Scenario studies: an aide for a dynamic territorial approach to policy-making

Example of the Scenar 2020-II Study,
taking into account agricultural prospects

Peter Nowicki
Agricultural Economics Research Institute (LEI-WUR)

Scenar 2020-II was financed by Contract No. 30-CE-0200286/00-21

Presentation Overview

- Scenar 2020-II:
  Challenges & Scenarios
- Regional character
  - Social capital
  - Physical & natural capital
  - Agricultural prospects
- Policy framework
  - Regional level impacts of EU policy
- Outcomes for agricultural production
  - Preparing for change

Challenges for agriculture as identified by Scenar 2020-II

1. Structural change process in agriculture is a long-term driver that continues *with or without* policy changes.
2. EU is facing an increasing diversity of farm structures through enlargement; structural adjustment will be correspondingly important. The livestock sector faces important challenges and restructuring.
3. Alternative policy settings may not produce very different effect on the overall production. However, the regional impact may prove to be more significant.
4. The process of liberalisation has a greater impact on agricultural income than on agricultural production and land use.
    a) The reduction of border protection and export refunds has a higher impact on production than does a reduction of direct payments.
    b) The reduction of direct payments has a higher impact on agricultural income than on agricultural production.

Scenar 2020-II Scenario Structure

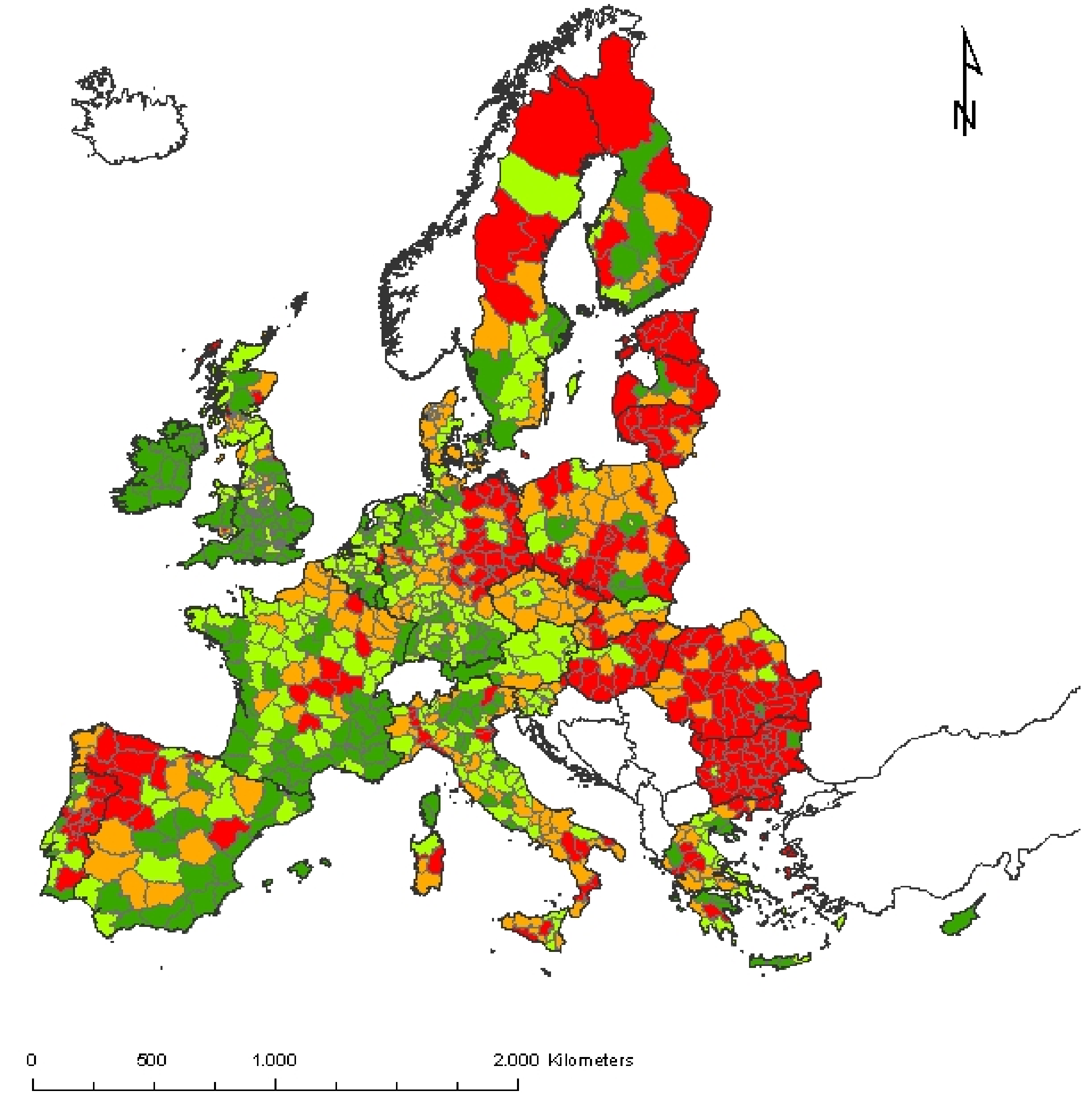
	Reference	Conservative CAP	Liberalisation
Financial Perspective 2014-2020	Reduction of 20% of CAP budget in real term – constant in nominal term	Reduction of 20% of CAP budget in real term – constant in nominal term	Reduction of 75% of CAP Budget in real term – -55% in nominal term
Market policies	Balanced market, i.e. keeping public intervention stocks at 2% of domestic consumption (if stocks are too high support price will be decreased) without compensation	Results of Health Check (HC) reform to be continued after 2013	No intervention
System of intervention	HC Intervention system	HC Intervention system	No intervention
Level of intervention	Adjustment to balance markets	HC level	
Direct Payment	- Implementation of SPS as of 2013 - Full decoupling - 30% decrease in DP in nominal term	- Flat rate (regional model) at national level - Coupling as HC - 15% decrease in nominal term	- Removing of all payments
Rural development	Increase of EAFRD +105%	Increase of EAFRD +45%	Increase of EAFRD +100%
Trade issues	WTO Agreement: stylised representation based on Falconer paper.	Reference scenario	Removing of all import tariffs
Additional trade premises	Stylised representation of bilateral agreements - EPA - EuroMed, Mercosur, India	Reference scenario	Removing of all import tariffs, TRQ, phasing out of export refunds
Biofuel policies	10% target in 2020	10% target in 2020	10% target in 2020

Understanding regional character: social, physical and natural capital

Although there are some differences in the scenario structure, the foundations for the future are the same

- Economy-wide and global dynamics
  - Beyond the immediate economic crisis, GDP per capita to expand globally, and EU regional demographic shifts will continue
- Environmental quality conditions agricultural risks
  - Natural environment offers suitability and constraint characteristics to regional economic activities
- Structural change – long term trends
  - Ongoing structural change in EU economy maintains wage gap between agricultural and other sectors
  - The number of farm units and the structure of regional agriculture will continue to change, even dramatically under a liberalisation scenario

Demographic developments



Declining → 422 regions

Increasing → 435 regions

SCENAR 2020-II

Demographic developments

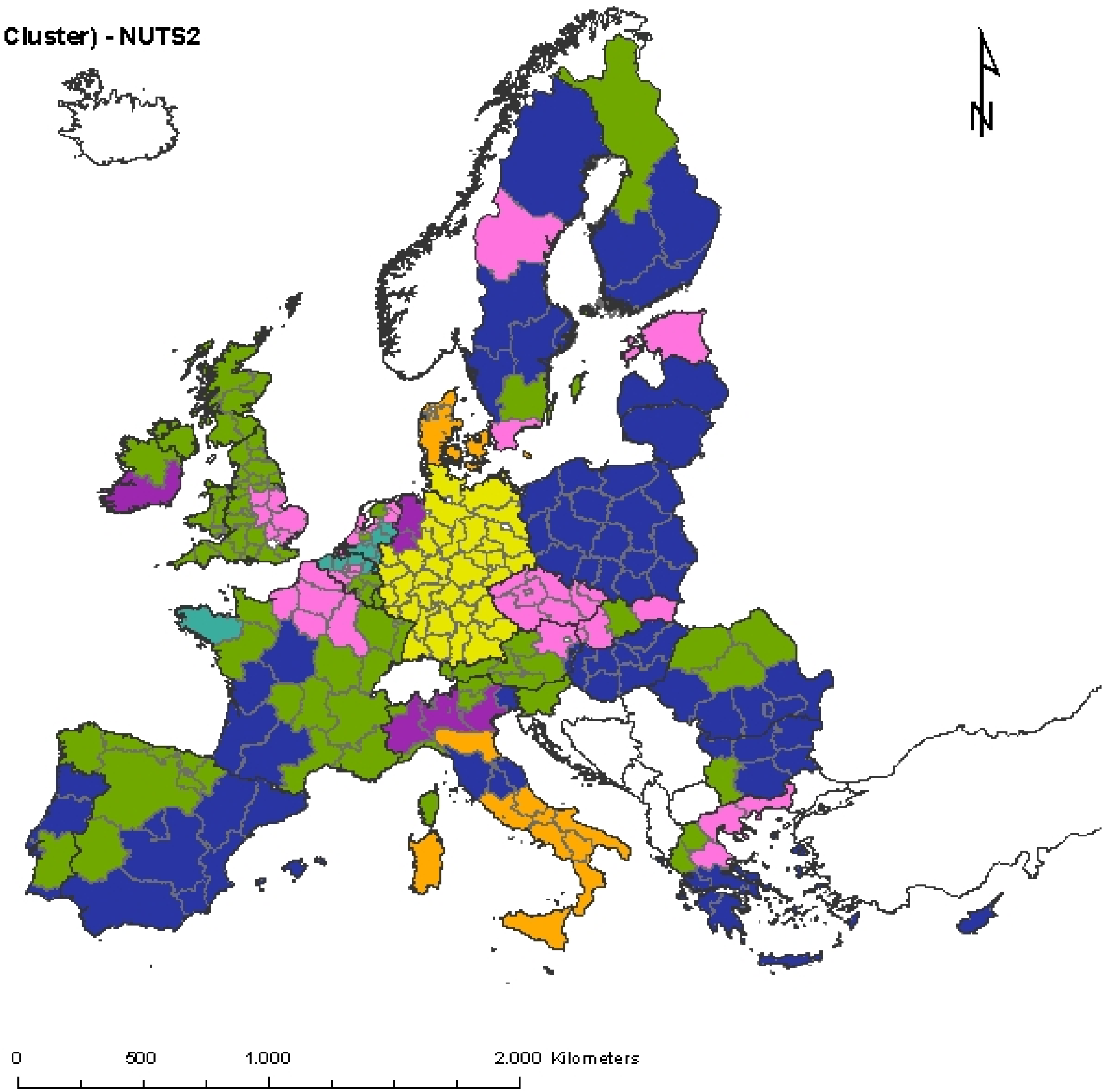
OECD_Classification	N° regions	high_popdecl ≤ - 0.3	low_popdecl > 0.3 - ≤ 0	low_popgrowth > 0 - ≤ 0.4	high_popgrowth >0.4
most rural	358	135	78	79	66
intermediate rural	292	58	70	80	84
most urban	207	40	41	69	57
Total	**857**	**233**	**189**	**228**	**207**

Most rural regions → 59 % in declining groups

Intermediate rural → 56 % in increasing groups

Most urban → 60 % in increasing groups

Projected agricultural activity
(horizon 2020)



1 (11) Mediterranean perennials, hort.*

2 (59) European grasslands (→ grazing)

3 (6) Feedlot beef production

4 (33) Biofuel production

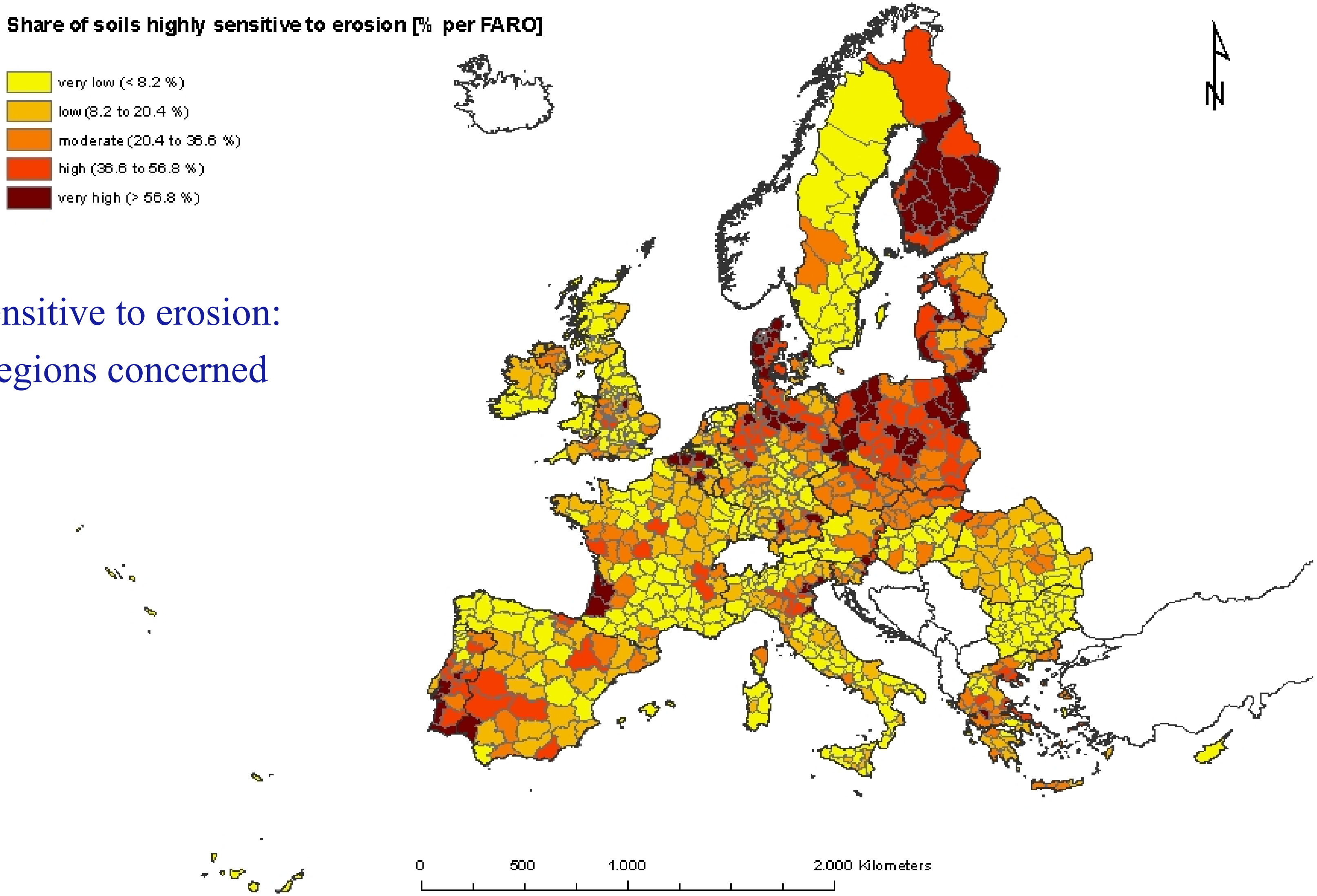
5 (9) Intensive specialised production

6 (34) Mixed crop farming

7 (73) Selected farming

*DK an outlier: linked by high voluntary set-aside

Environmental conditions:
potential for soil erosion

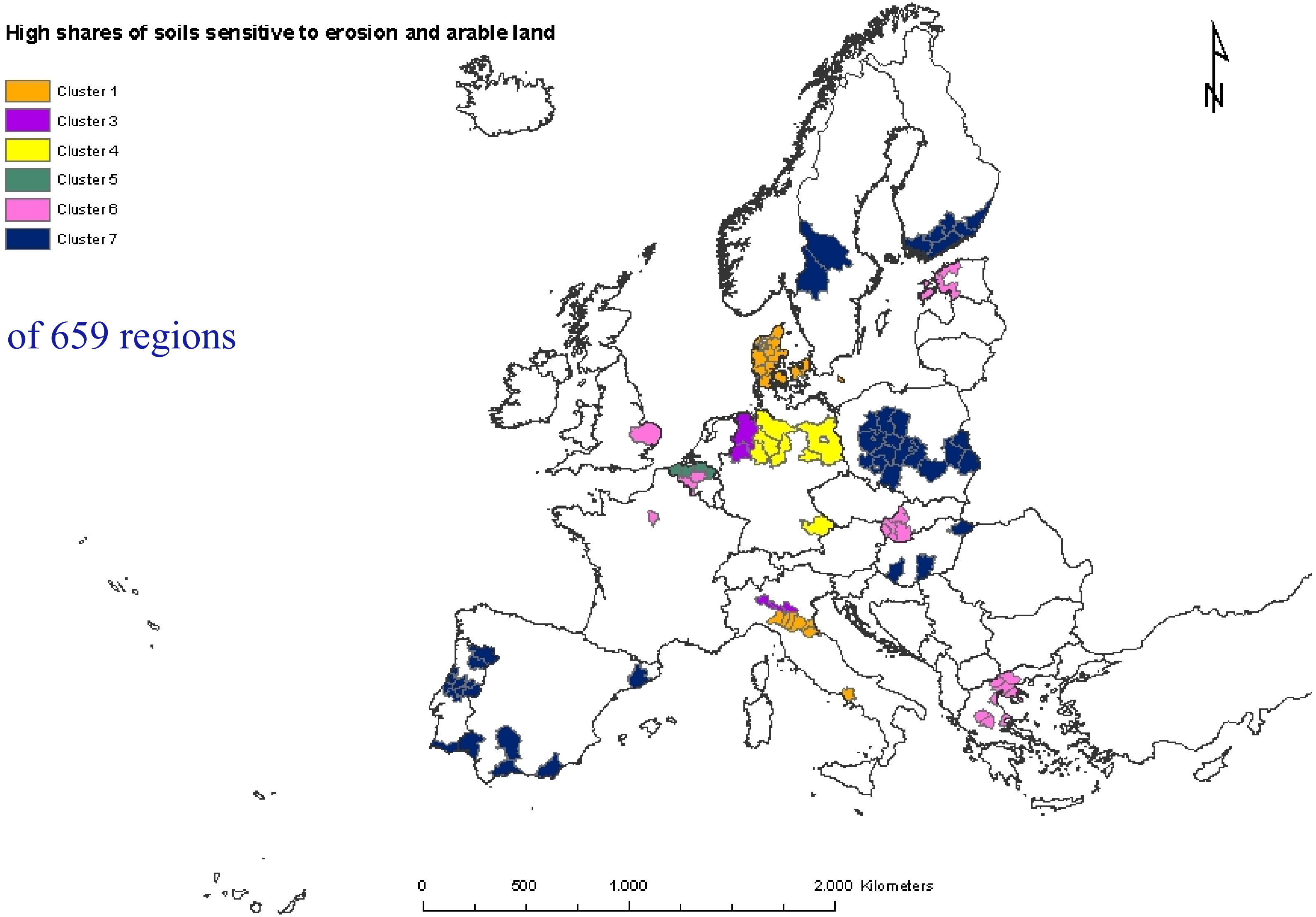


Soils sensitive to erosion:

Σ 297 regions concerned

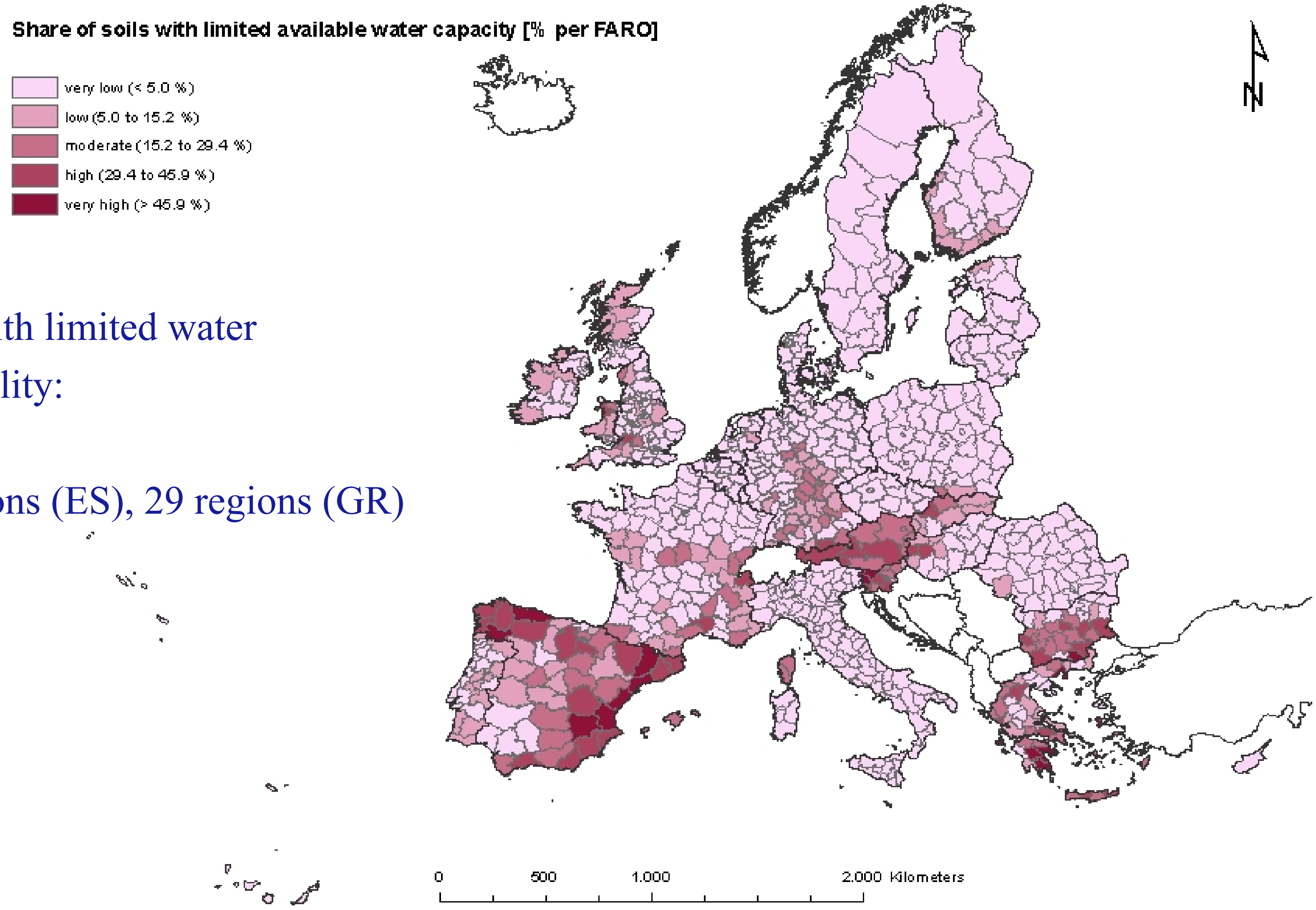
SCENAR 2020-II

Environmental risks in agriculture:
soils sensitive to erosion and arable land use



Σ 96 out of 659 regions

Environmental conditions:
soil-related water availability



Soils with limited water availability:

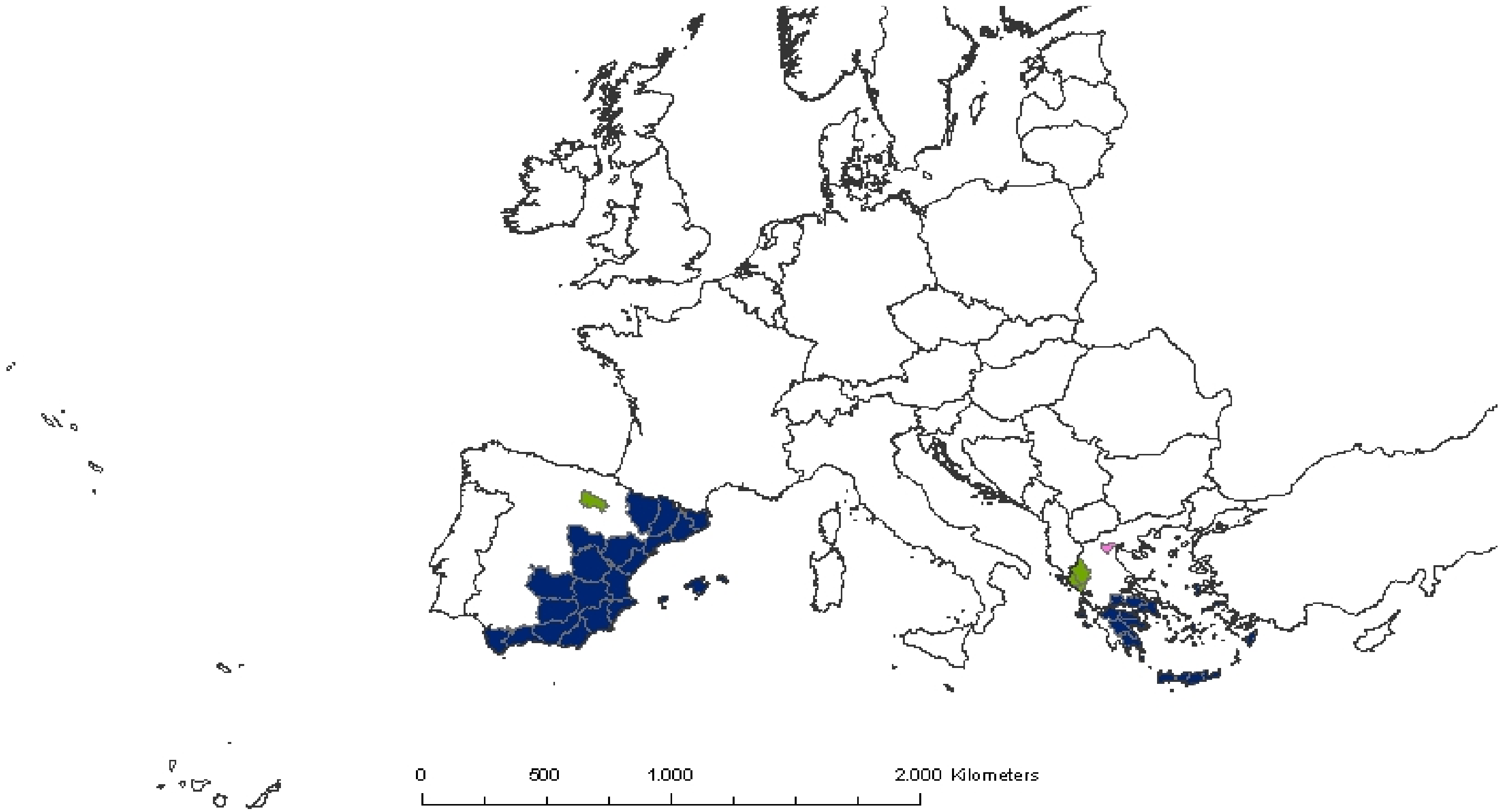
Σ137;

32 regions (ES), 29 regions (GR)

Environmental risks in agriculture:
restricted water availability

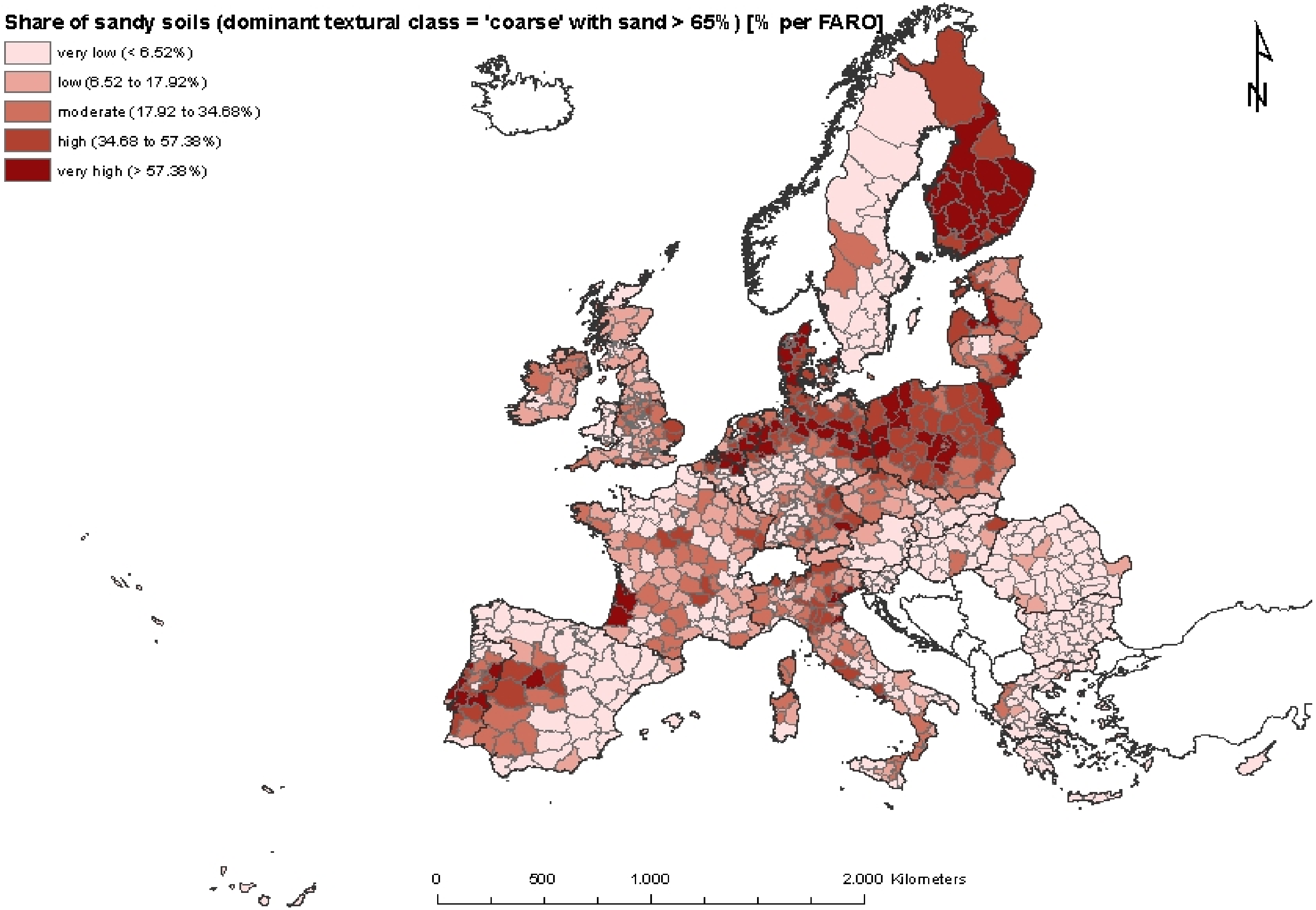
Limited available soil water capacity and high shares of permanent crops

Country	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	∑
Spain		1					20	21 (out of 50)
Greece		3				1	20	24 (out of 51)
∑	**0**	**4**	**0**	**0**	**0**	**1**	**40**	**45**

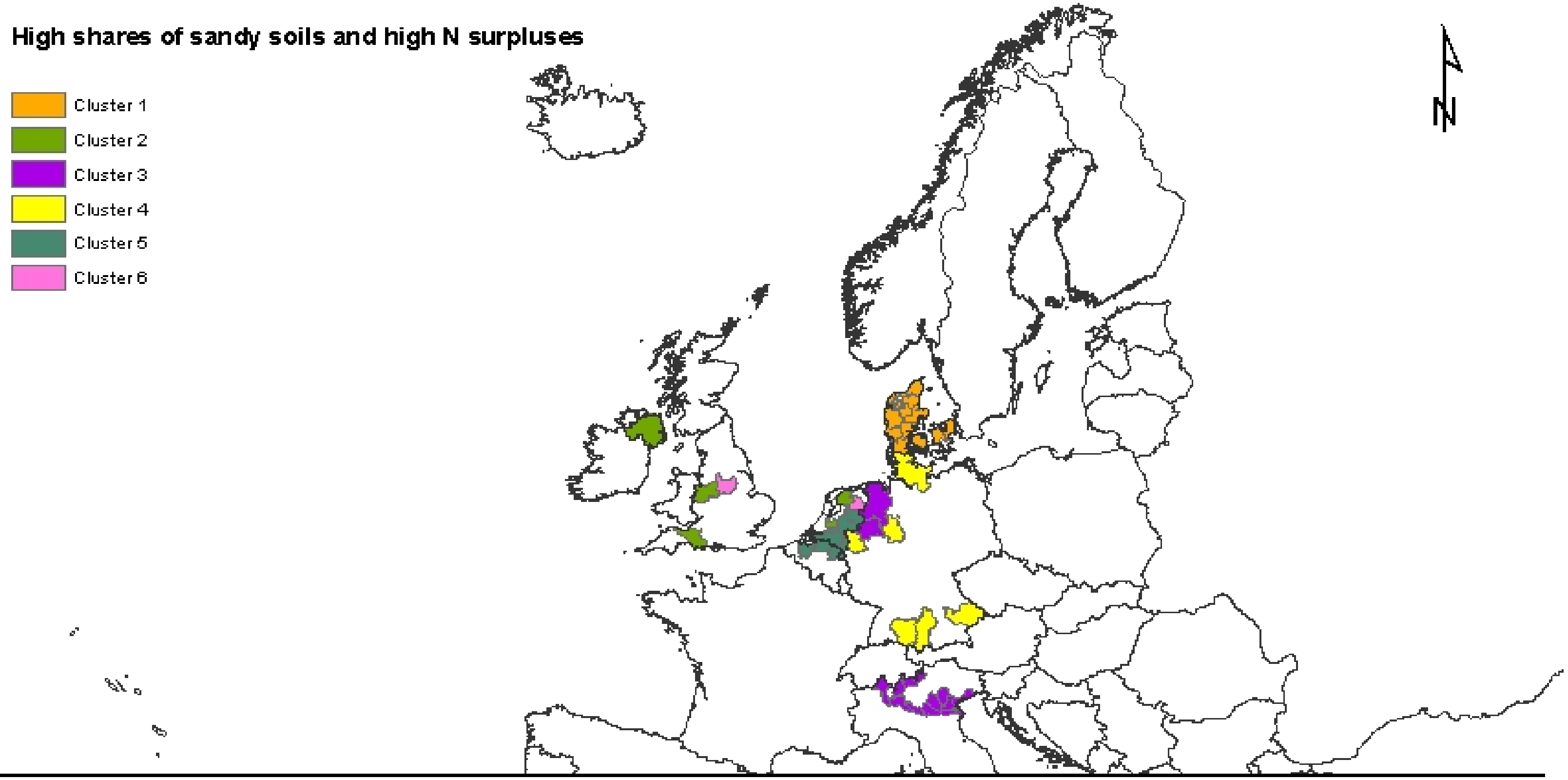


SCENAR 2020-II

Environmental conditions:
permeable soils



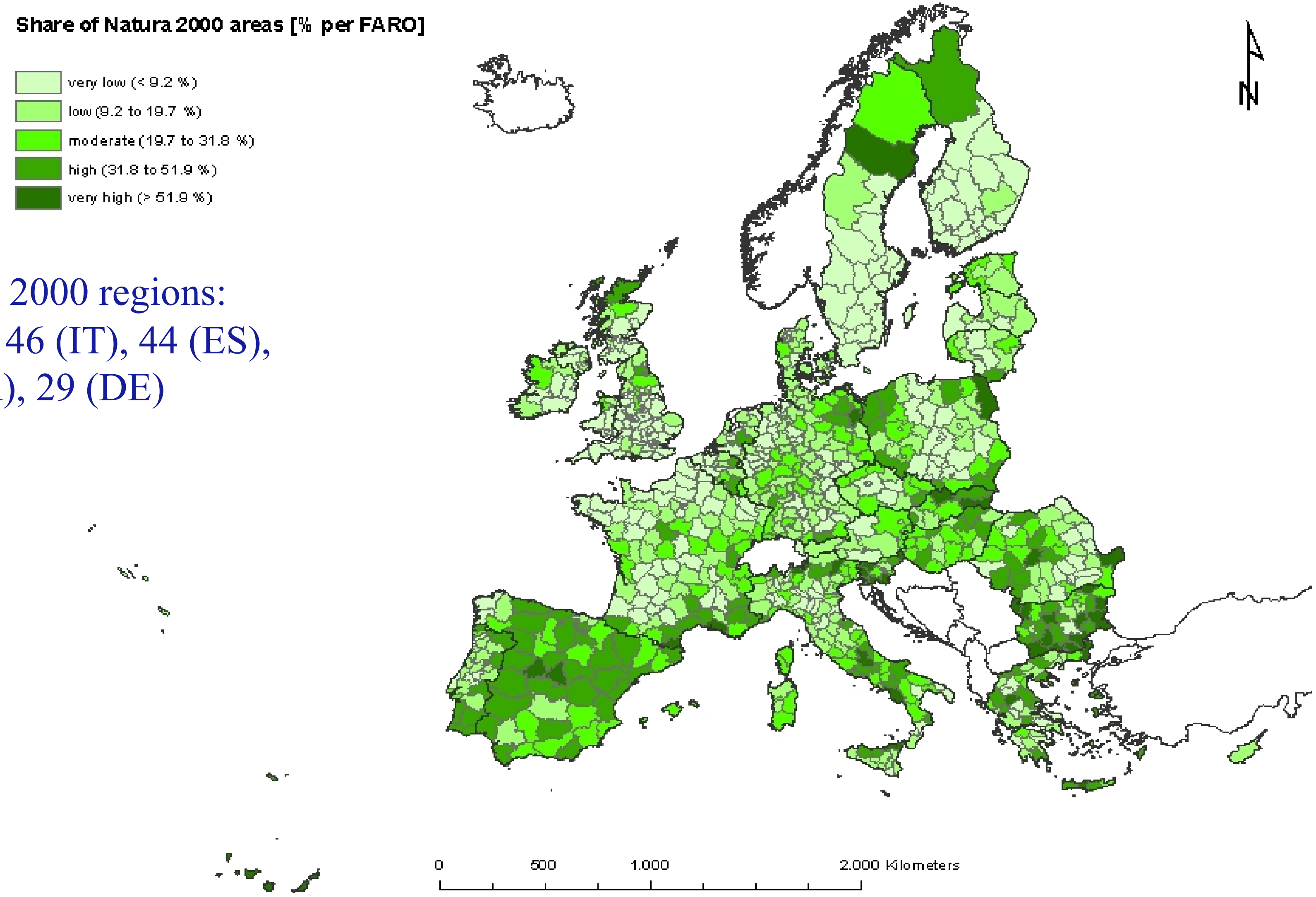
Environmental risks in agriculture:
leaching of farming-generated N-surplus on permeable soils



Country	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	total
HARM2	59	174	28	33	12	78	275	659
Germany			4	6				10 (out of 36)
Denmark	10							10 (out of 12)
Italy			11					11 (out of 95)
NL		2			4	1		7 (out of 12)
UK		3				1		4 (out of 26)
total	**10**	**5**	**15**	**6**	**7**	**2**	**0**	**45**

SCENAR 2020-II

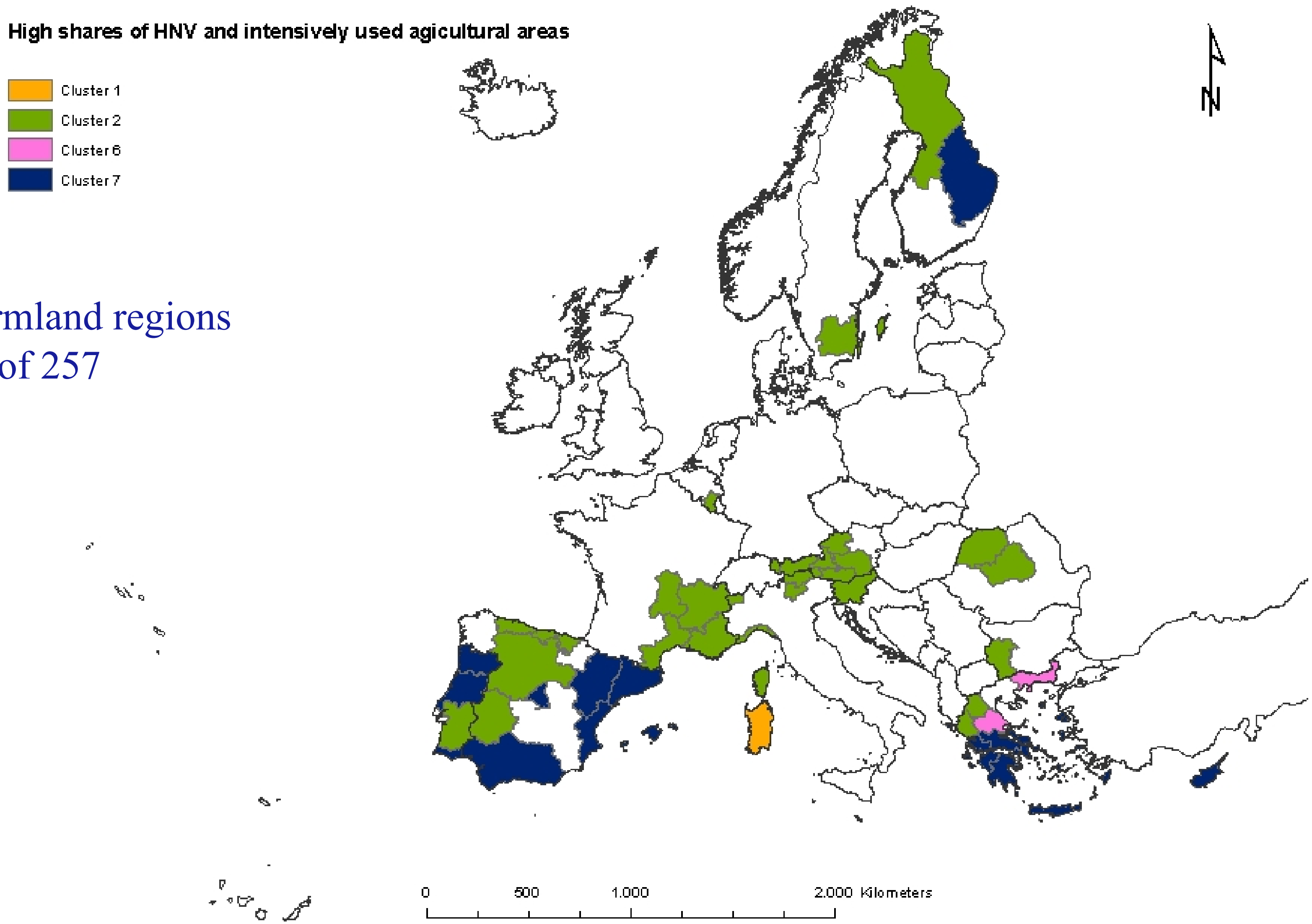
Environmental conditions:
Natura 2000 areas



Natura 2000 regions:
Σ 315; 46 (IT), 44 (ES), 32 (FR), 29 (DE)

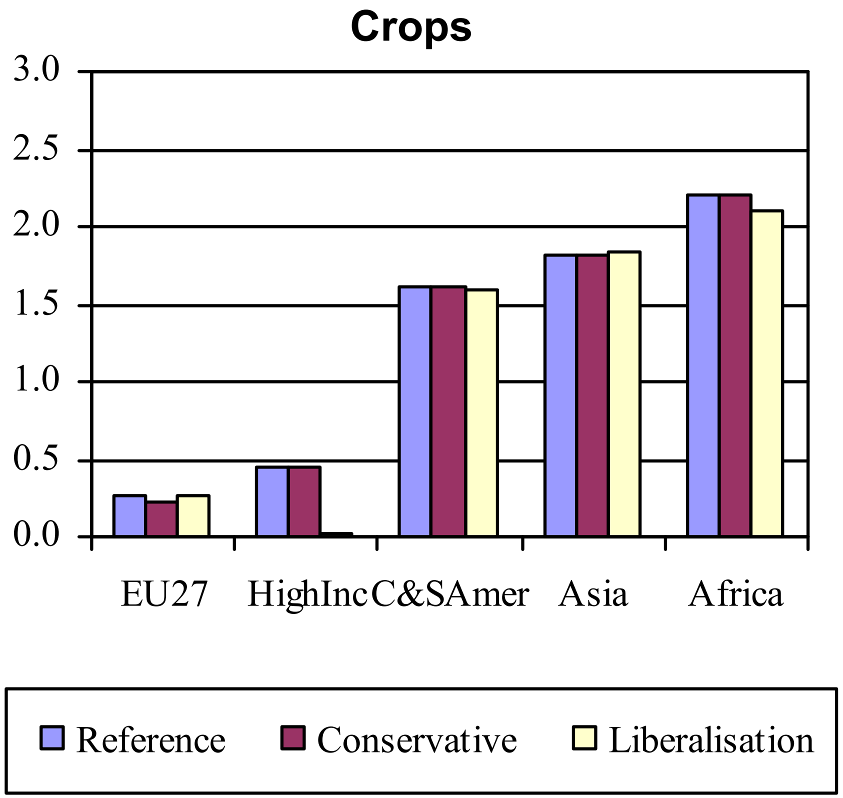
Environmental risks in agriculture:
regions with risk of biodiversity loss

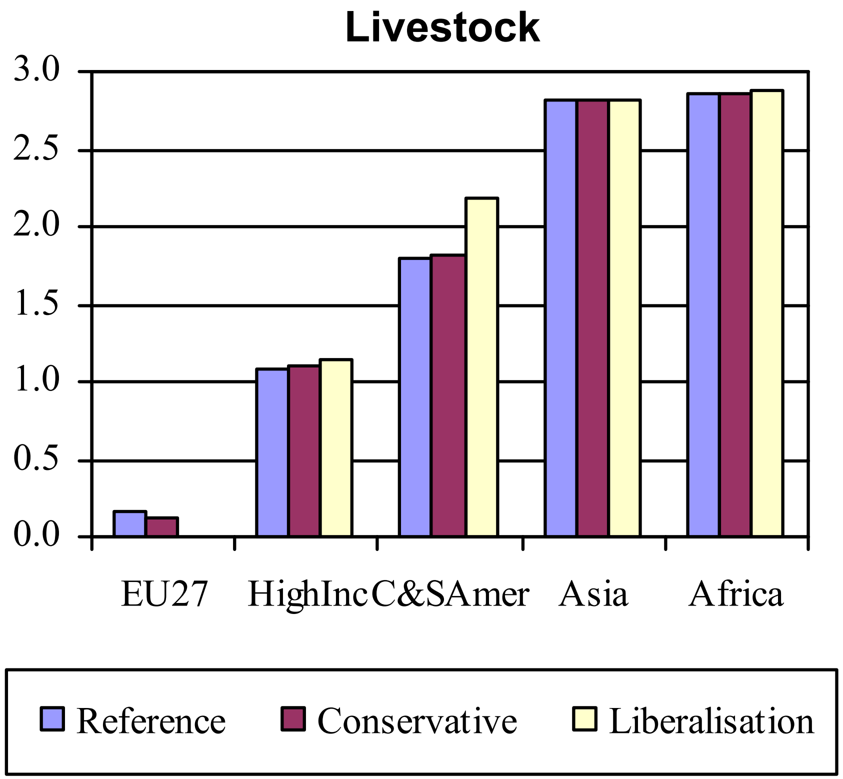
HNV Farmland regions
Σ 52 out of 257



SCENAR 2020-II

Agricultural Production, 2007-2020, Annual Growth Rates (%)



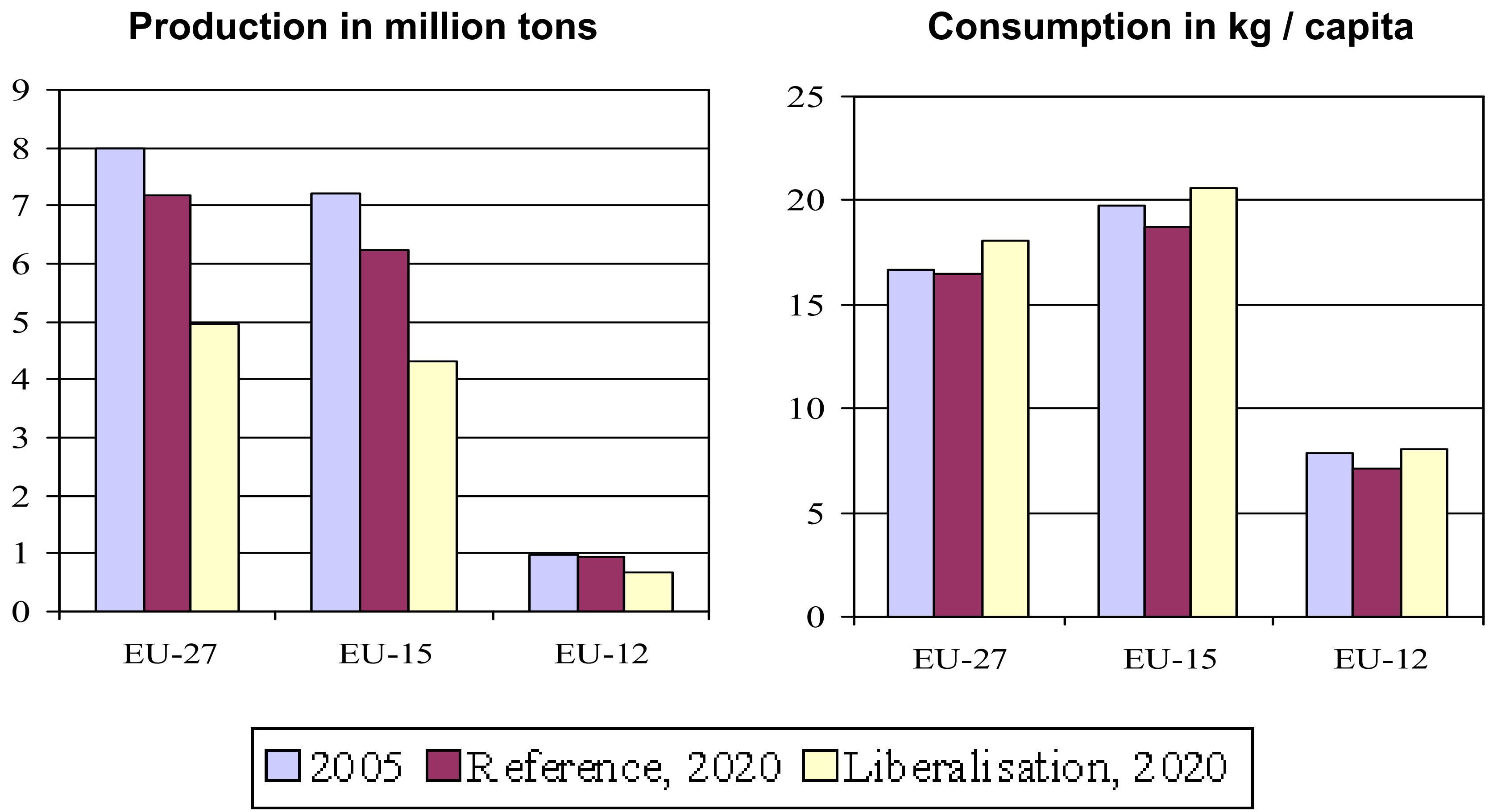


Source: LEITAP results.

Policy framework partially influences regional macro-economic prospects

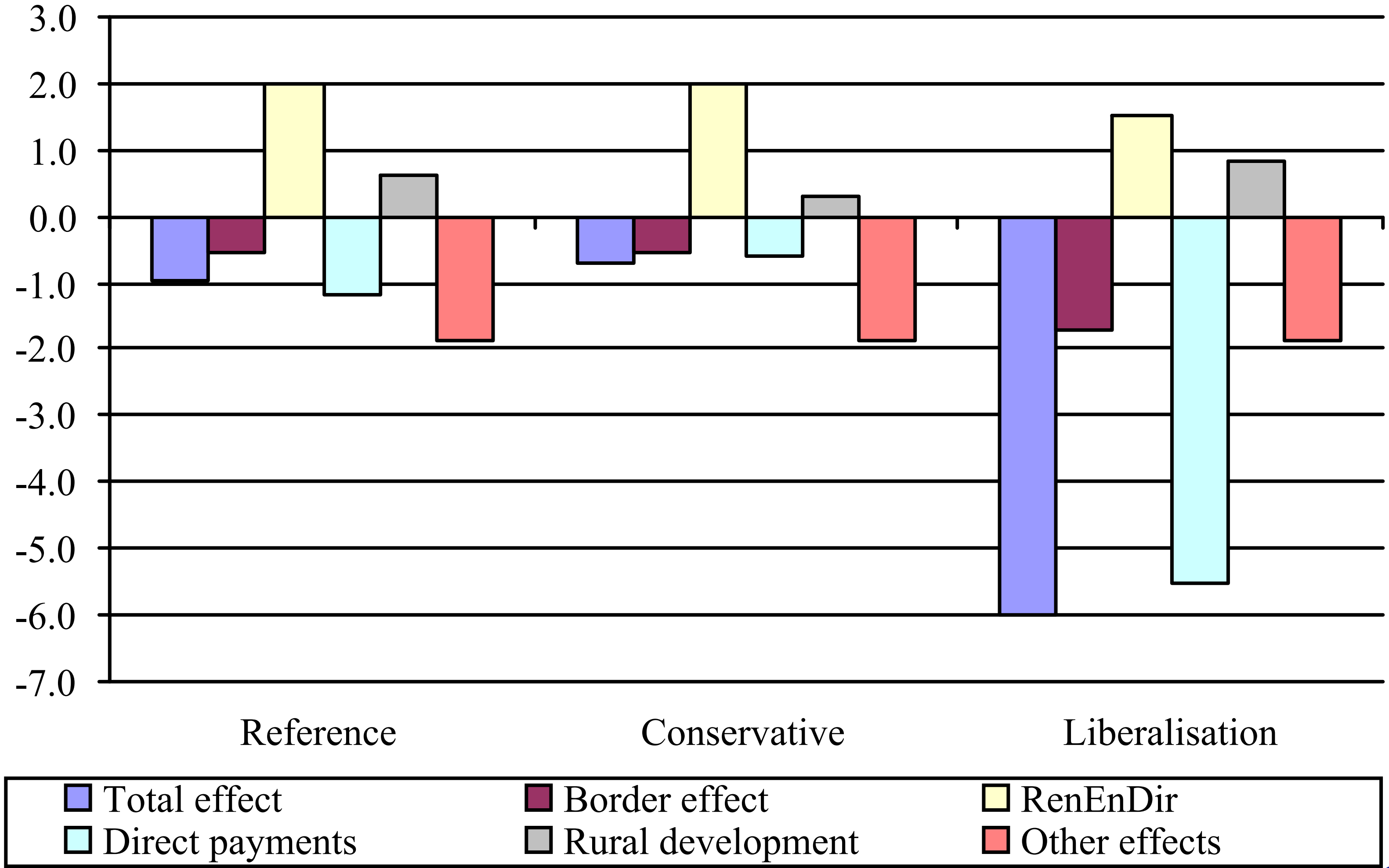
- Impact of EU policies on agri production
  - Growth in crop production principally stimulated by the Renewable Energy Directive (RED)
  - Limited impact of Rural Development (RD) measures; human and physical capital investments stimulate productivity growth
  - Reduction in border support reduces prospects for beef sector even as consumption increases (through cross-price effects with white meat in an enlarged market area)
- Commodity markets
  - Real price evolution for arable crops generally negative, except those related to RED. Liberalisation affects ethanol price and therefore cereal prices negatively.
  - Liberalising trend at first affects milk, beef and sheep prices more than pork, poultry and egg prices

Beef production and consumption, 2005 and 2020



Source: ESIM results.

EU-27 agricultural land-use change (2007-2020, in %): multiple influences

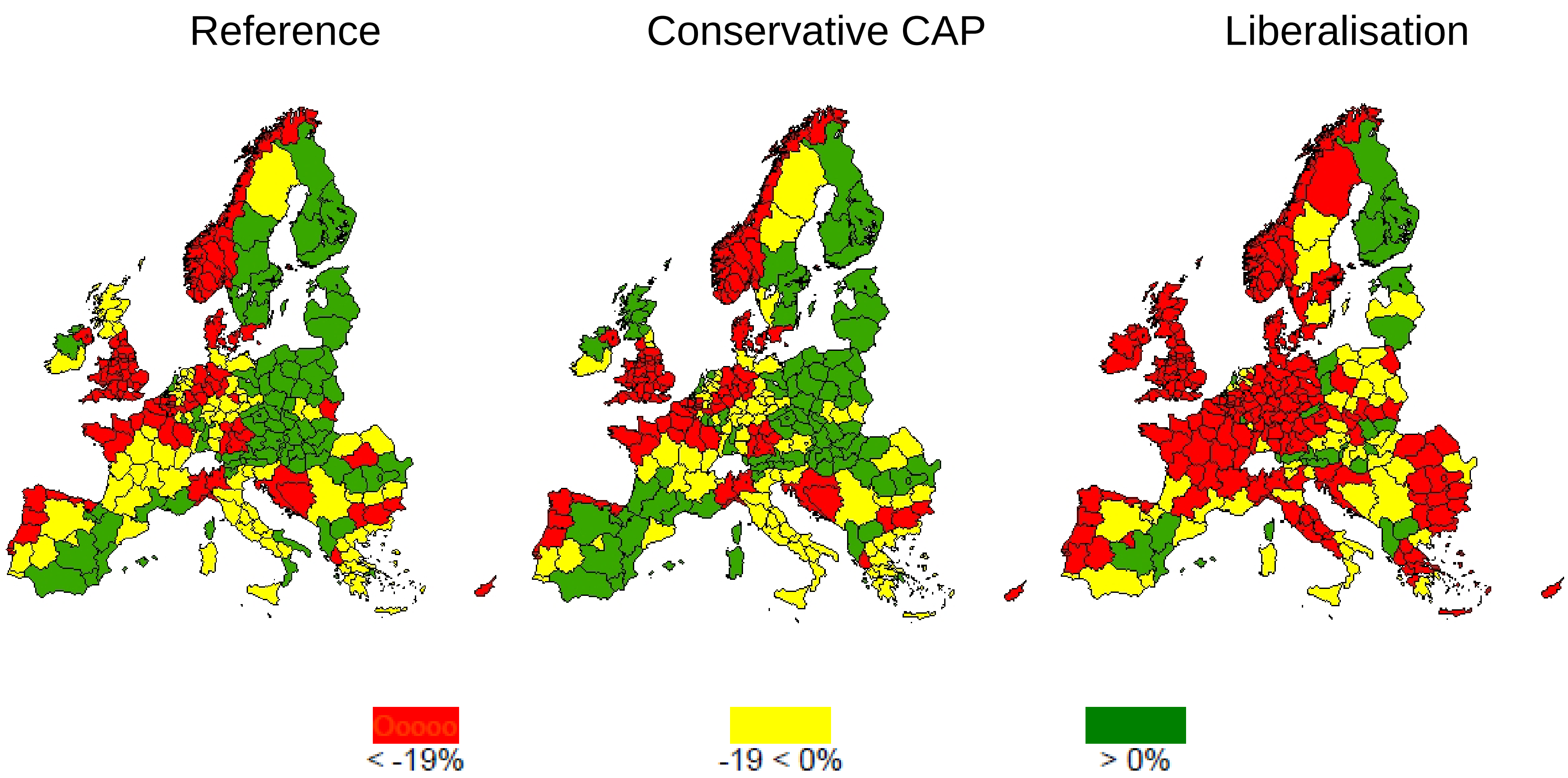


Source: LEITAP results.

Regional impact of policy framework on agricultural macro-economic prospects

– Farm income and structure
  - Income from cereals increases, but especially from oilseeds; income from vegetables and permanent crops also increases
  - Full liberalisation: Farm income decreases dramatically from the Reference scenario levels (-30% for arable and -60% for livestock)
  - Pillar 2 (P2) stimulates extensive production technologies and diversified farming systems
  - Farm numbers decrease by 1/3: 25% in EU-15 and 40% in EU-12. In case of full liberalisation another 15% of farm units disappear (especially cattle, but also cereals)

Farm income change by scenario, 2007-2020, in %



Number of farms per sub-sector in 2003 and 2020 in different scenarios average in the EU-27 (in mio farms)

	2003	2020	compared to 2003	compared to Reference	
Farm type		Reference	Reference	Conser-vative	Liberali-sation
Arable crops	2.3	1.4	-39%	-0.9%	-18.8%
Vegetables and permanent crops	2.8	2.5	-10%	-0.2%	-3.9%
Cattle activities	1.8	1.1	-38%	-0.3%	-38.6%
Other animals	0.4	0.6	61%	-4.1%	-5.3%
Mixed livestock farms	0.7	0.1	-87%	0.1%	-23.4%
Mixed crop farms	0.8	0.2	-71%	-0.5%	-7.4%
Other livestock and crop farms	2.3	1.4	-39%	-2.3%	-18.7%
Total	11.1	7.3	-34%	-1.2%	-15.2%

Source: Derived from LEITAP and CAPRI results.

Policy insights from Scenar 2020-II Preparing for Change

1. Alternative policy scenarios seem to have little impact on the overall production levels (although more on income and farm structure) … except for livestock and mixed arable / livestock
2. “Liberalisation” would:
   a) affect production levels mainly through increased market access, rather than through the absence of income support
   b) show a significant impact on income and agricultural assets, including land (though this may help facilitating the structural adjustment process)
3. However, at the regional level, the (negative) impact may be more significant:
   a) A process of liberalisation would lead to intensification in the most competitive regions and an extensification of production in others
   b) Adjustment processes in agriculture might be accompanied by an adverse or supportive economic and social situation
4. An increasing number of rural areas will become increasingly dependent on other sectors and will be driven by factors outside of agriculture