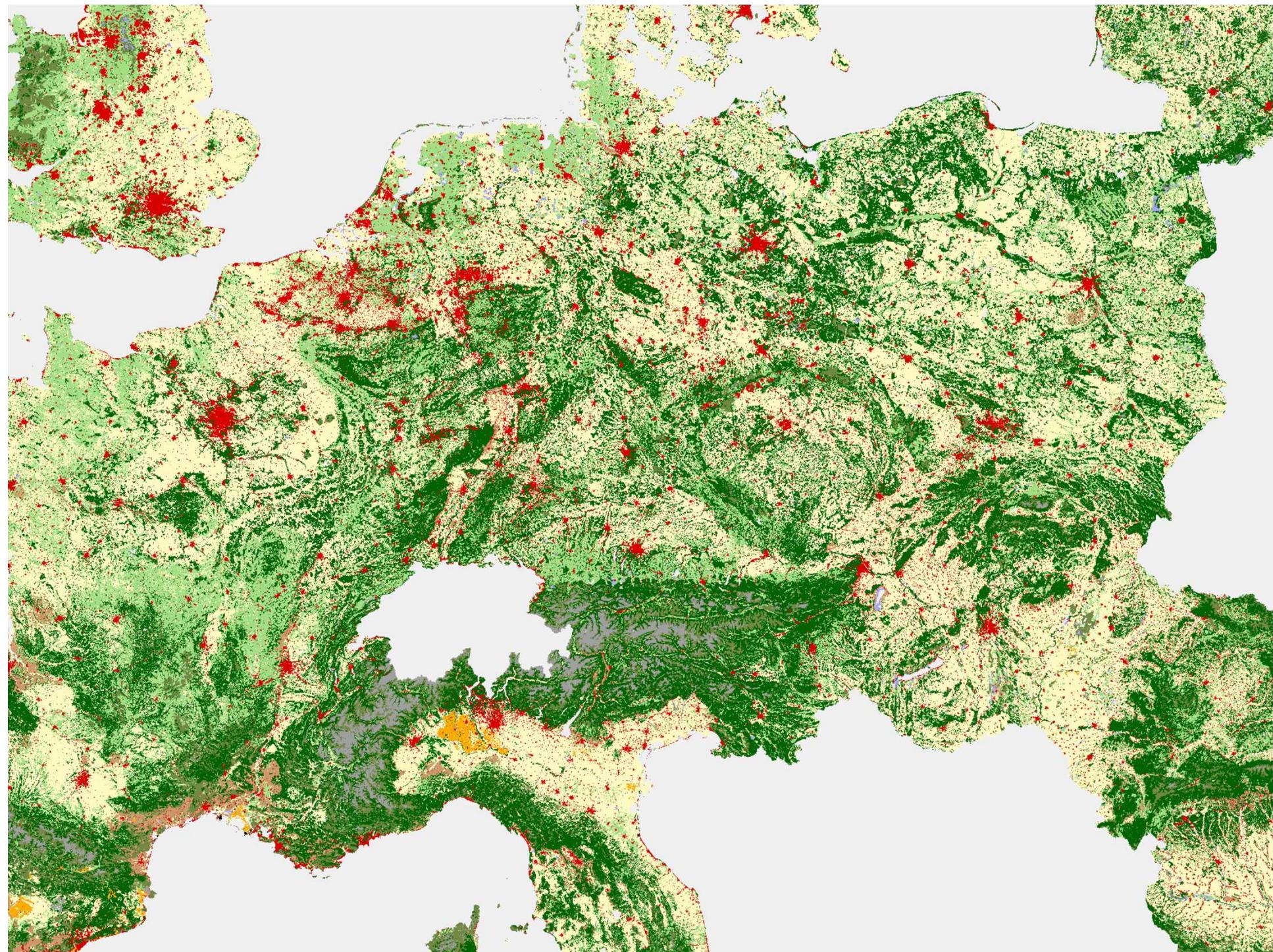


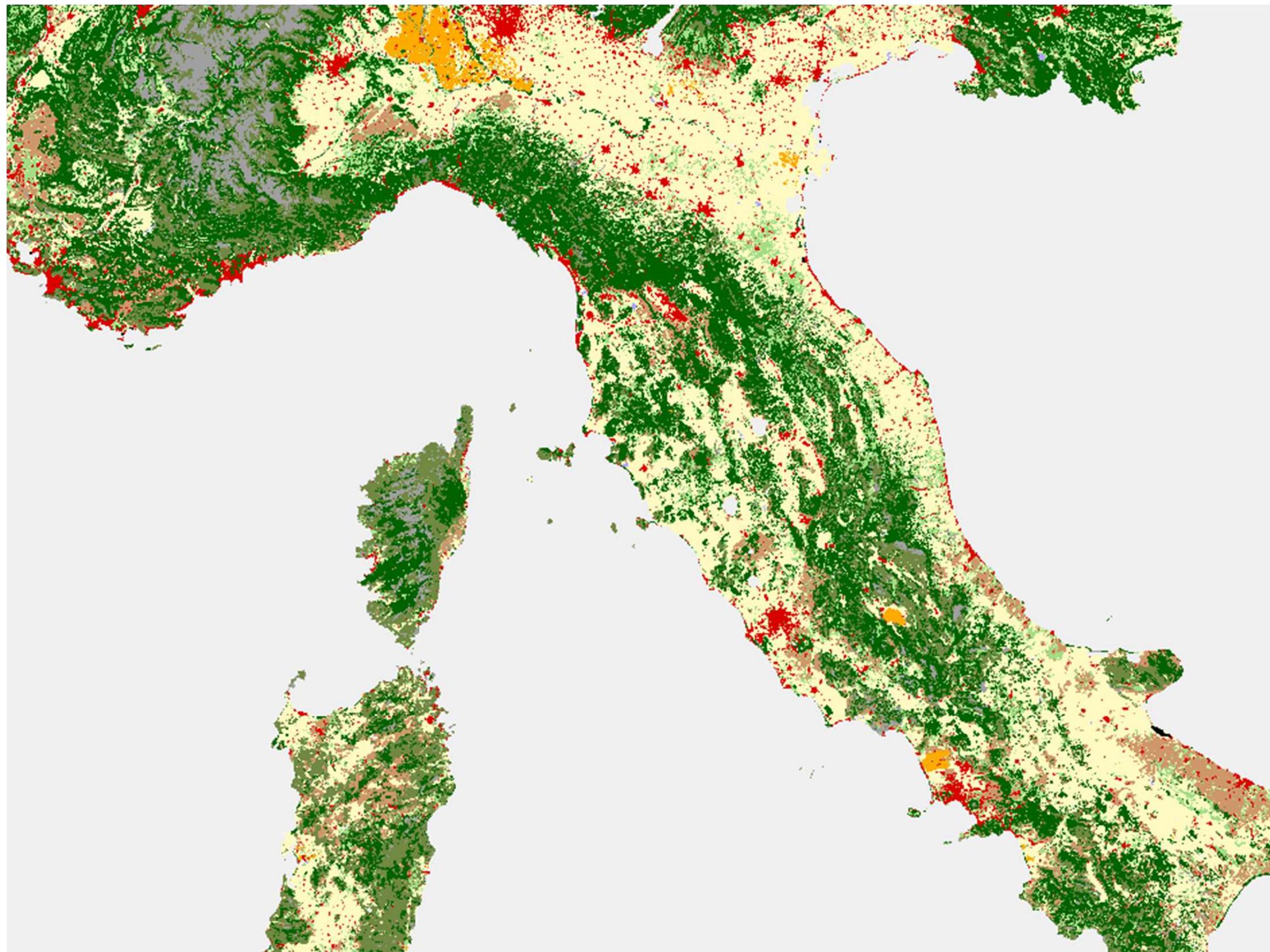
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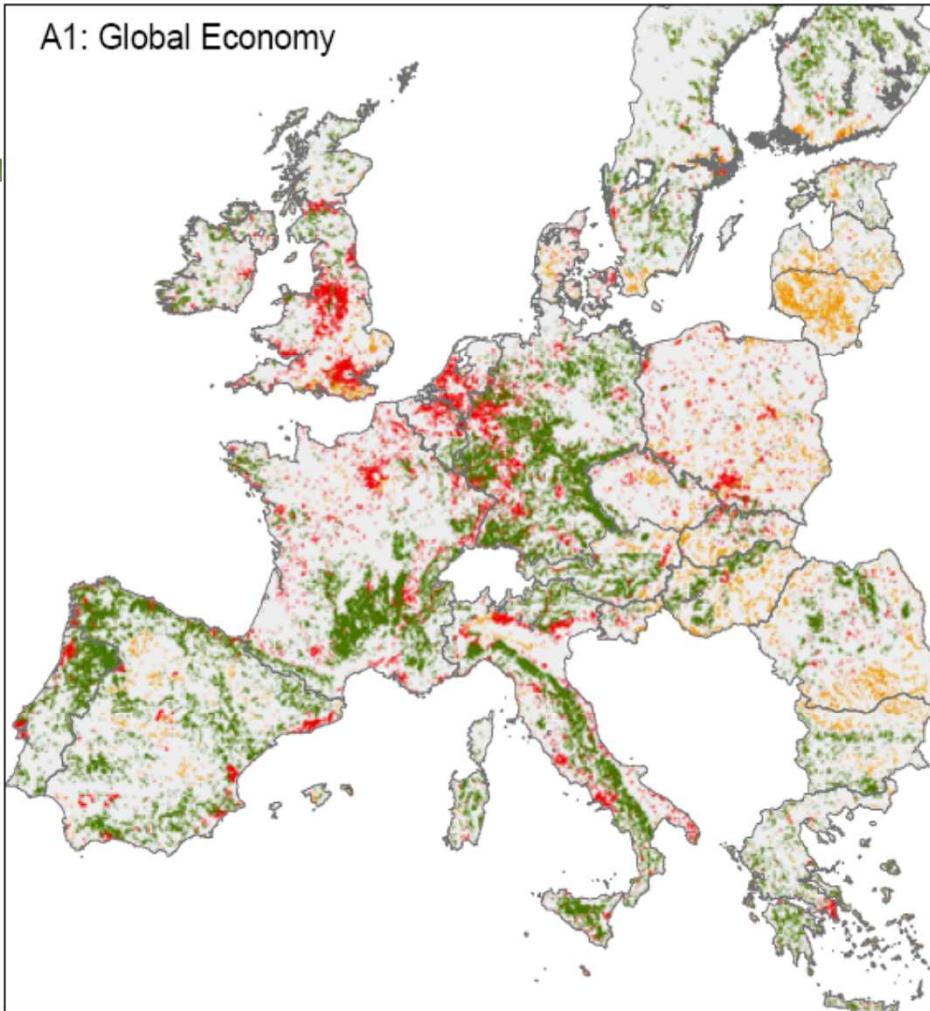
Methodology



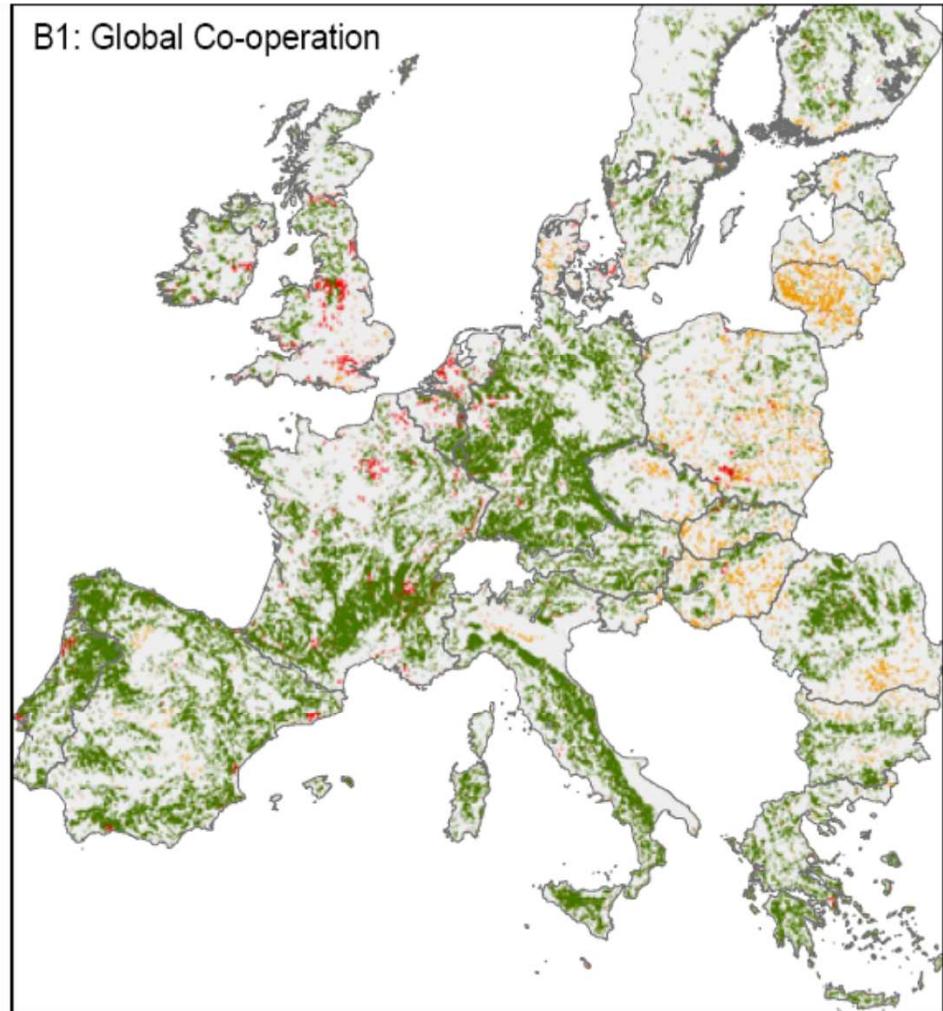




A1: Global Economy

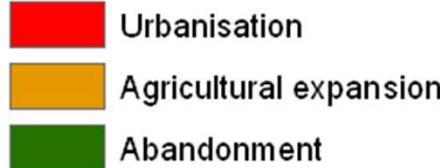


B1: Global Co-operation

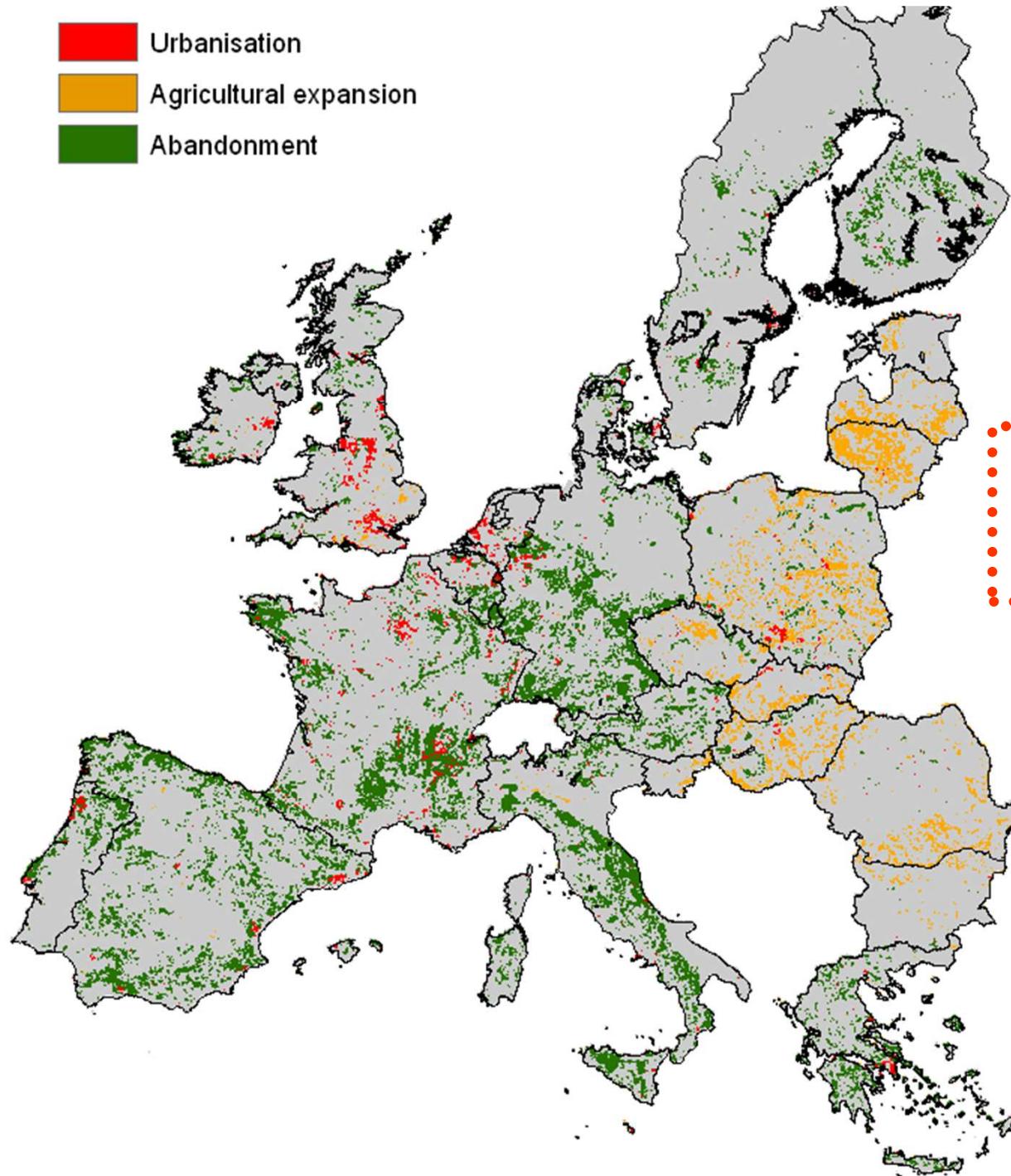


Legend

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



Urbanisation
Agricultural expansion
Abandonment



Storyline

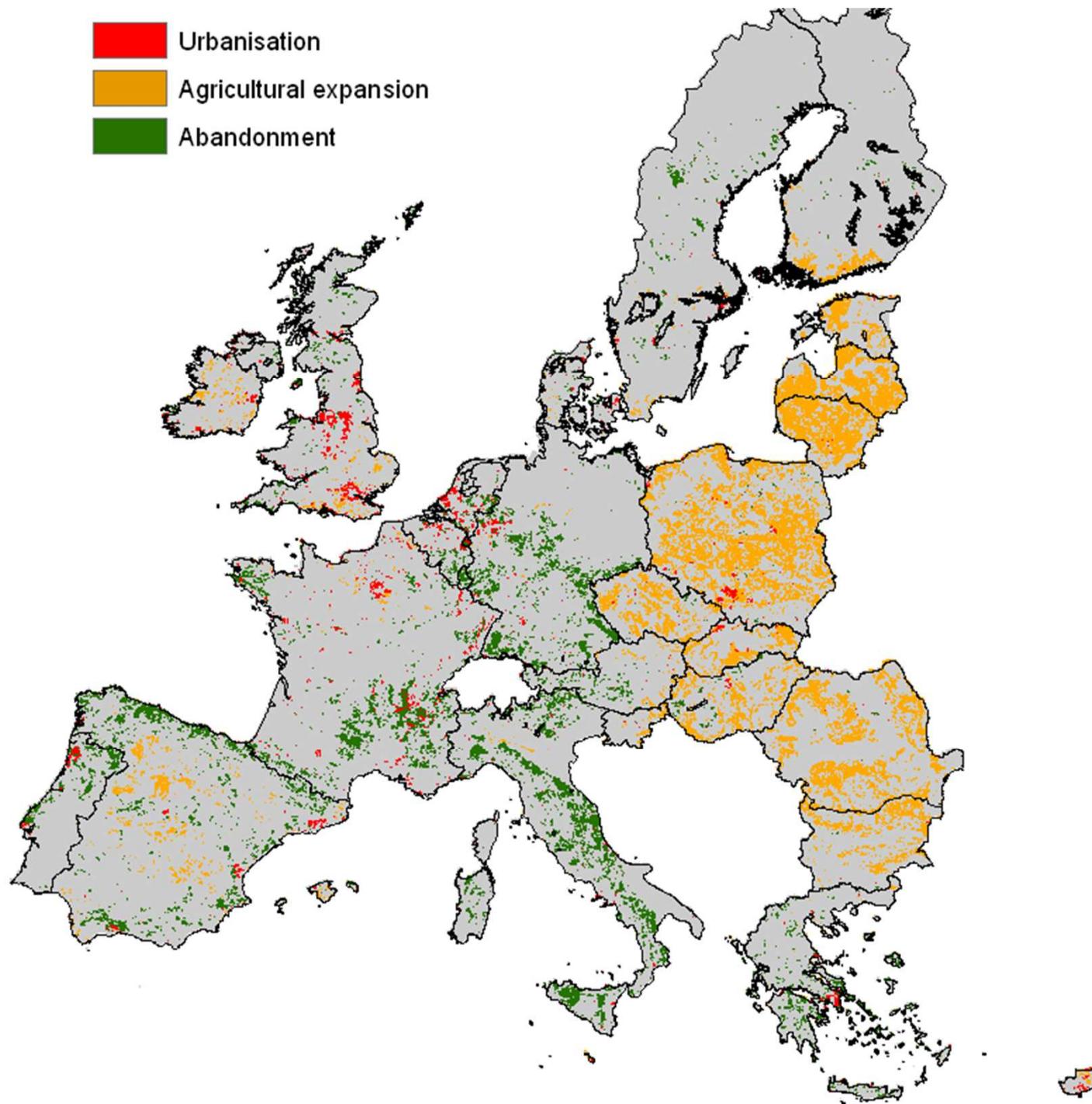
GTAP/IMAGE
*global economy and integrated
assessment models*

CLUE
land allocation model

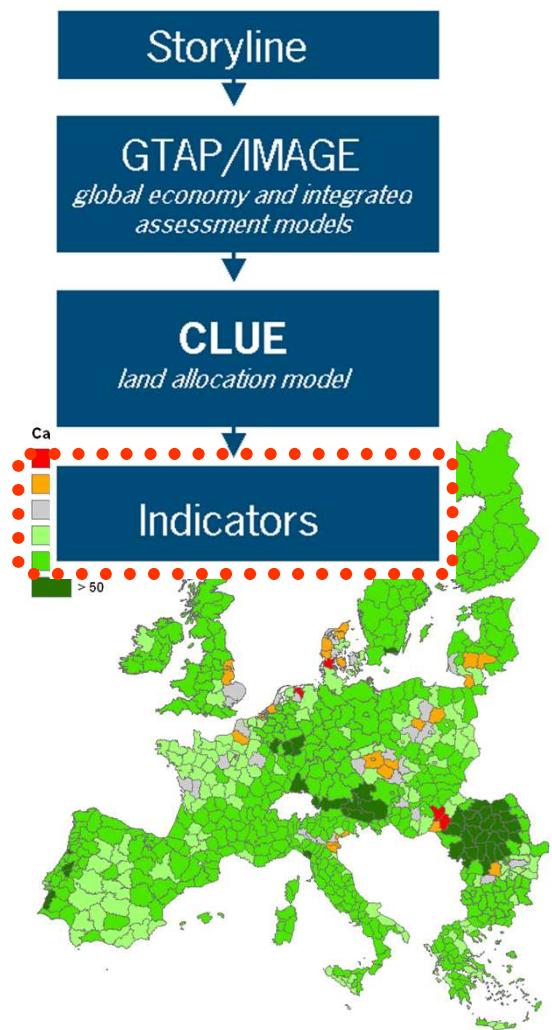
Indicators

Reference
(2000-2005)

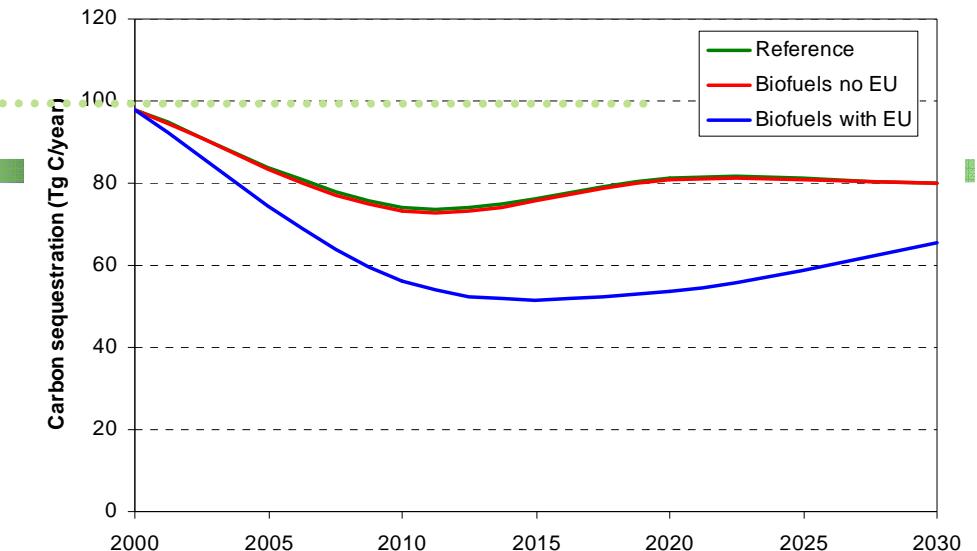
Global and European directives (2000-2030)



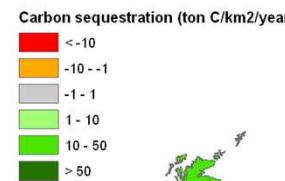
Carbon sequestration



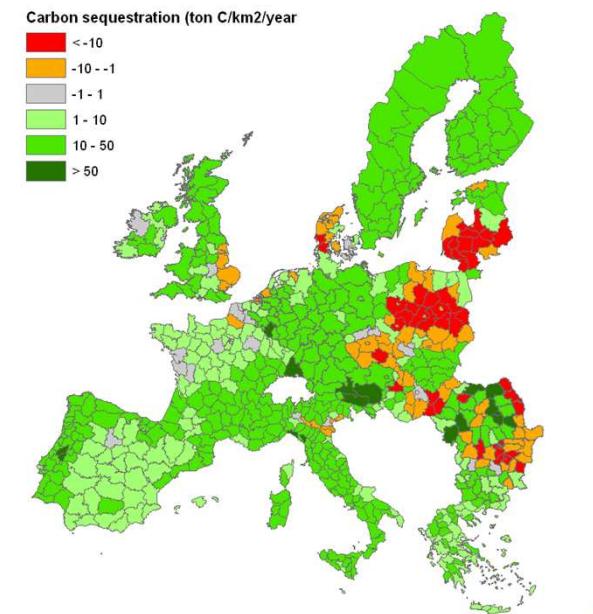
Current
C-sequestration
LULUFC



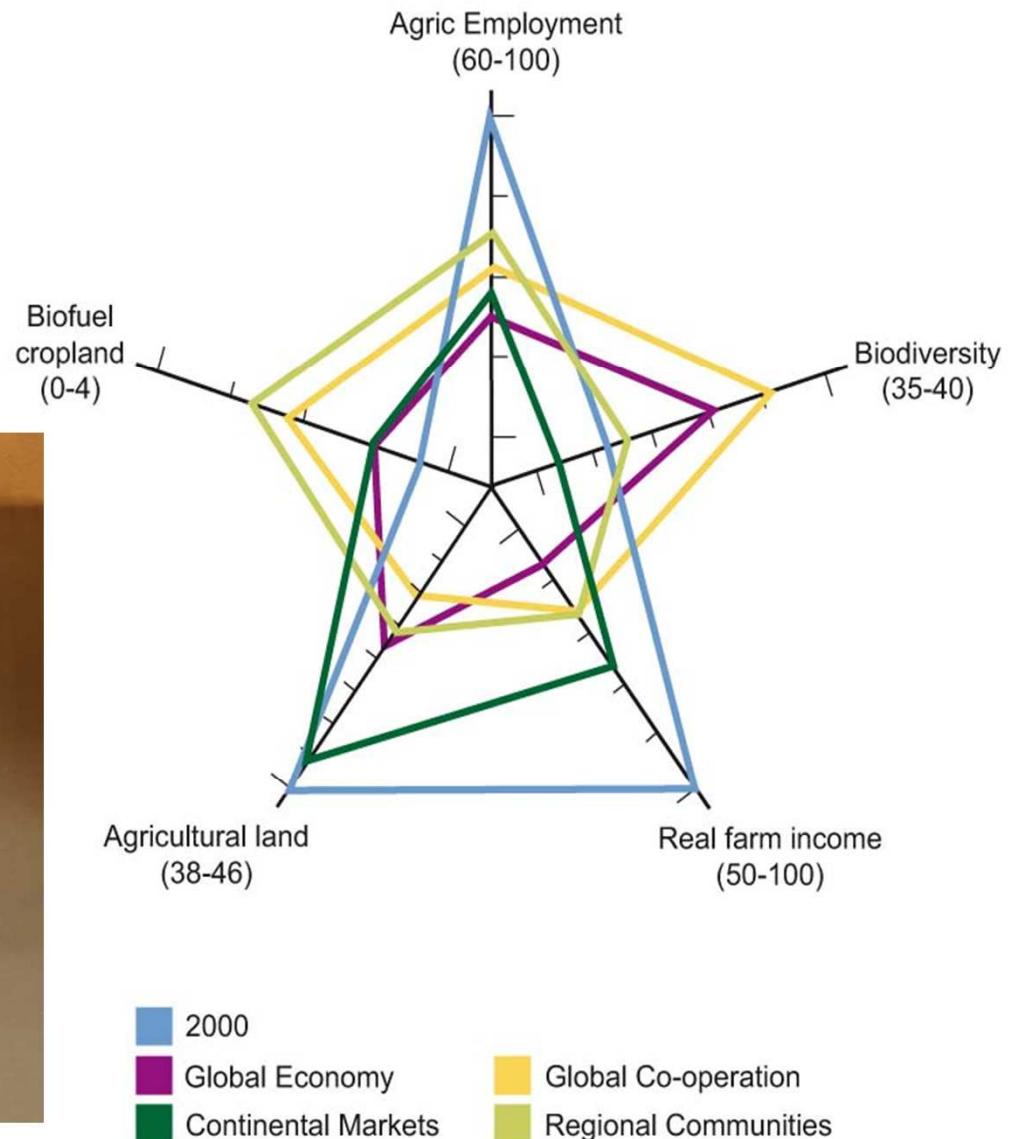
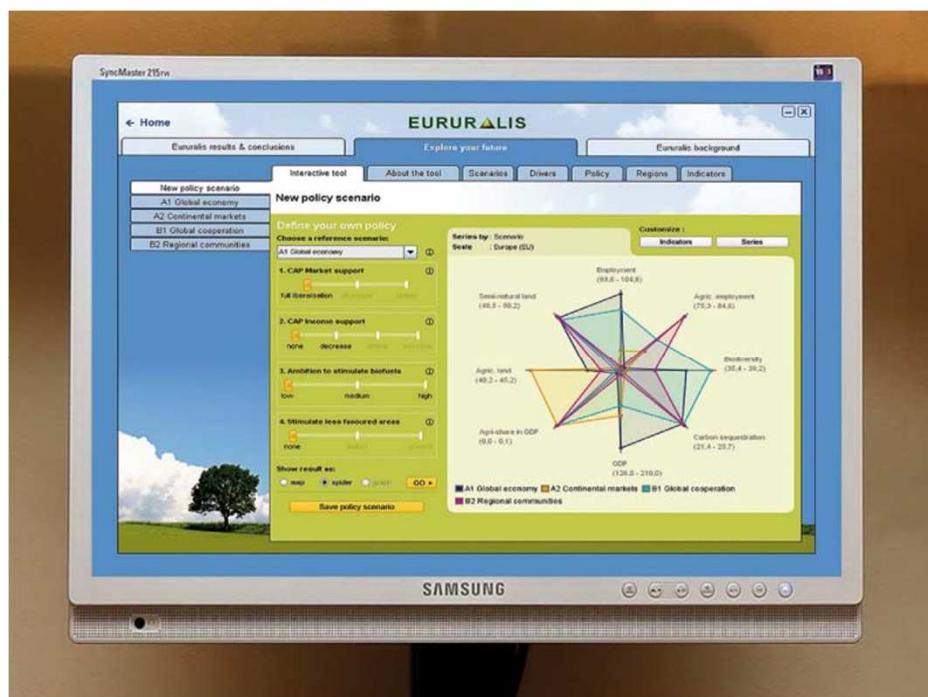
2030 Reference



2030 Biofuel policies



Trade-off analysis



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Spatial policy areas

Policy relevant areas

Natura 2000 areas currently cropped*

HNV farmland currently cropped

LFA areas currently cropped

Erosion sensitive locations

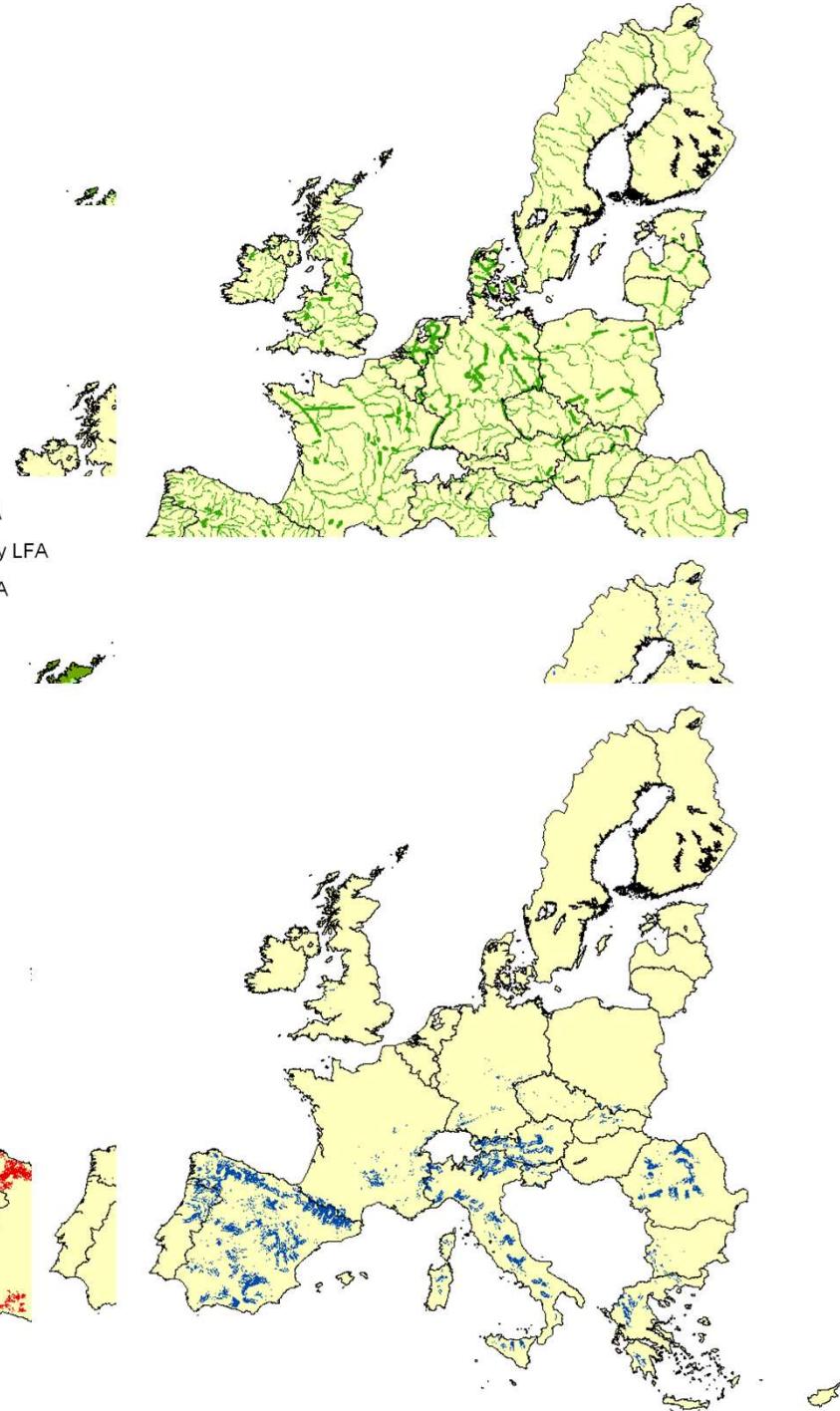
Ecological corridor areas

Peatland areas

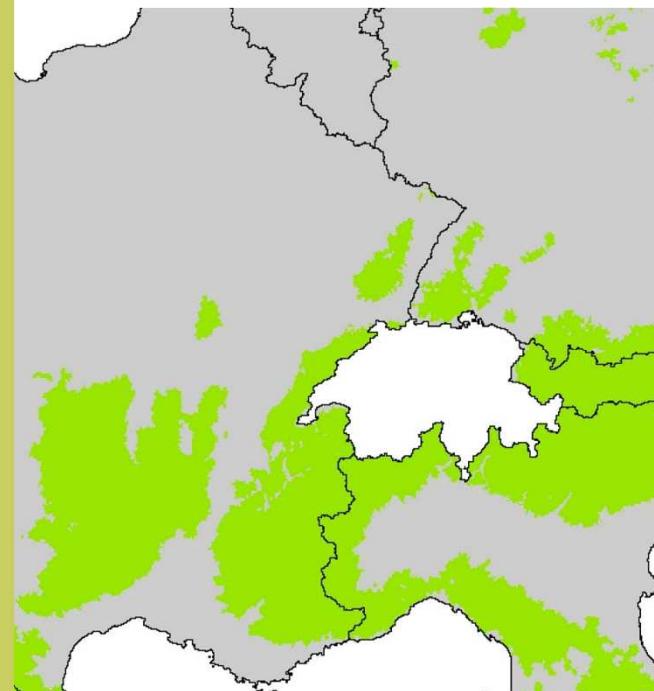
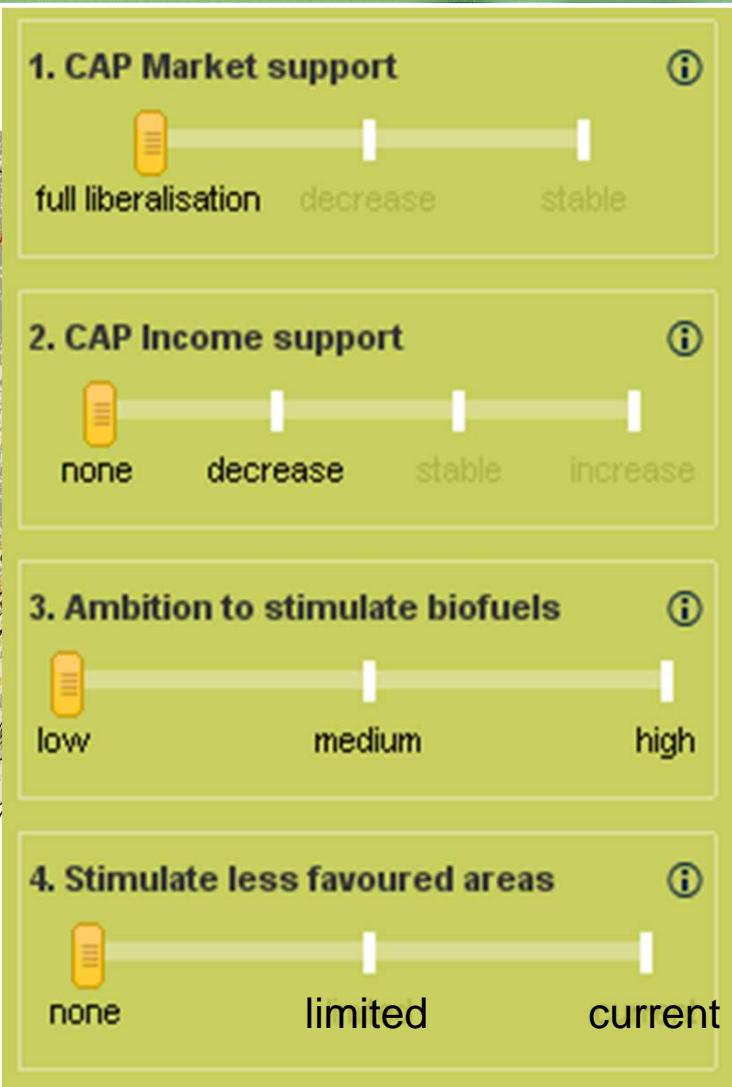
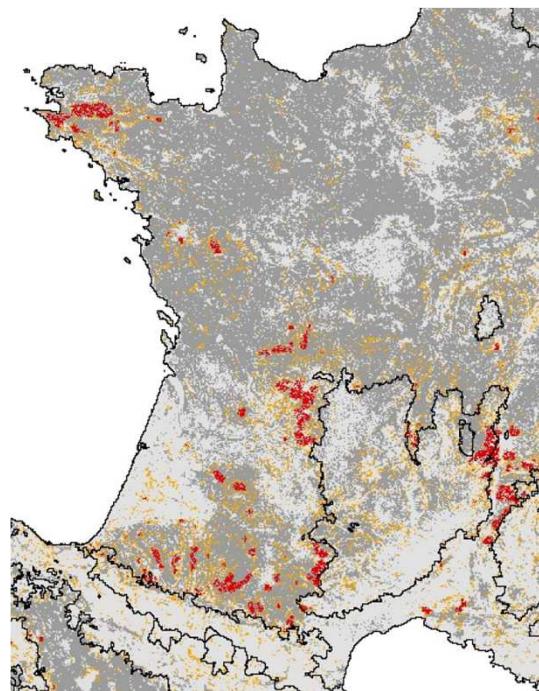
River flood prone areas

Upstream areas

- No LFA
- Partially LFA
- Full LFA



LFA compensation effect on land abandonment



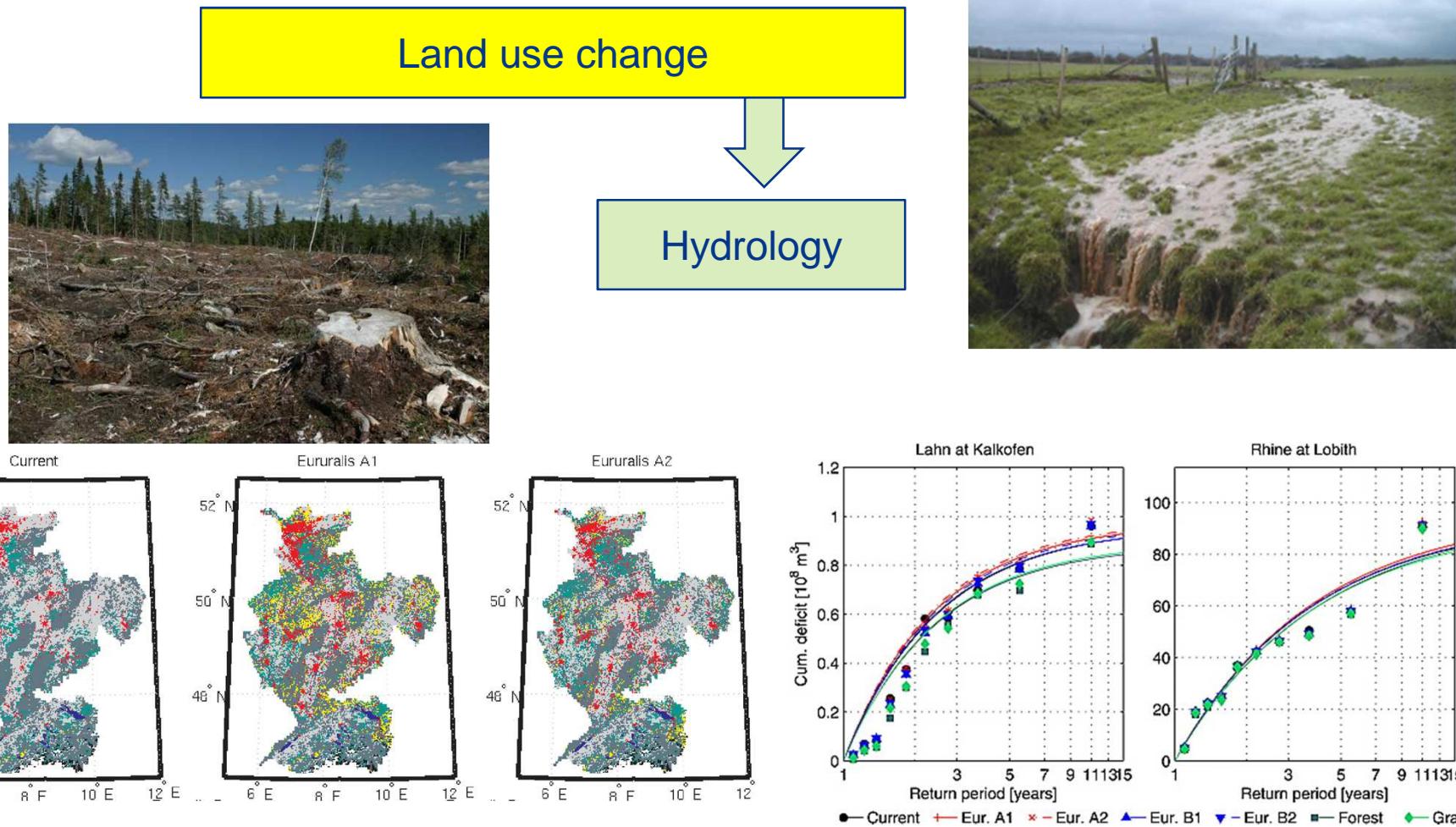
areas
LFA areas
LFA areas



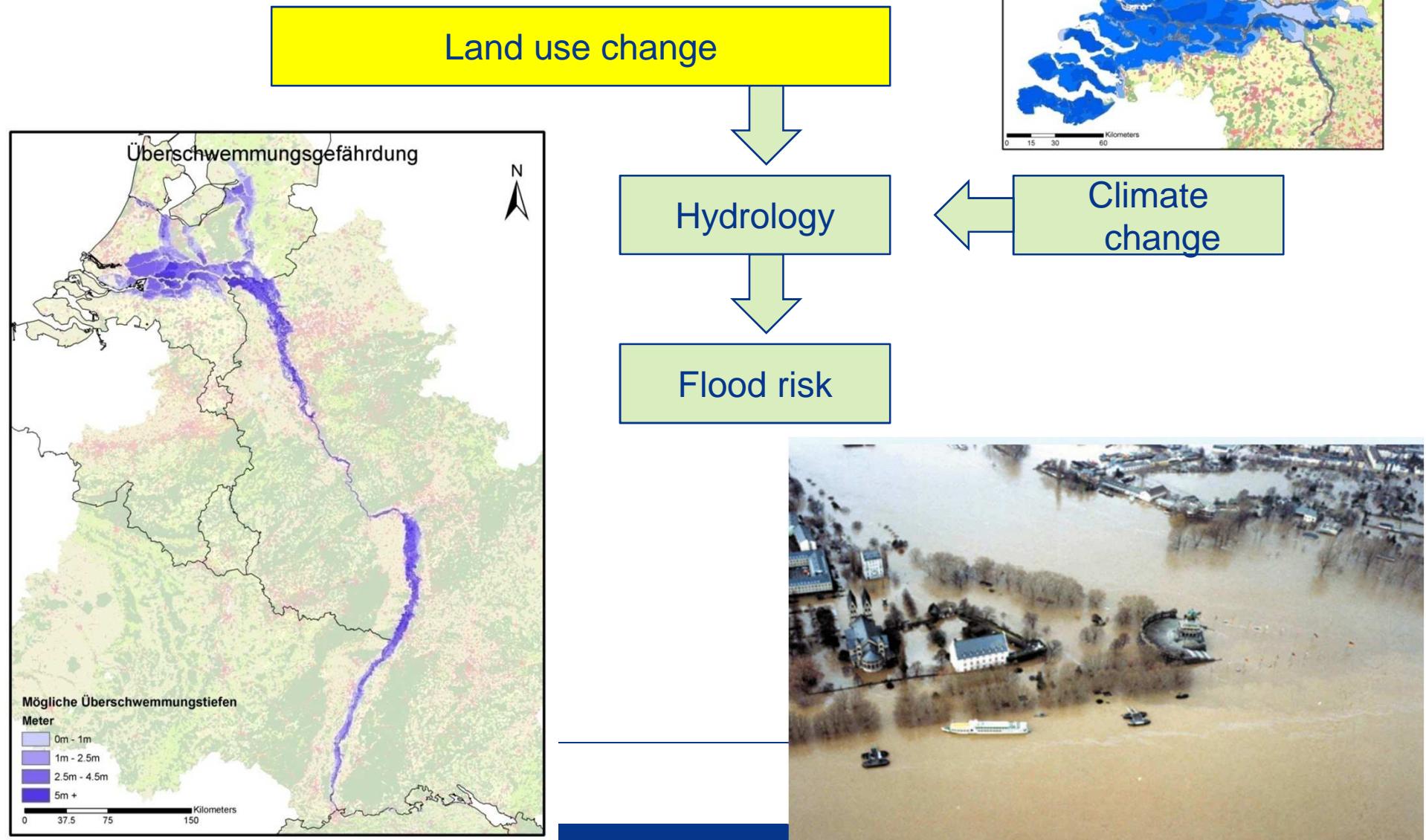
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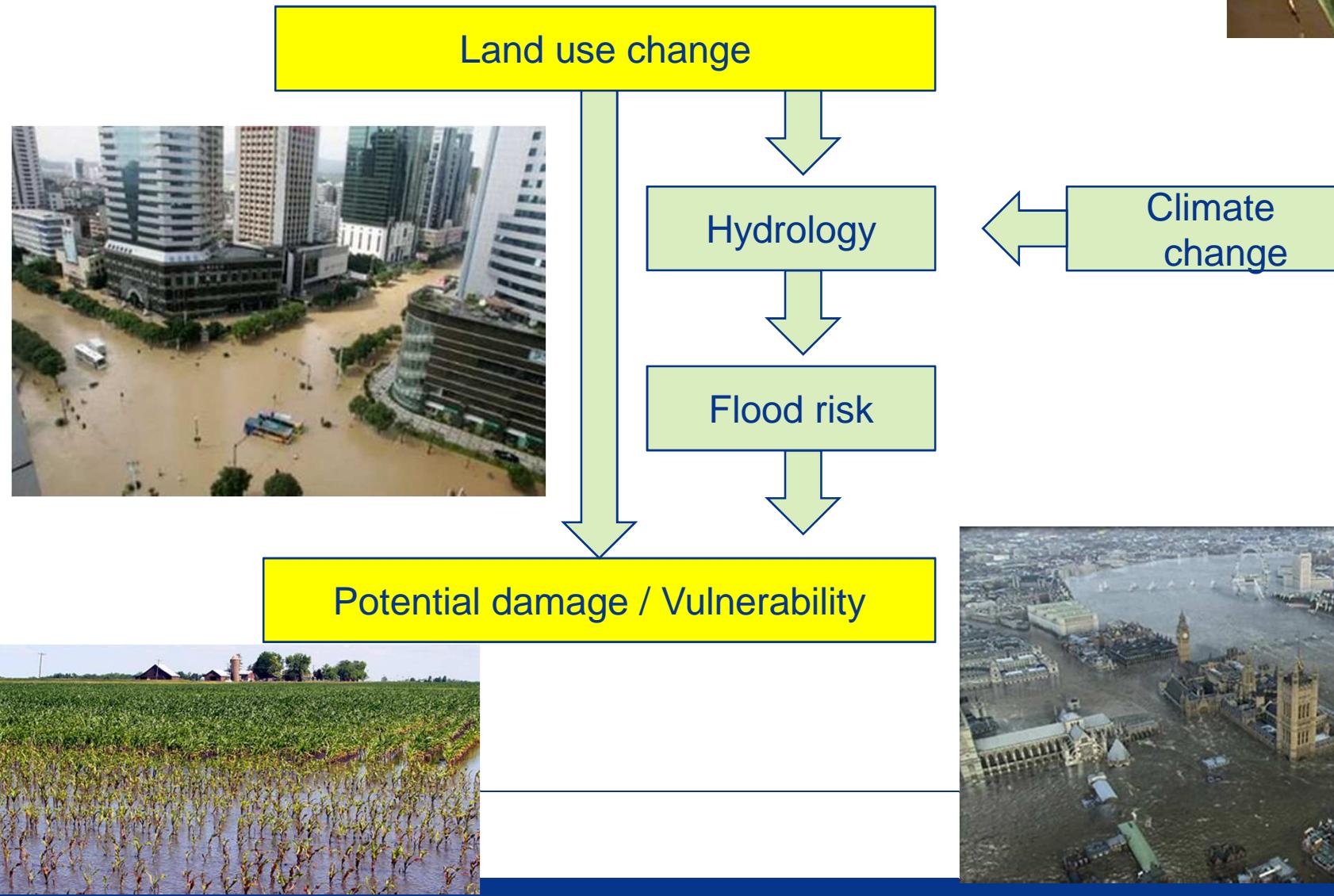
Role of land use in climate change



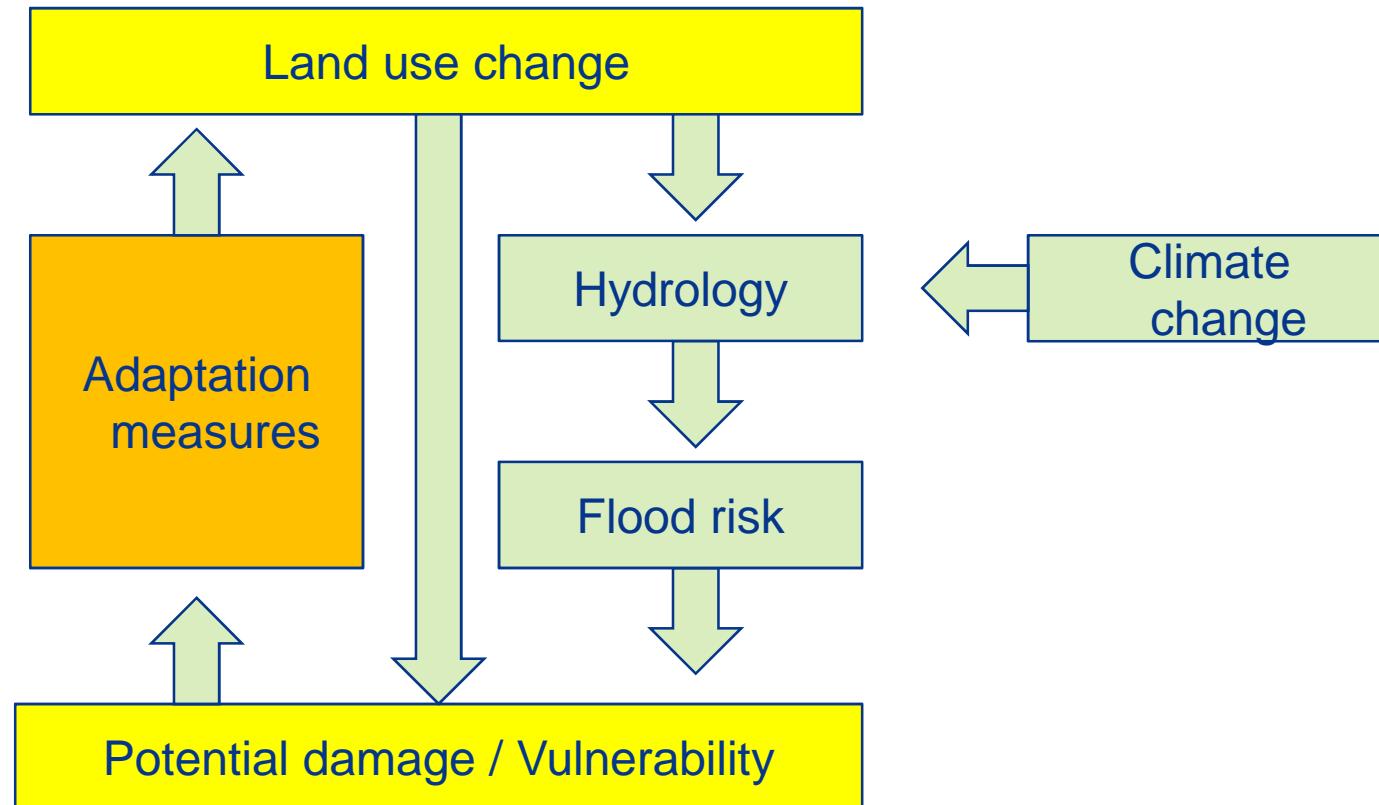
Role of land use in environmental char



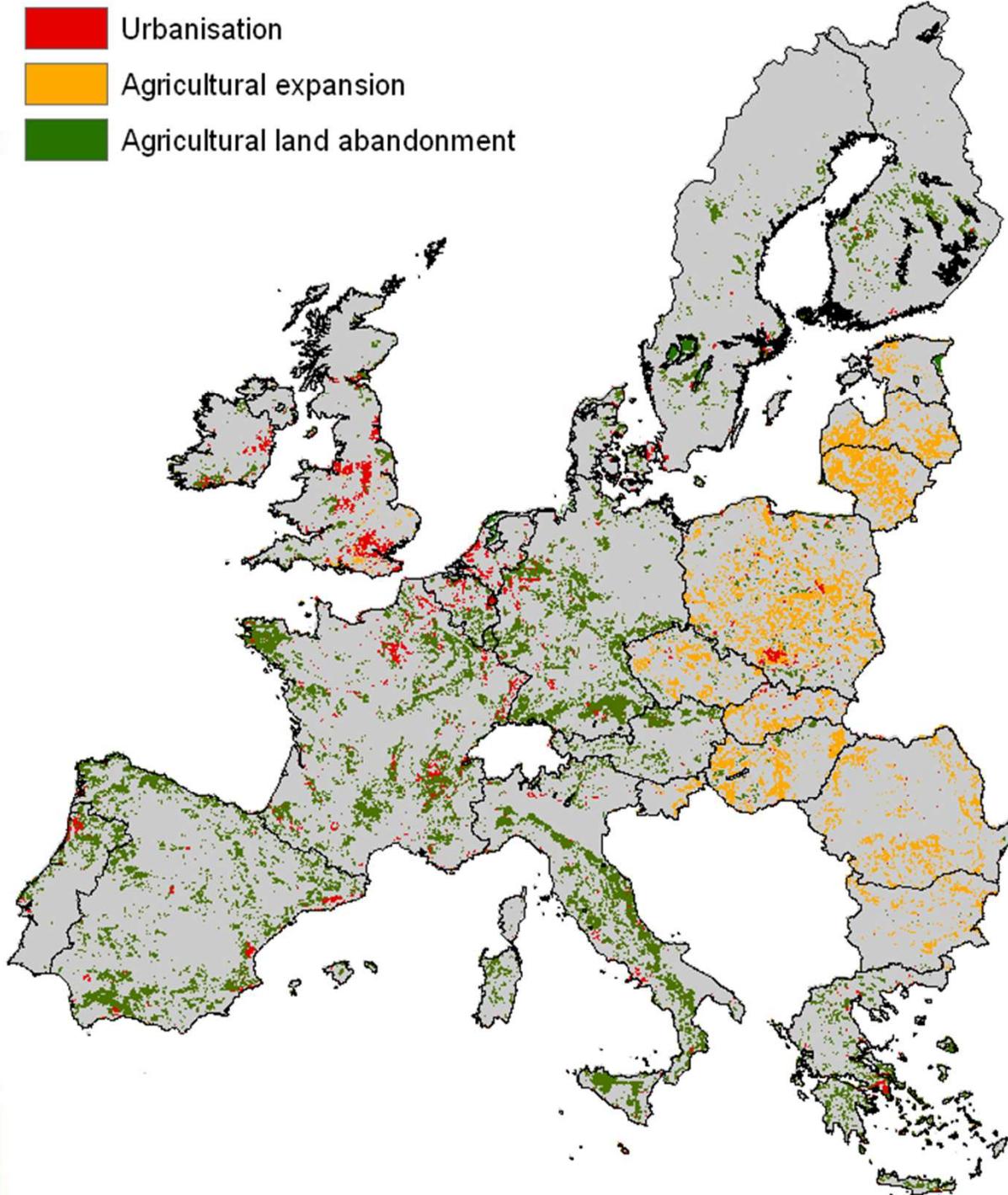
Role of land use in environmental change



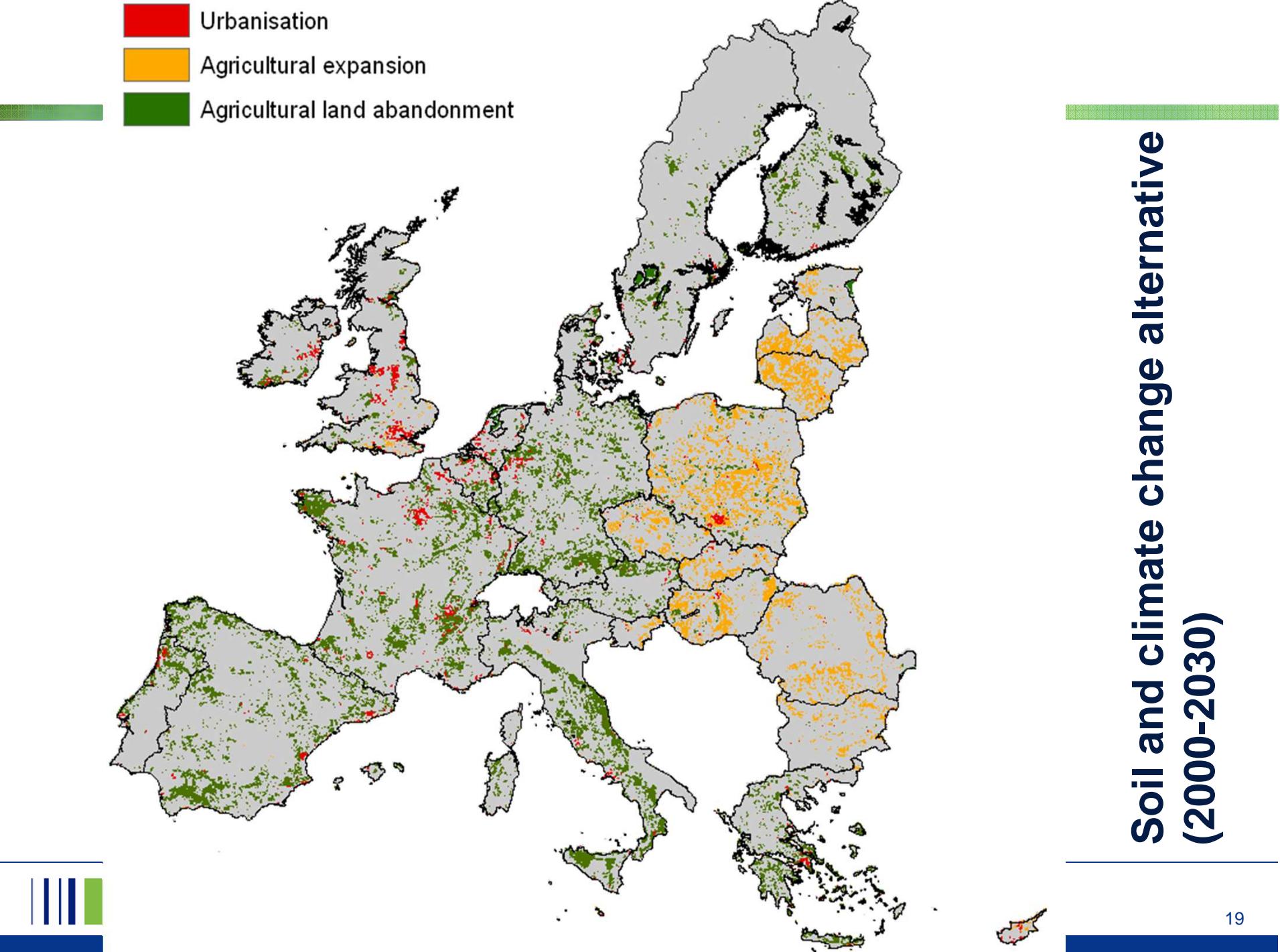
Role of land use in environmental change



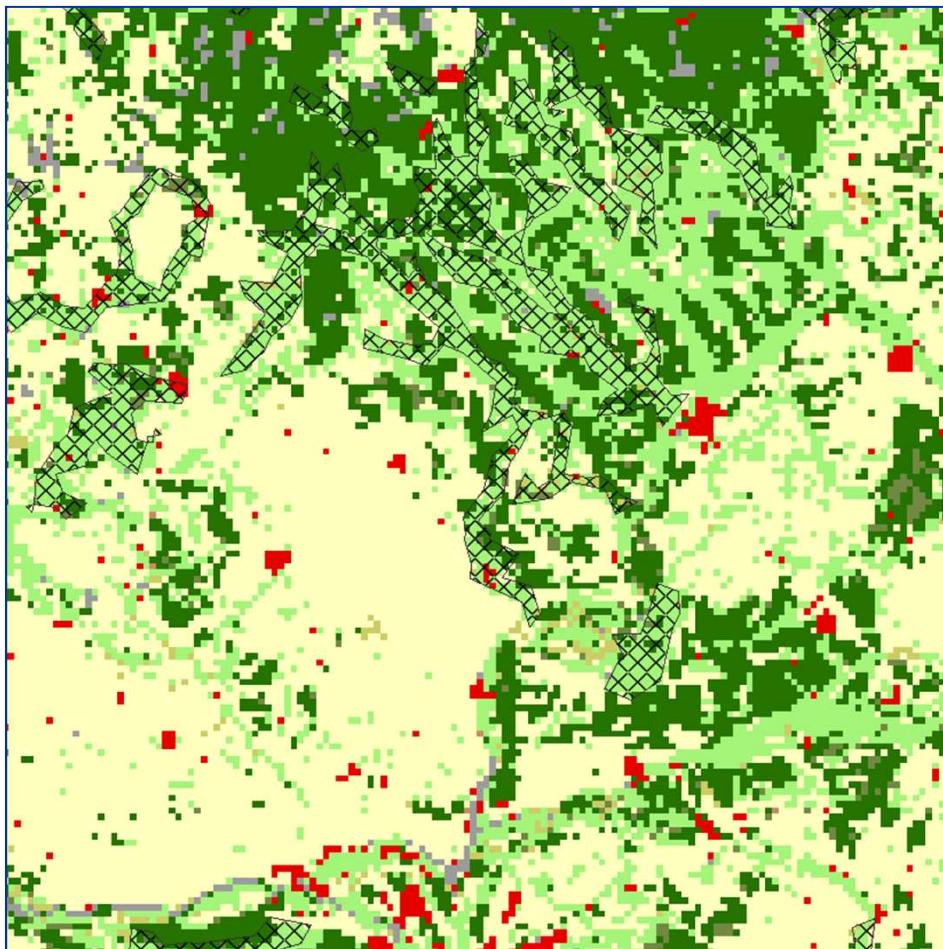
 Urbanisation
 Agricultural expansion
 Agricultural land abandonment



**Reference scenario
(2000-2030)**



Protection peatland

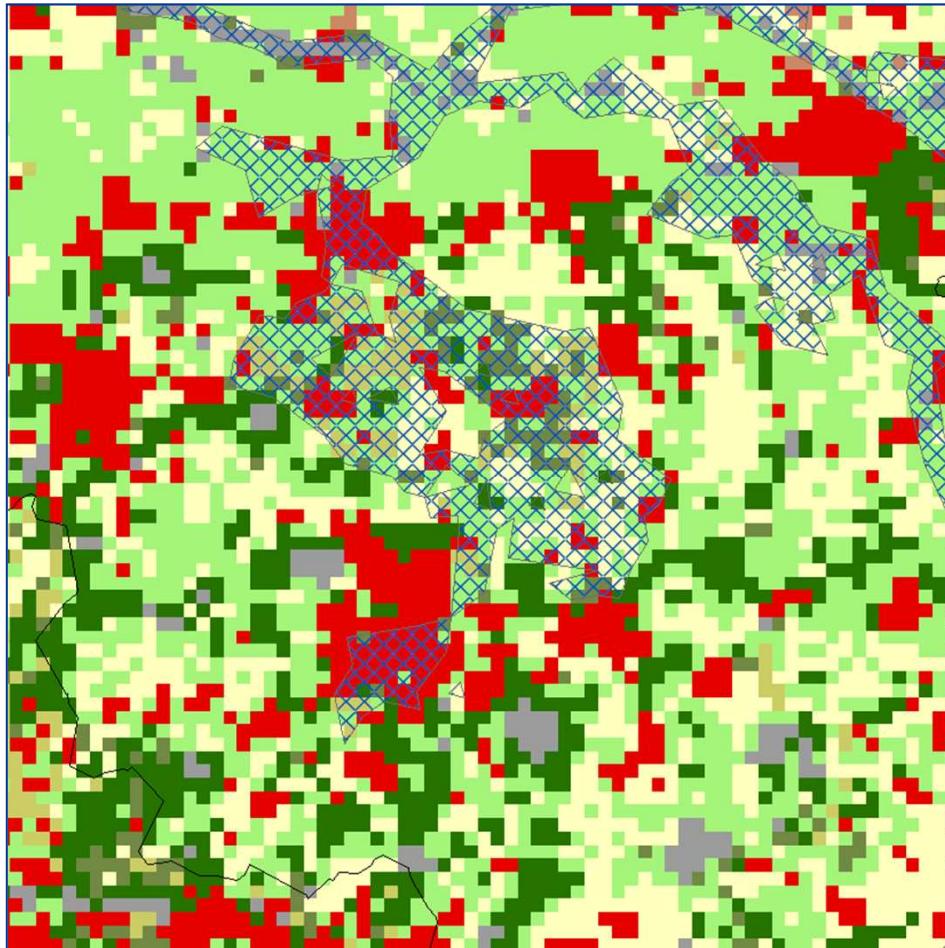


Poland

Soil and CC alternative

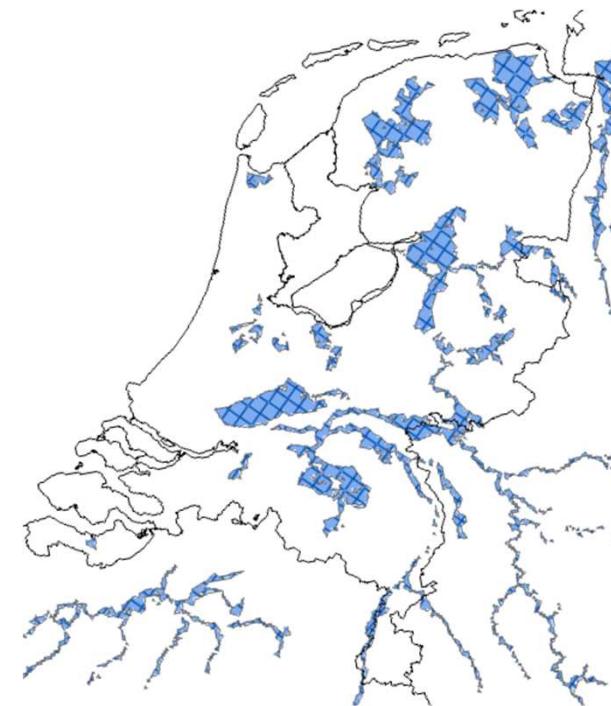
- Built-up area
- Arable land (non irrigated)
- Pasture
- (semi-) Natural vegetation
- Irrigated arable land
- Recently abandoned arable land
- Permanent crops
- Forest
- Recently abandoned pasture
- Other

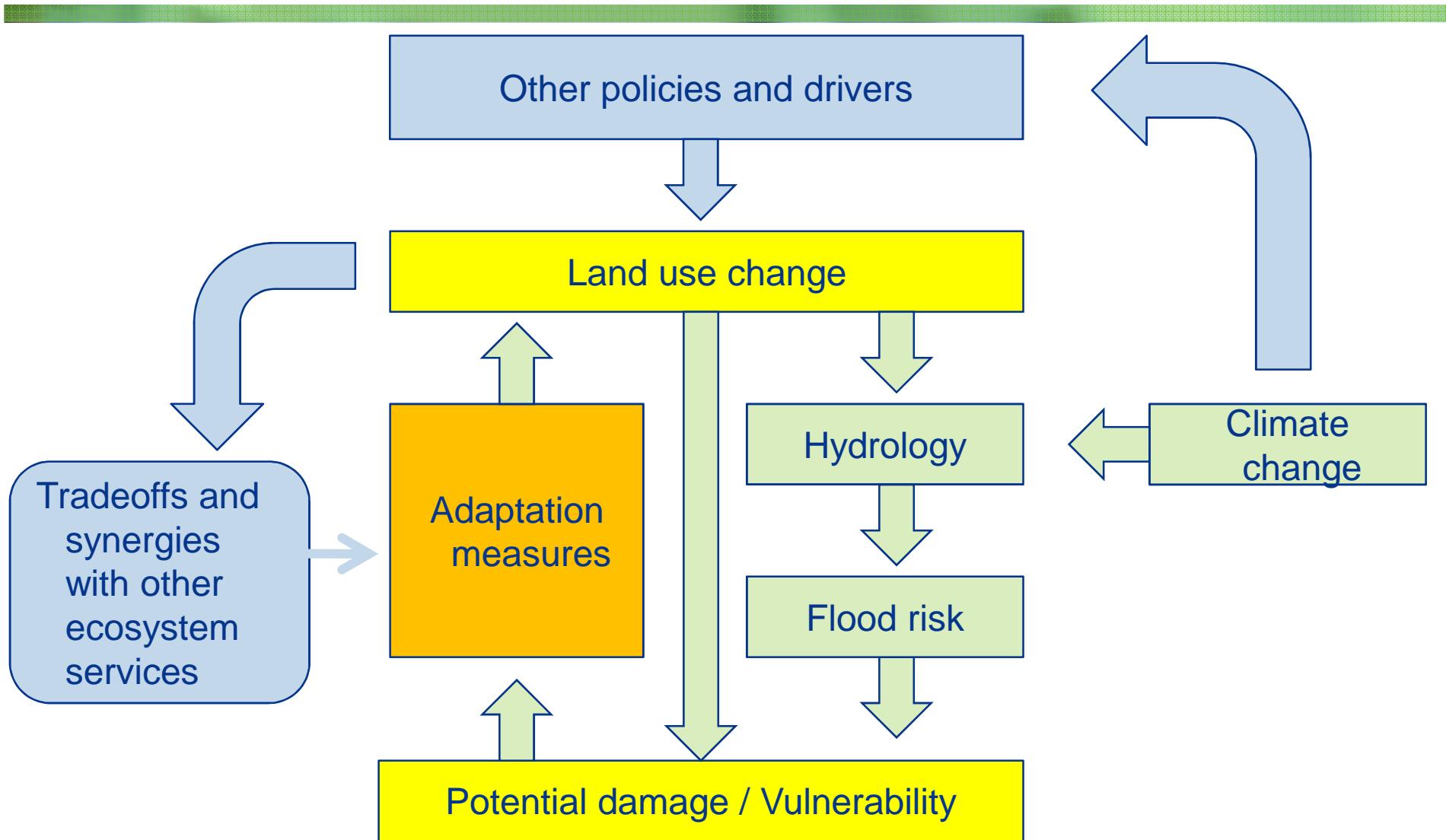
Flood damage reduction



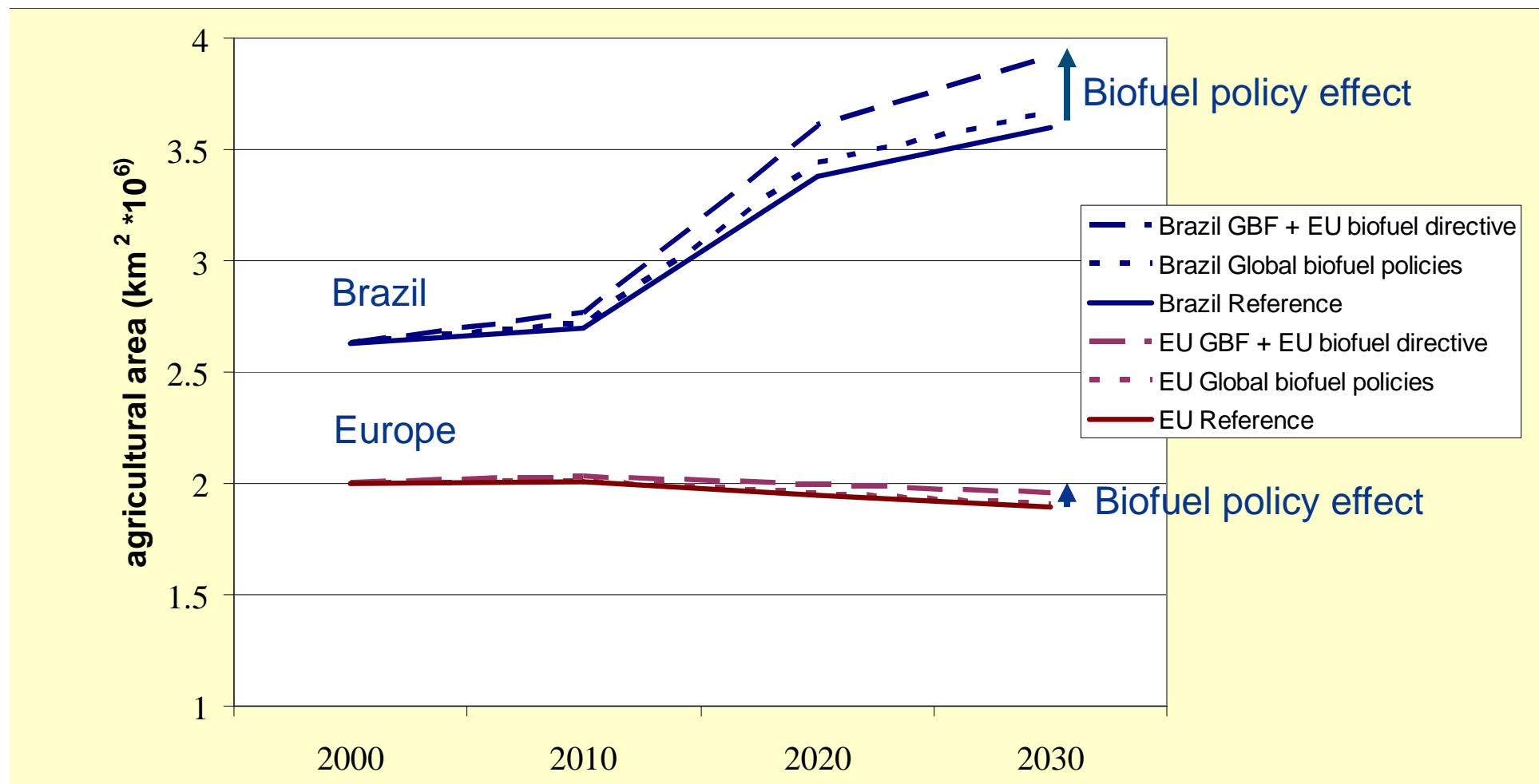
The Netherlands

Soil and CC alternative

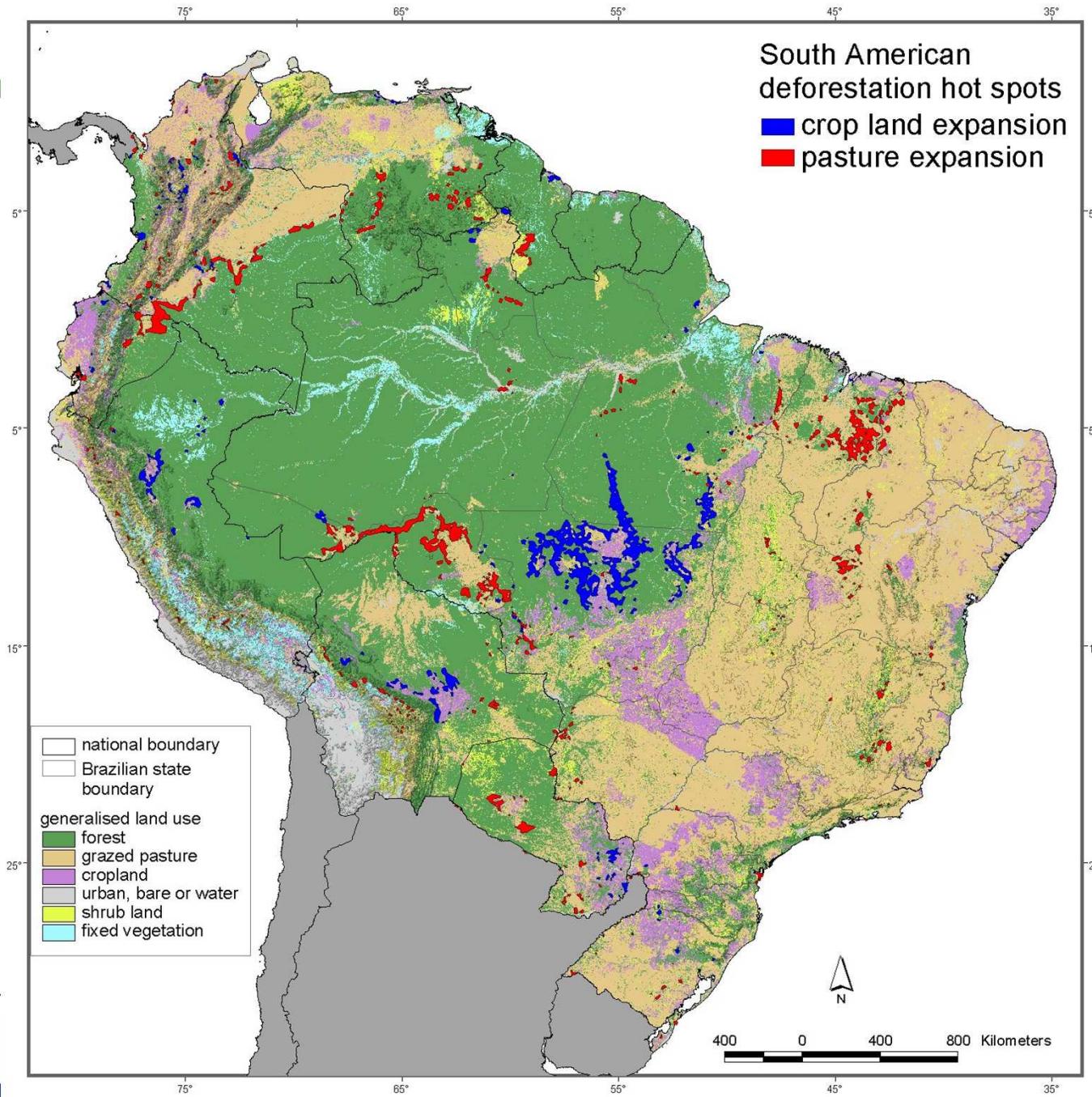




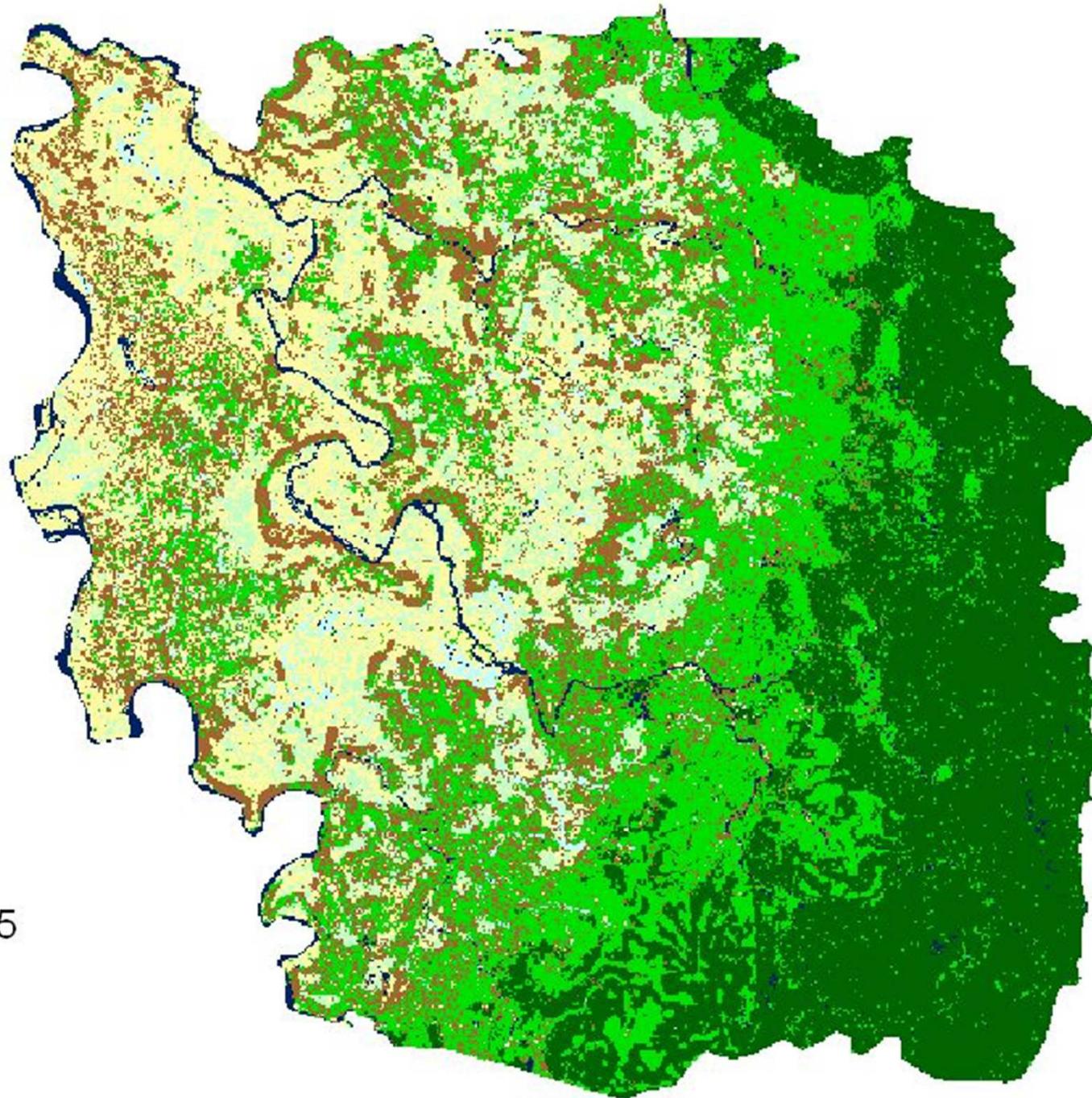
Competing claims: Europe and the rest of the world



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



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Global Change
↔
Local adaptation



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Using the spatial variation of the environment to adapt to climate change

river
28

Thank you !

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