

Broad scale LCLUC in Eastern Europe – Patterns, drivers and effects



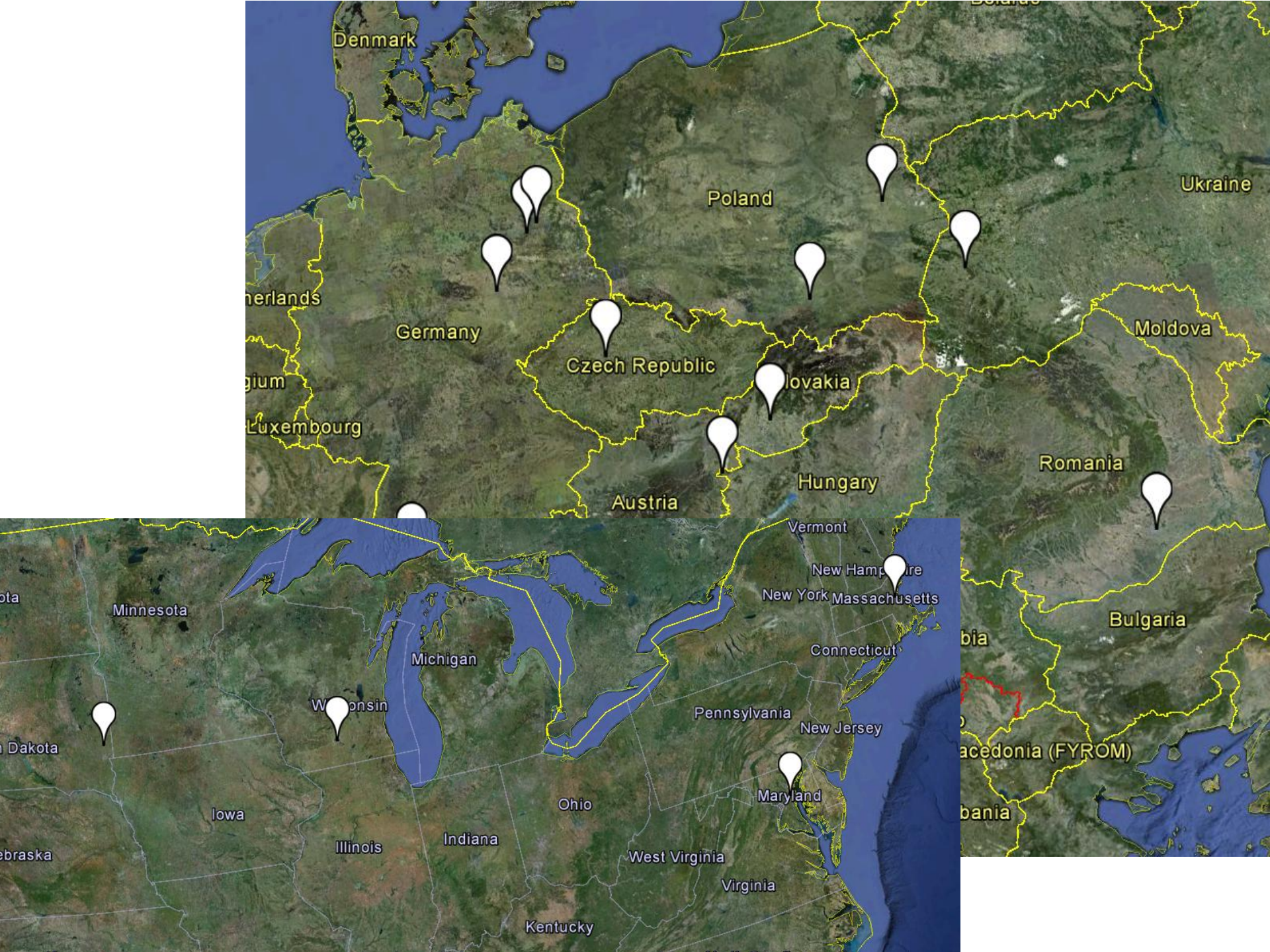
Catalina Munteanu, Volker C. Radeloff, Tobias Kuemmerle, Peter Potapov, Matthias Baumann, Patrick Griffiths, Camilo Alcantara, Eugenia Bragina, Patrick Culbert...

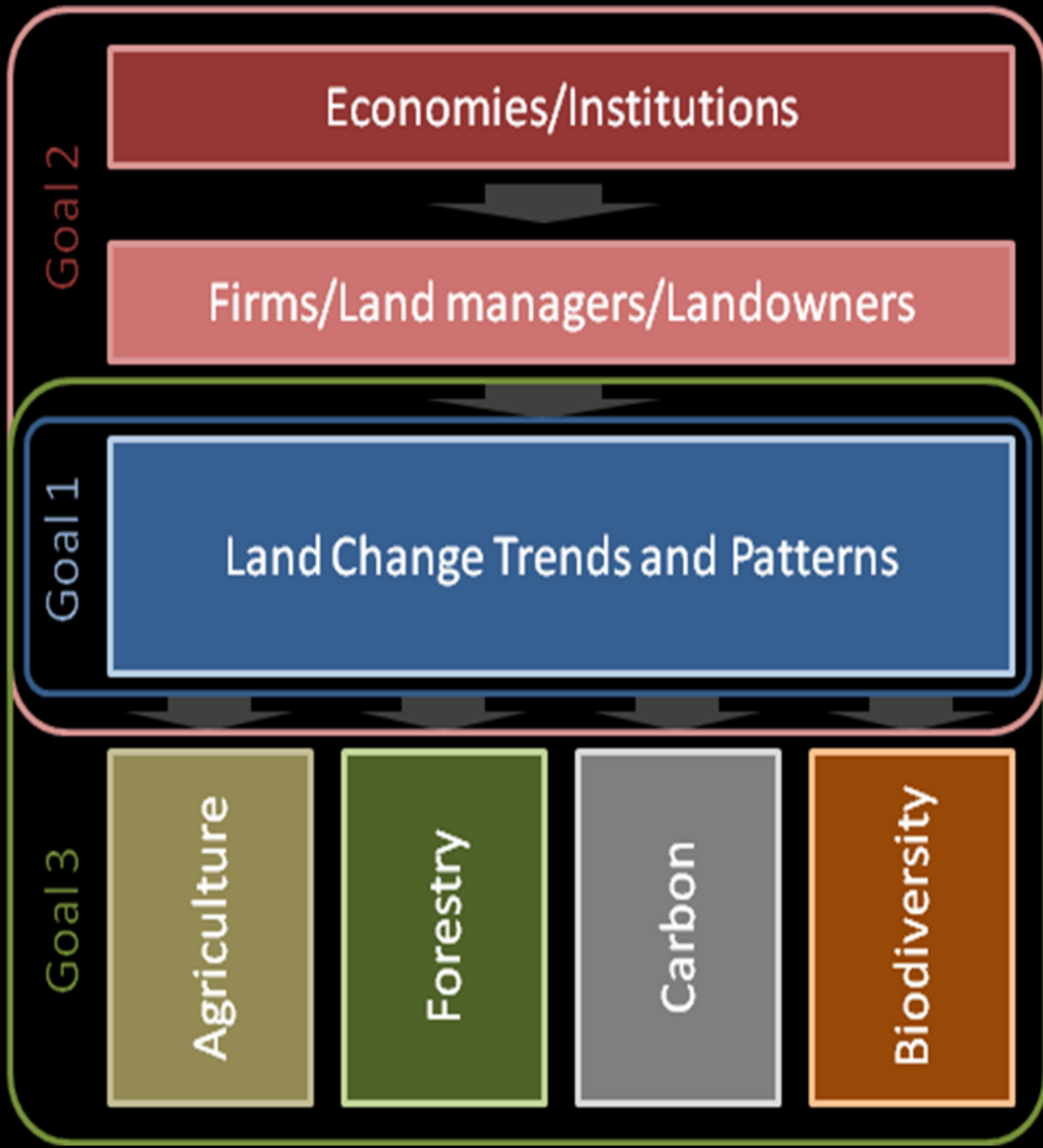
...and the consortia of:

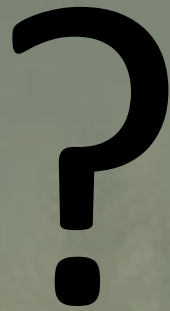


Land-Cover / Land-Use Change
Program

- 200 years land use land cover change in the Carpathian Basin
- Synthesis of studies on institutional change and LCLUC effects on carbon, biodiversity, and agriculture after the collapse of the Soviet Union







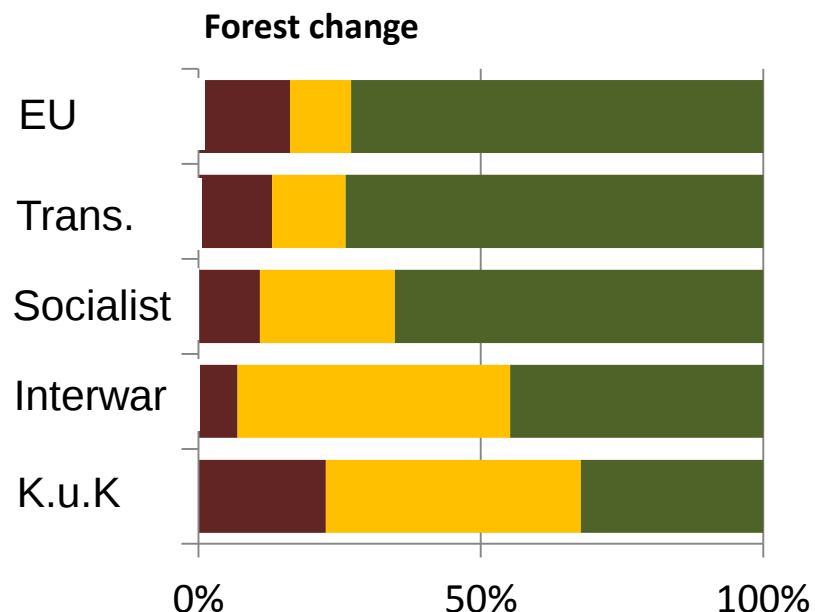
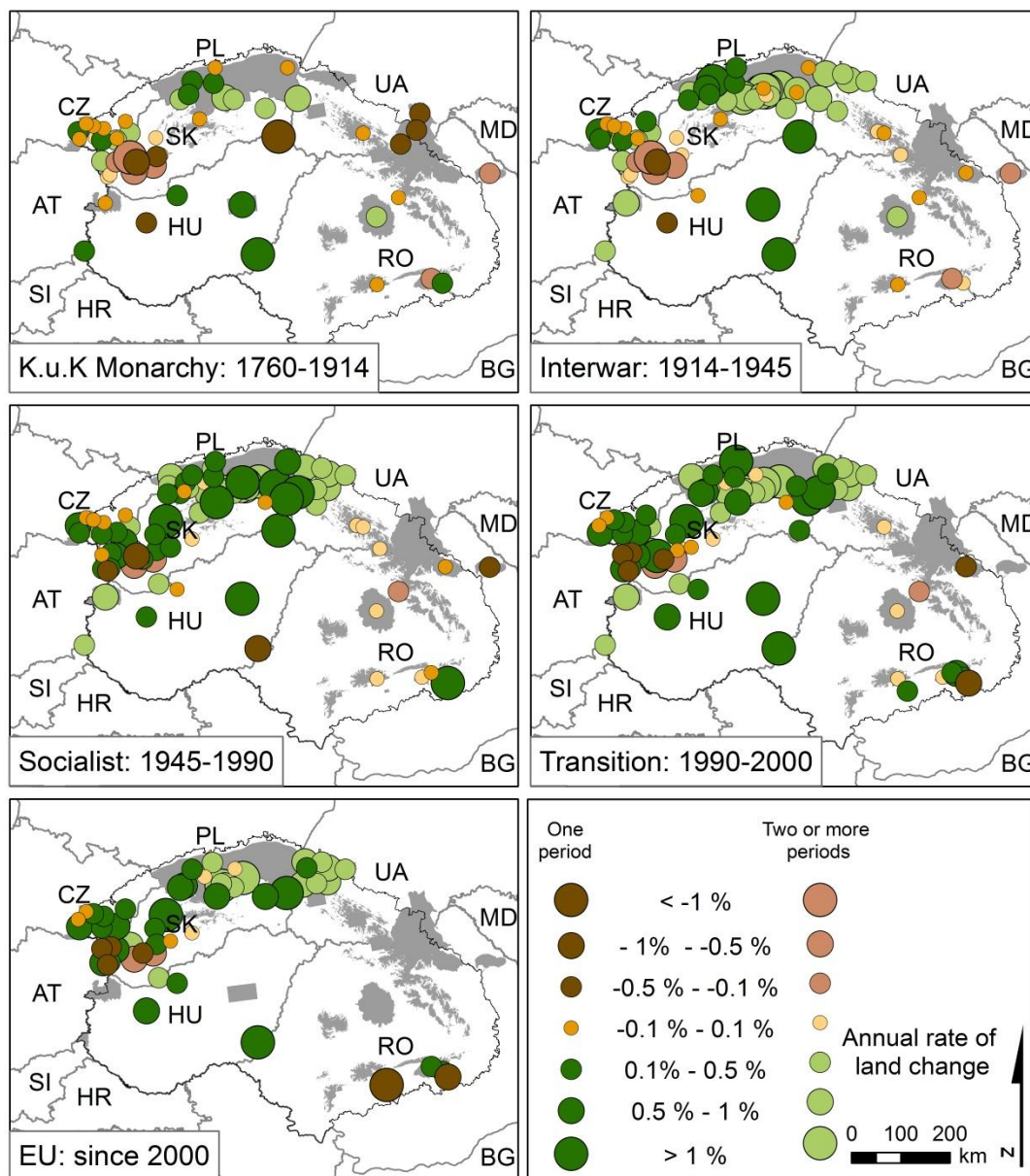
Understand the effects of socioeconomic shocks on land cover change, land use intensity and the implications for biodiversity

Outline

- Forest cover change
- Agricultural abandonment
- Effects on large mammals

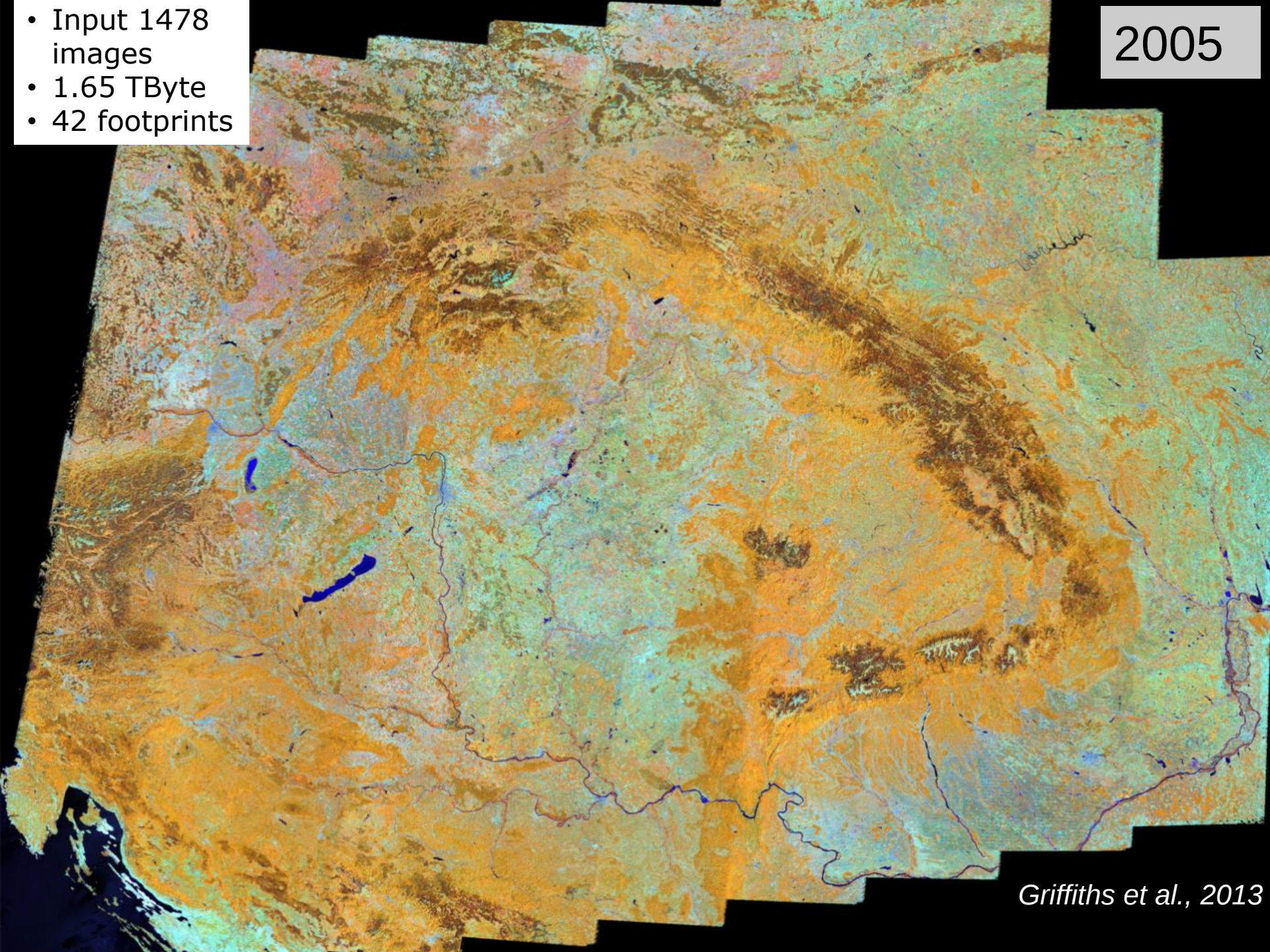
1760-2010

- Forest transition 1914-1945
- Temporal variation



- Input 1478 images
- 1.65 TByte
- 42 footprints

2005



Griffiths et al., 2013

2000-2012



ТОВАРИЩИ
ЛЕСОРУБЫ!
С Д Е Р Ж И М
С Л О В О , Д А Н Н О Е
Т О В А Р И Щ У
С Т А Л И Н У !

- Forest recovery
- generally less logging
- regions matter
- non-linearities



Outline

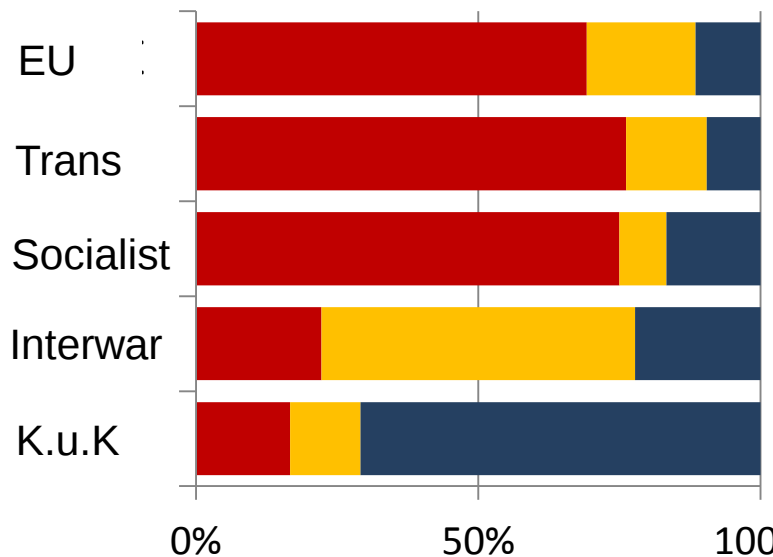
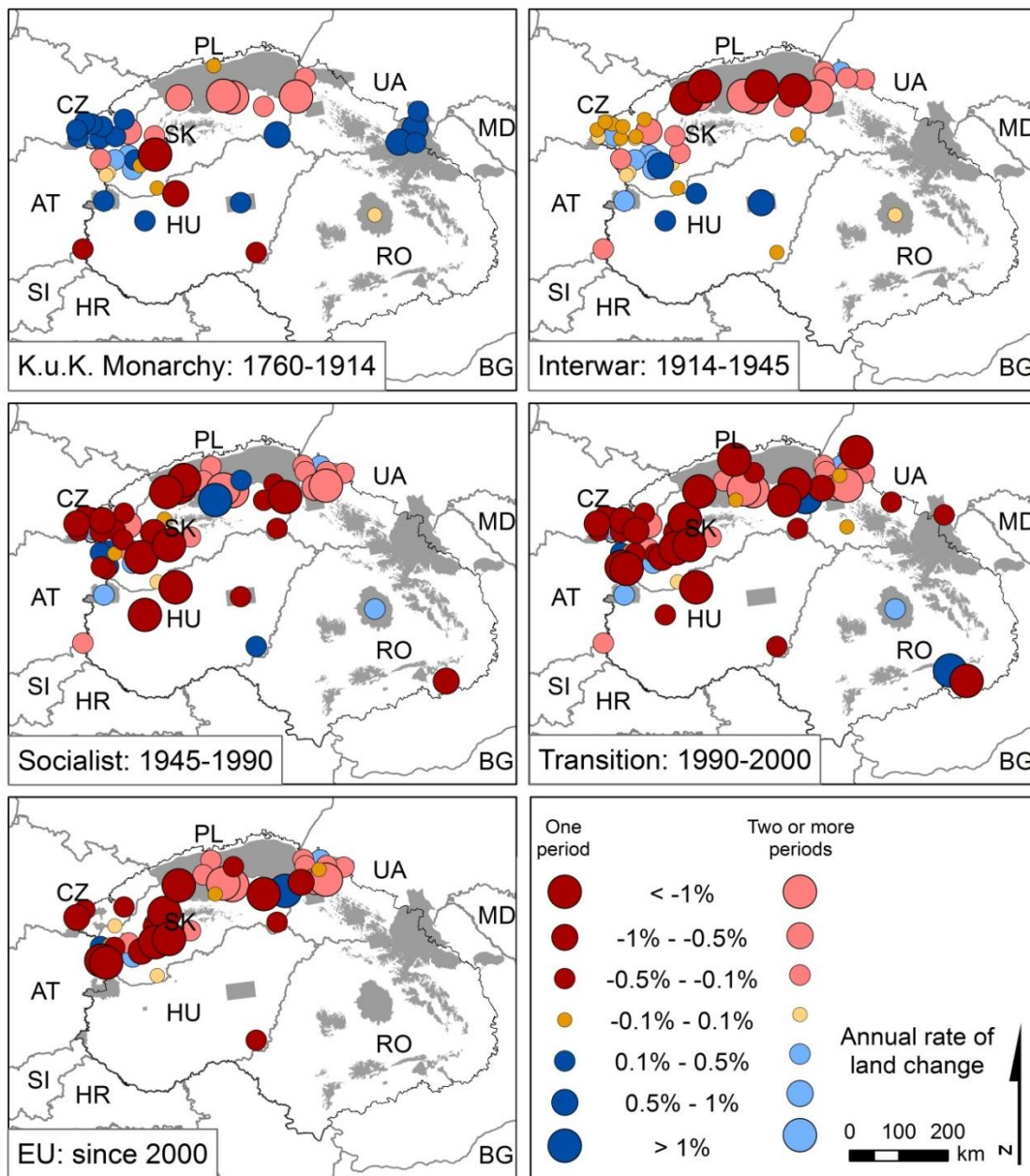
- Forest cover change
- Agricultural abandonment
- Effects on large mammals



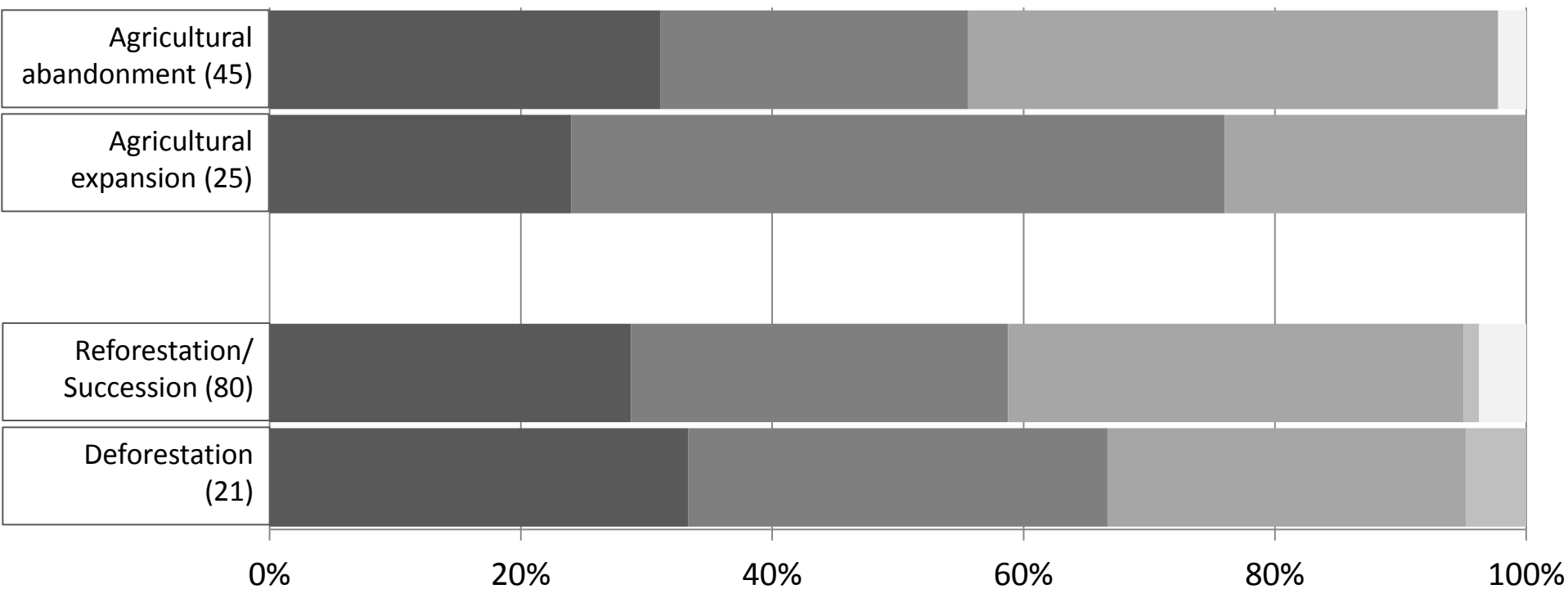
Photo: A. Prishchepov

1760-2010

- Abandonment since socialism
- Temporal variation



Political	Economic	Socio-demographic	Cultural	Climatic
-National & regional policy -Political system -Institutional changes -Incentives & subsidies	-Market access & commercialization -Urbanization & -Industrialization -Infrastructure -Technological development & innovation	-Migration -Displacement and colonization -Sector employment -Population density	-Public attitudes -Traditional practices -Regional values & beliefs -Individual & household behavior	-Climatic variability -Temperature changes -Precipitation changes

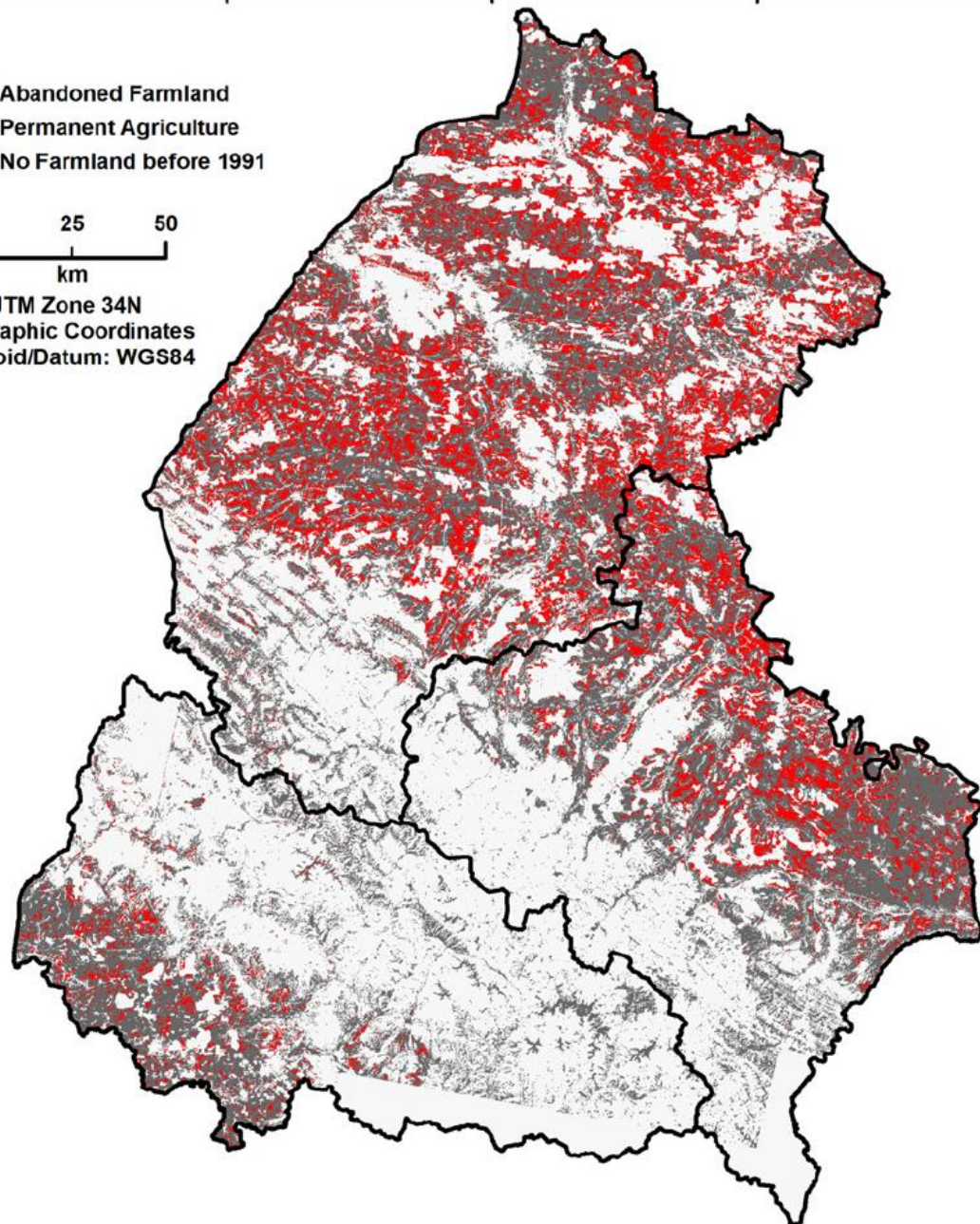


A

Abandoned Farmland
Permanent Agriculture
No Farmland before 1991

0 25 50
km

UTM Zone 34N
Geographic Coordinates
Ellipsoid/Datum: WGS84



B

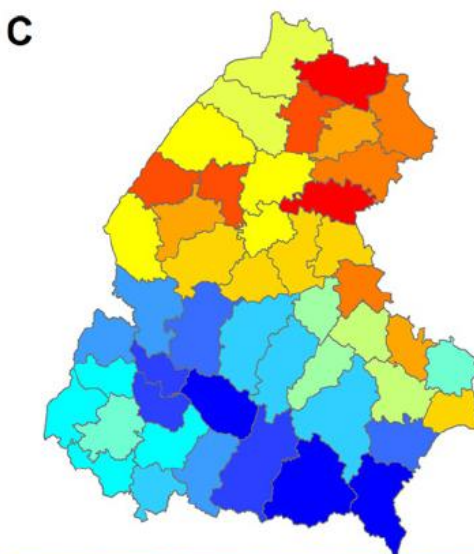
1986-2008

50°0'0"N

49°0'0"N

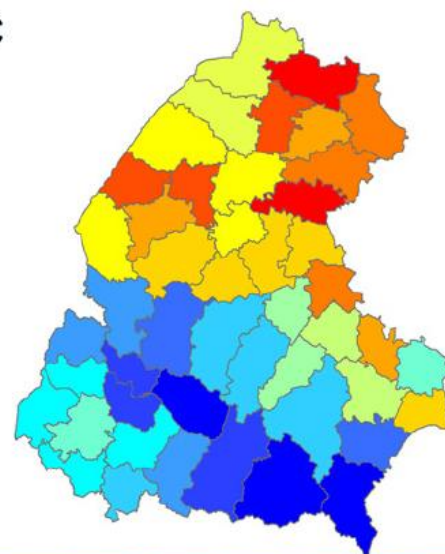
48°0'0"N

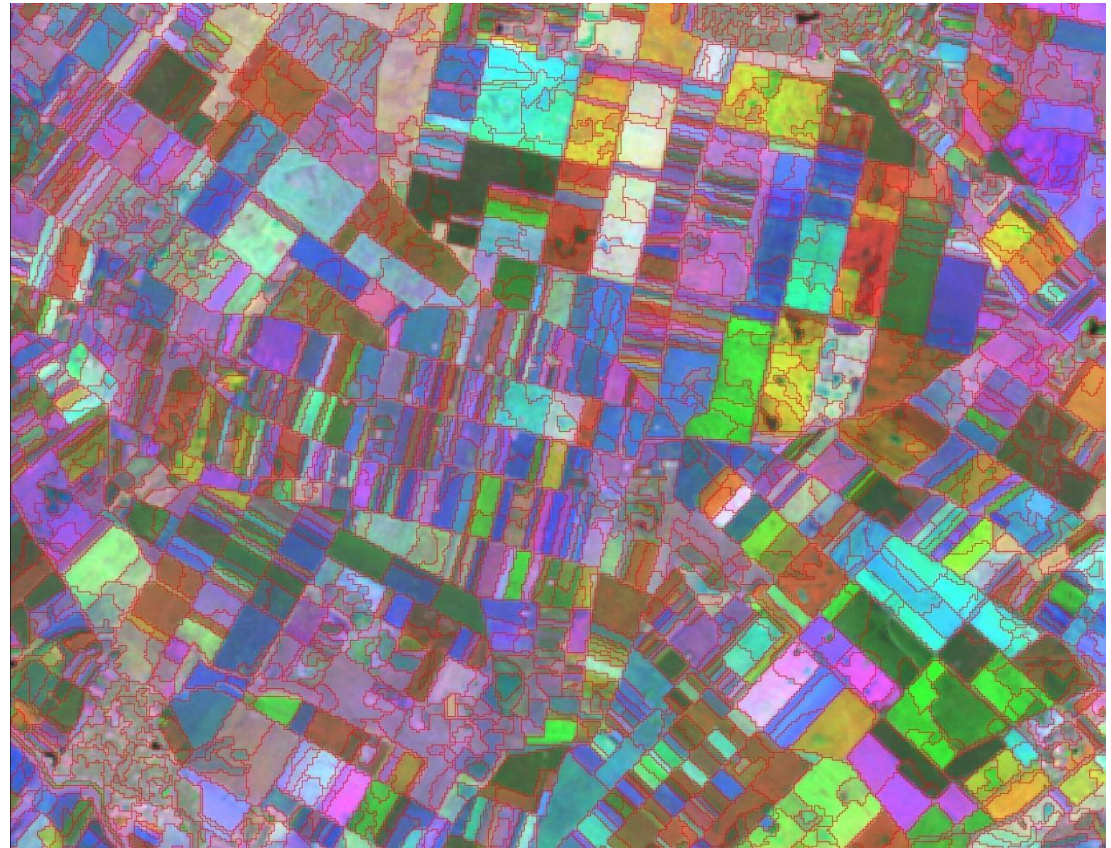
Pre-1991 Farmland
Other Pre-1991 Land Cover



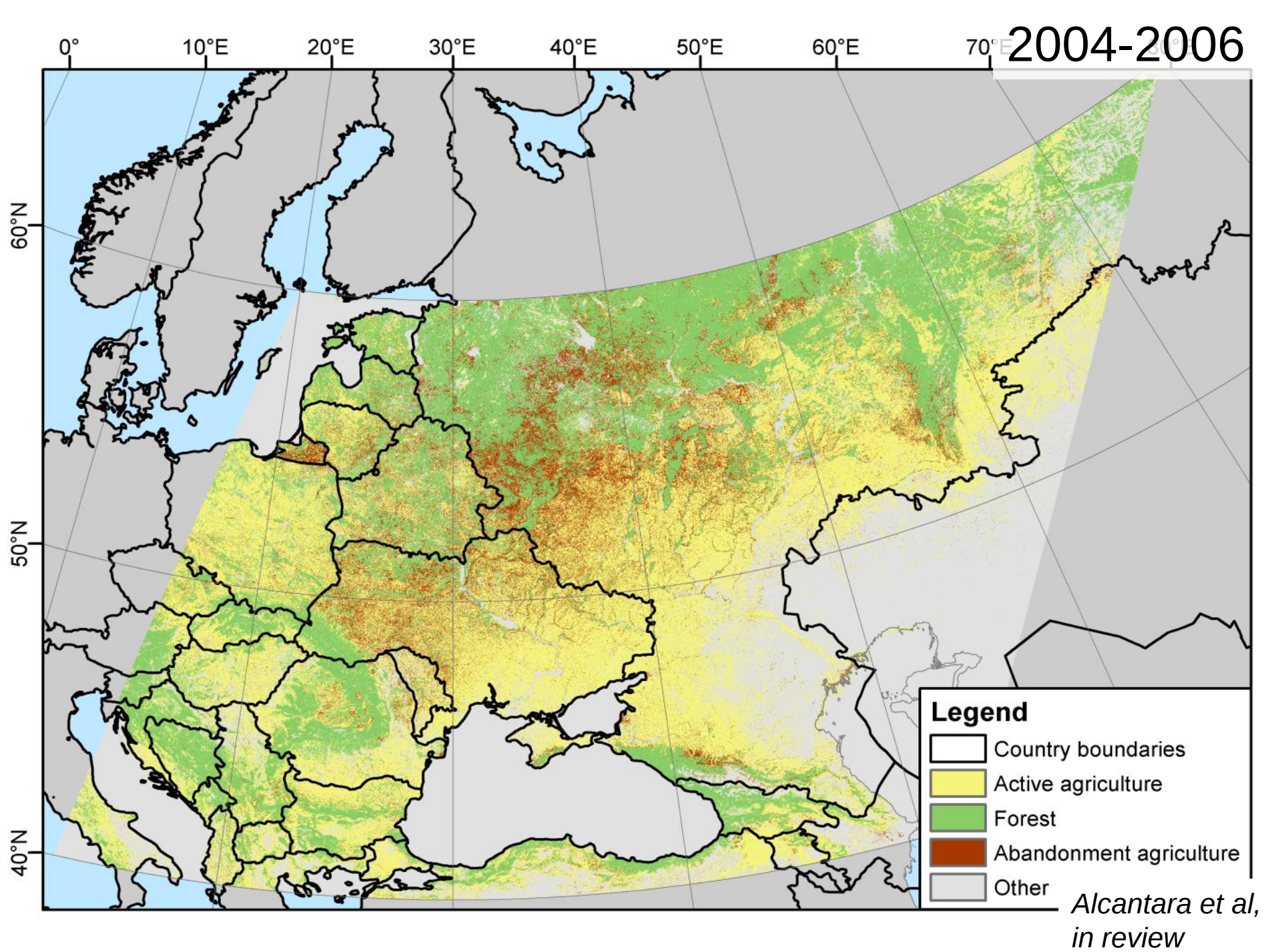
C

0% 10% 20% 30% 40% 50%

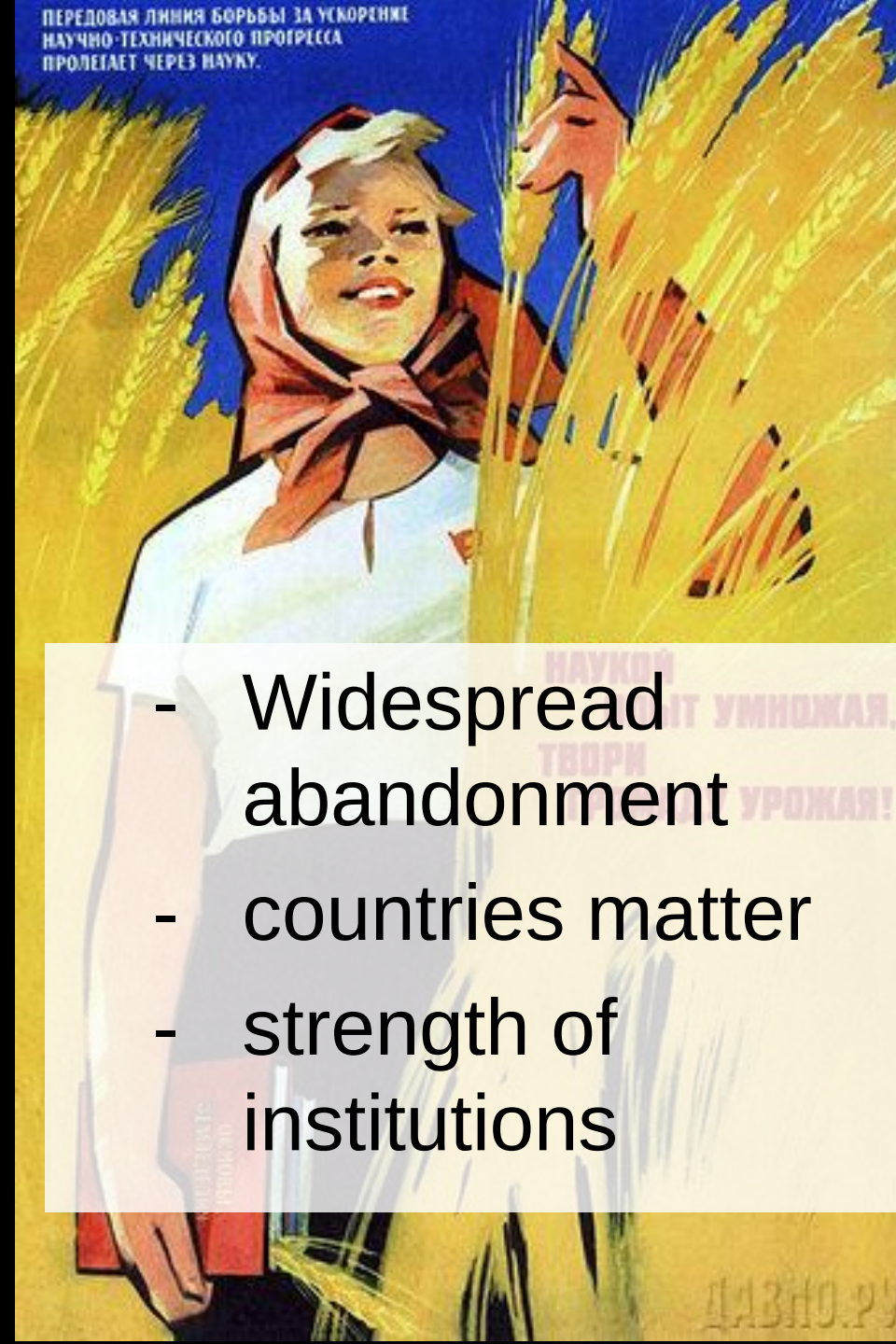




Field size: - agricultural intensity



ПЕРЕДОВАЯ ЛИНИЯ БОРЬБЫ ЗА УСКОРЕНИЕ
НАУЧНО-ТЕХНИЧЕСКОГО ПРОГРЕССА
ПРОЛЕГАЕТ ЧЕРЕЗ НАУКУ.



- Widespread abandonment
- countries matter
- strength of institutions

НАУКА
УМНОЖАЯ,
ТВОРИТ
УРОЖАЯ!

ДАВНО.РУ

Outline

- Forest cover change
- Agricultural abandonment
- Effects on large mammals

Uniunea Republicilor

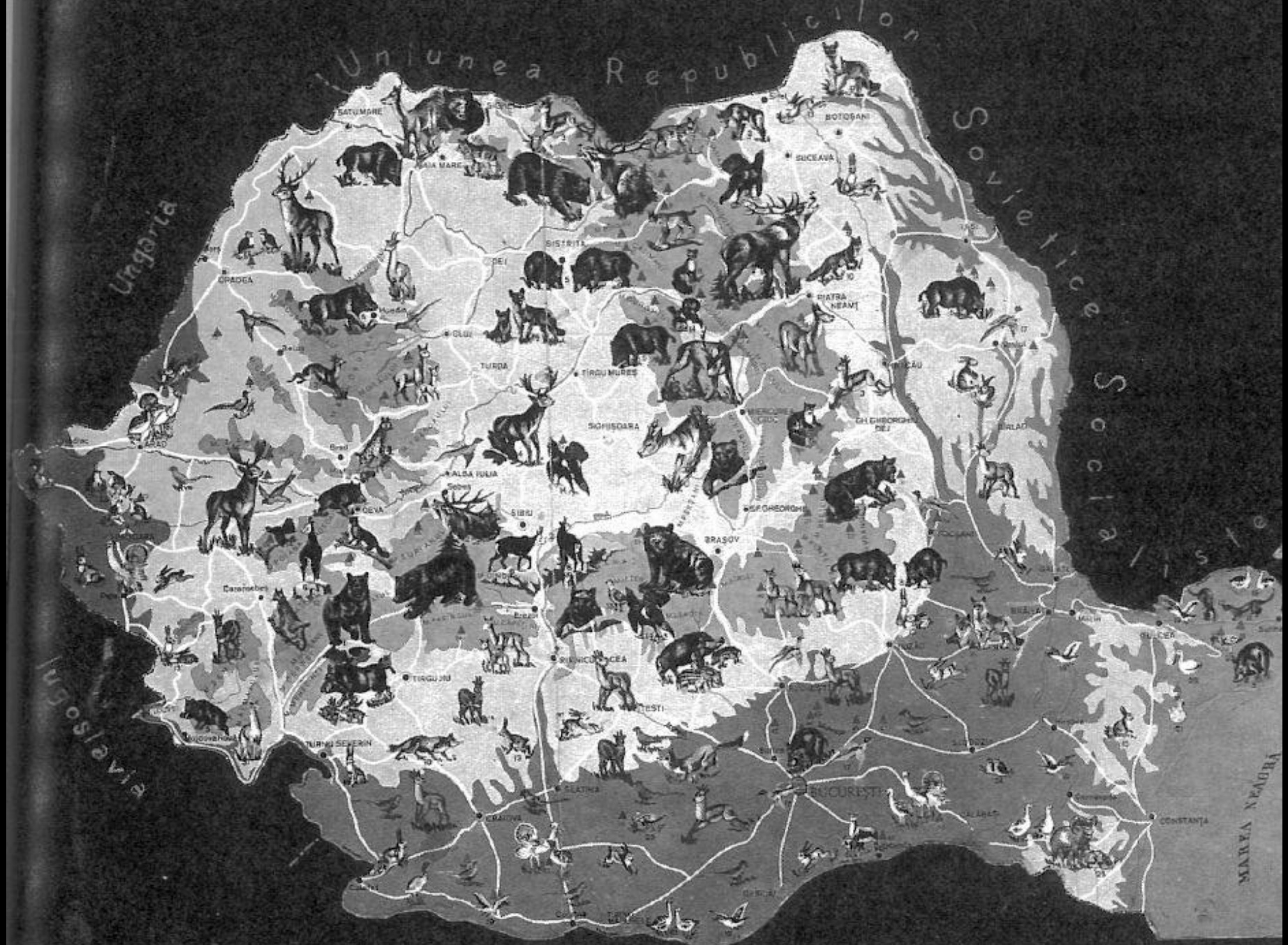
Sovietice

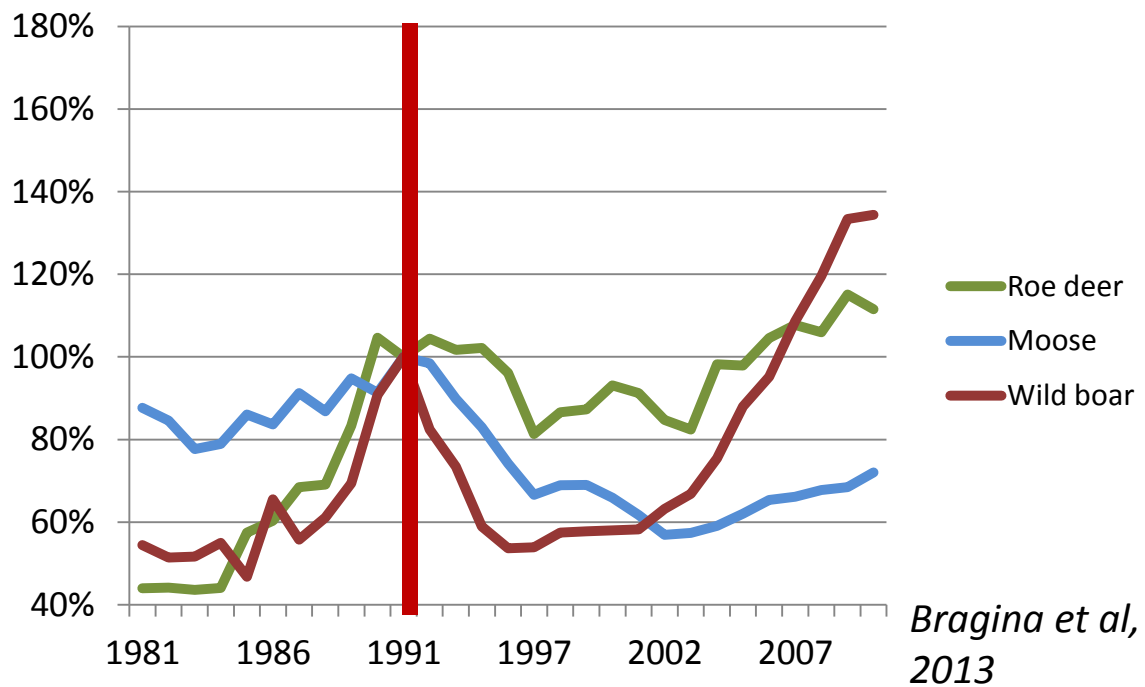
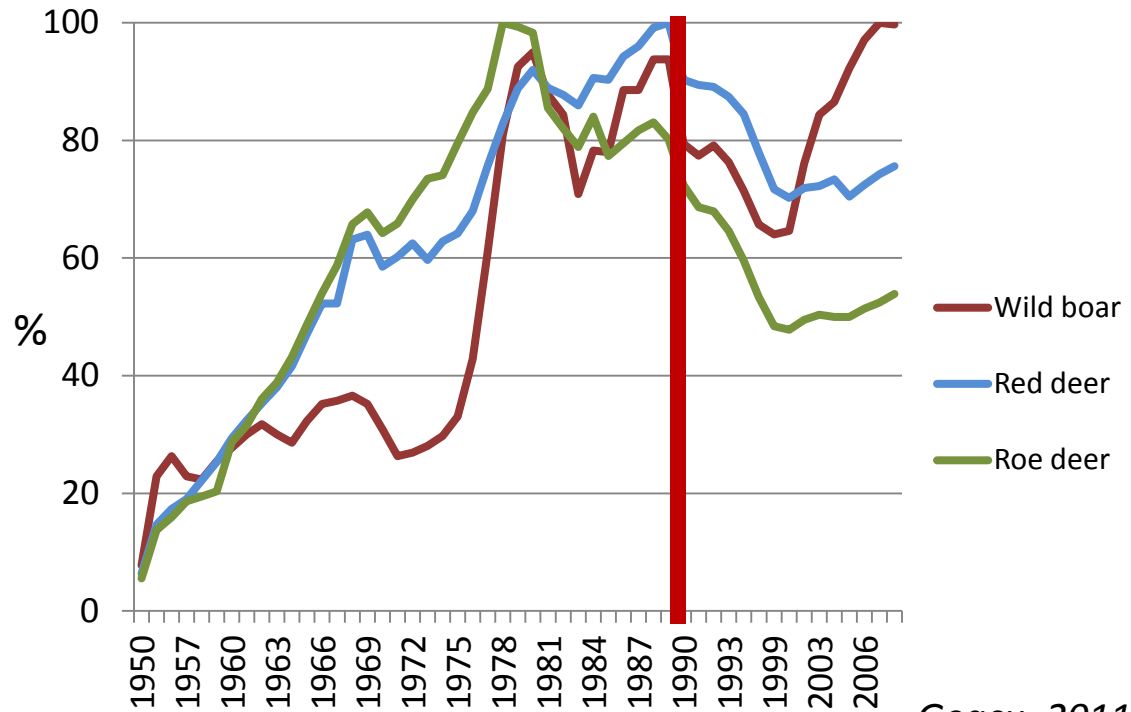
Ungaria

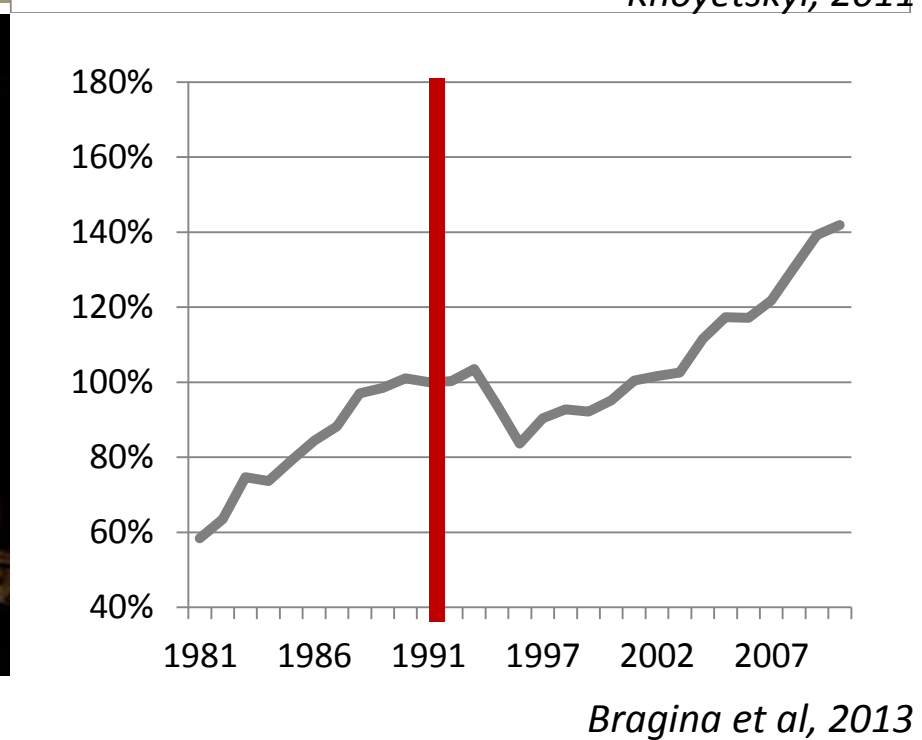
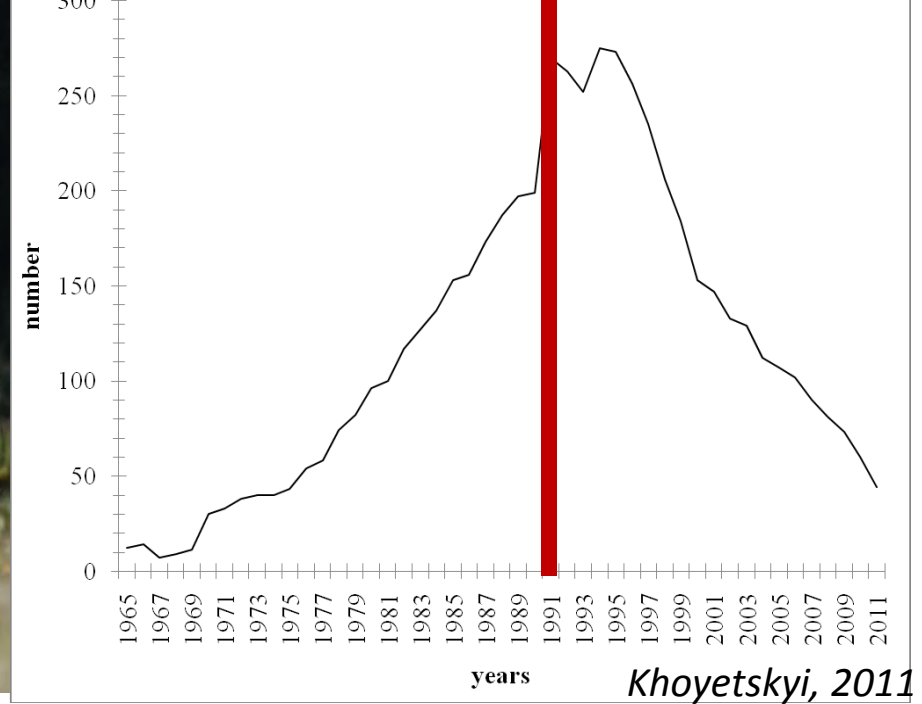
Iugoslavia

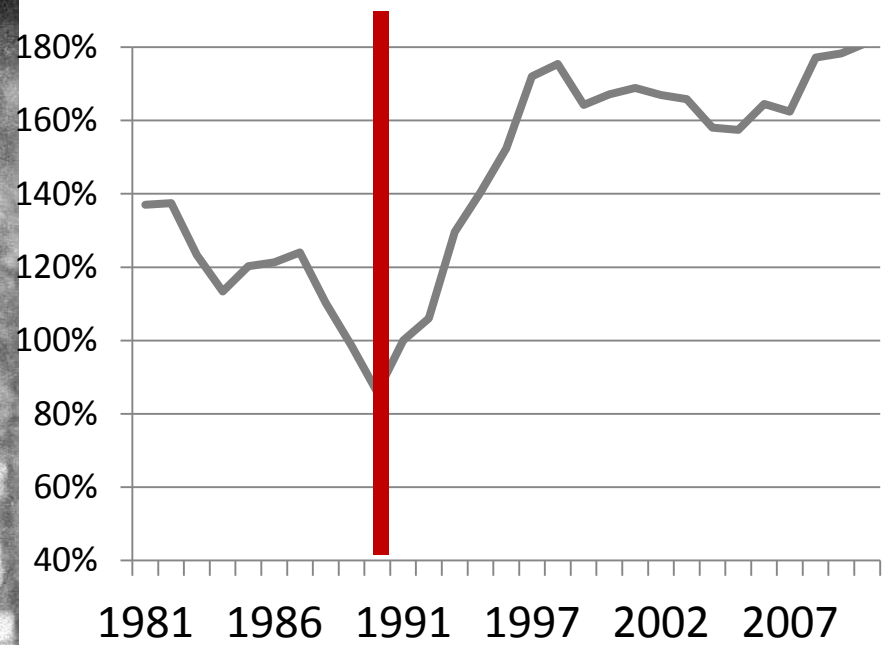
Bulgaria

MAREA NEAGRĂ

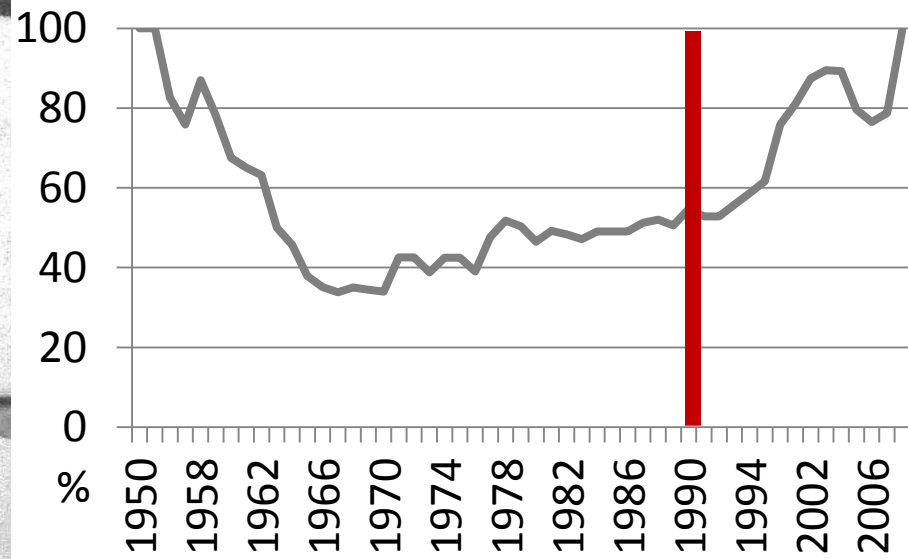








Bragina et al, 2013



Selaru, 2009



- decline and recovery
- cascading effects
- species matter

Conclusions: patterns

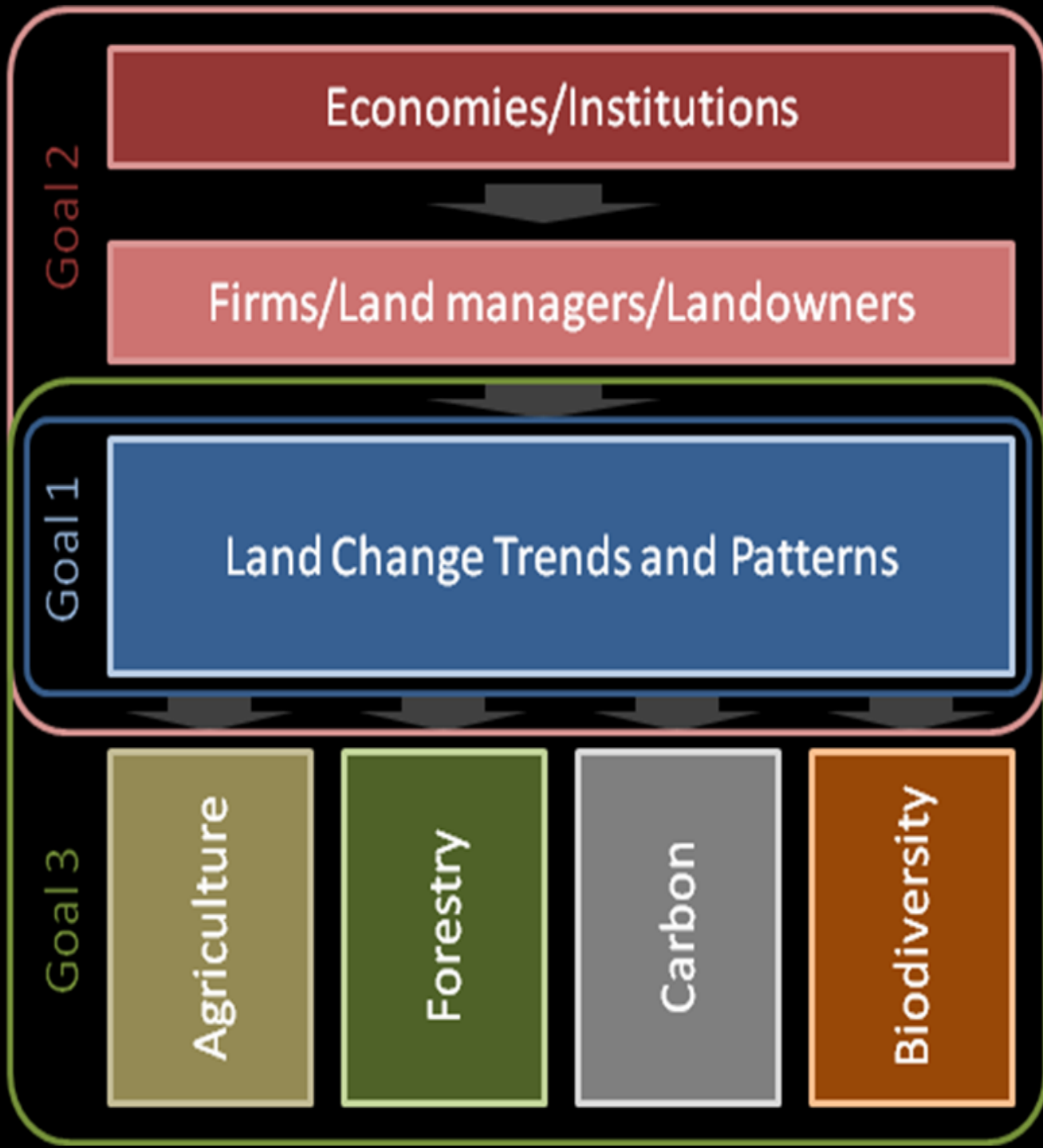
- Forest increase/ agricultural abandonment
- Countries and regions matter
- Drivers interplay
- Importance of shocks
- Importance of scales

Conclusions: theories

- Land use legacies
- Time lags
- Multiple stable states

Conclusions: networking







Thank you!



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