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Mapping functional rural areas in Romania - ensuring food security & sustainable development in a changing world

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Content

1. General background

- Geographical environment of Romania (general landforms, soil cover pattern, land use / land cover, productive potential of agricultural land, limiting factors of the productive potential of agricultural land)

- Agriculture in Romania (land management, crop structure, agricultural production)

2. Mapping functional rural areas in Romania

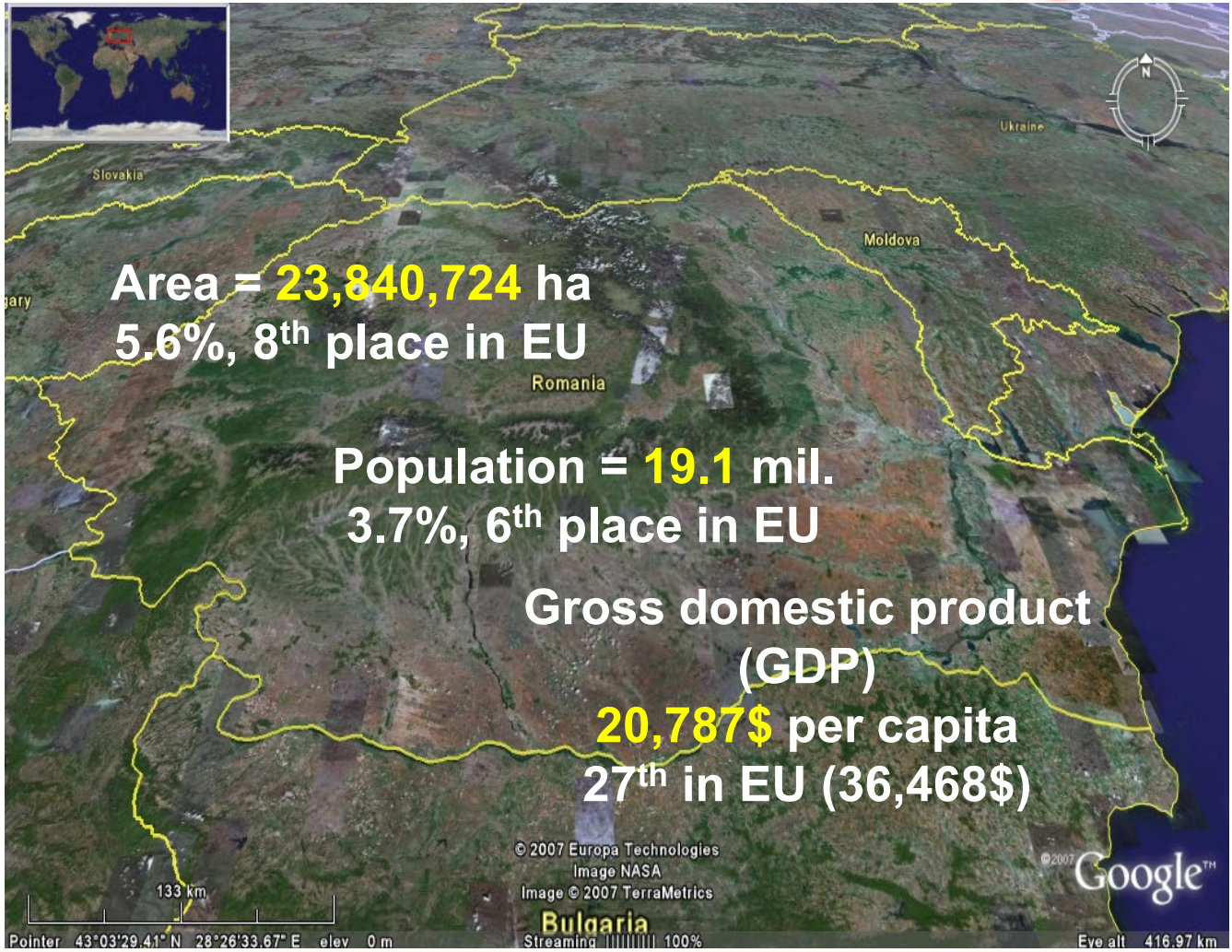
3. Future challenges dealing with the agriculture - food security & sustainable development in a changing world

1. General background

Geographical environment of Romania

Land use / land cover	Area (x10^6 ha)	%
Agricultural land	**14.8**	**62,1%**
Arable	9.3	39.2
Pasture	3.4	14.3
Meadows	1.5	6.3
Vineyards	0.3	1.2
Orchards	0.3	1.1
Non-agricultural land	**7.7**	**32.4**
"Urban" land	**1.3**	**5.5**
Total Romania	**23.839**	**100.0**

National Agency for Cadaster and Land Registration (NACLR)



Natural and anthropic limiting factors of the productive potential of agricultural land in Romania

(www.madr.ro)

Limiting factor	x1000 ha	%
Drought	**7100**	**47**
Periodic excess moisture	**3781**	**25**
Soil erosion by water	**6300**	**42**
Soil erosion by wind	378	3
Landslides	702	5
Soil salinization	391	
Soil alkalization	223	
Excessive soil skeleton	300	
Primary soil compaction	2060	
Compaction by improper work	6500	
Crust formation	2300	
Low / extremely low humus reserve in the soil	7485	
High and moderate soil acidity	3424	
Poor and very poor supply of mobile phosphorus	6330	
Poor and very poor supply of mobile potassium	787	
Poor nitrogen supply	5110	
Deficiencies of microelements	1500	
Soil chemical pollution	900	

Agriculture in Romania

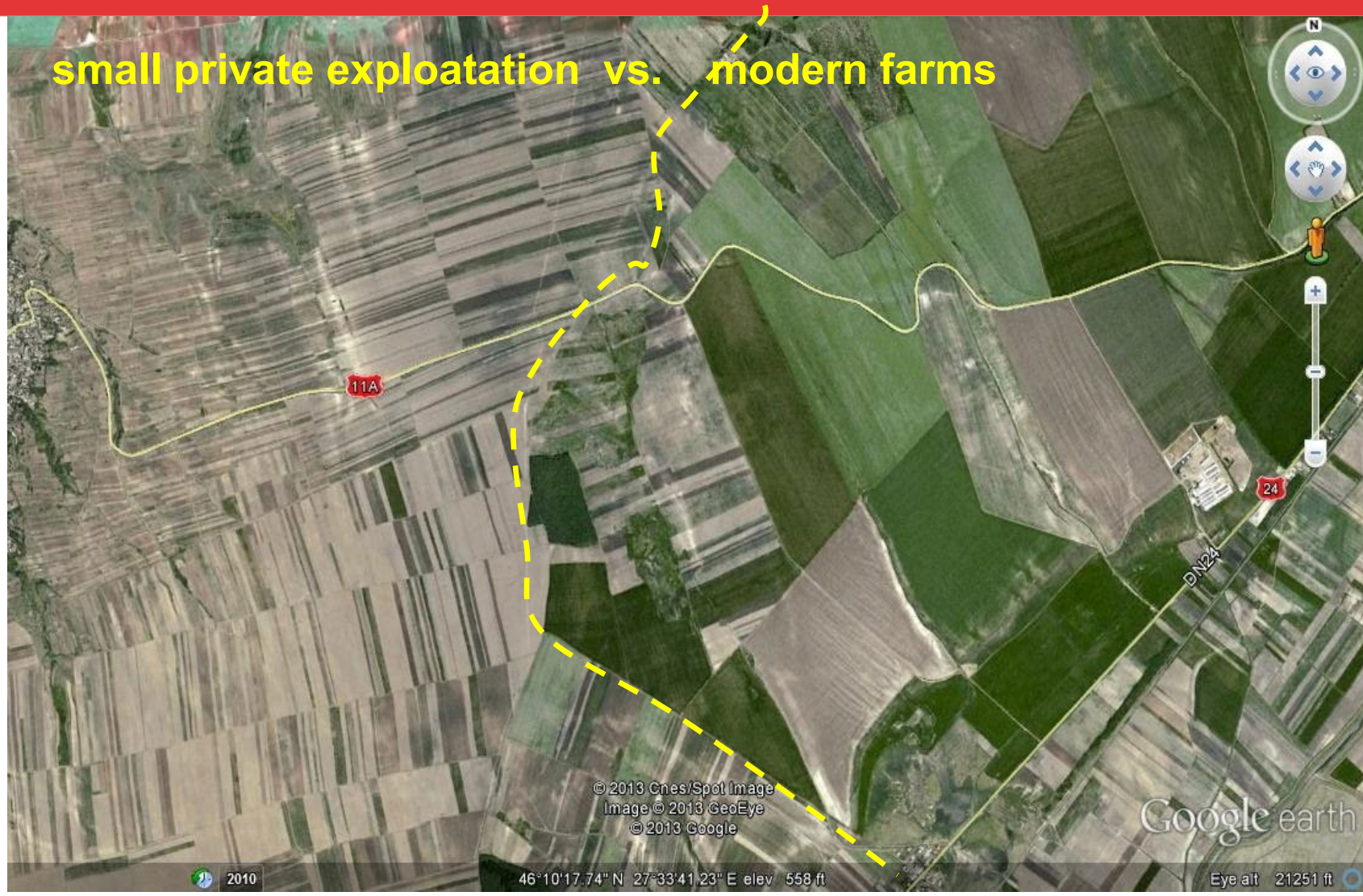
Agricultural land:

- 4.48 million individual exploitations (NIS, 2012)

Arable land:

2012 - 3.97 million
2010 – 3.80 million
2016 – 3.42 million individual smallholdings (Anghelache, 2018)

Average area per exploitation – **2.24 ha**



The existence of a **very large number of small exploitations** in parallel with the very large ones reveals the **structural imbalance** that influences Romanian agriculture

Crop structure & agricultural production in Romania in 2020 (EUROSTAT, 2021)

	Cultivated areas (x1000ha)	Production (x1000t)
Cereals (winter wheat, barley, oat, corn)	**5,435**	**18,968 (30,412*)**
Leguminous plants for grains (peas, beans)	**107**	**122**
Oilseeds plants (sunflower, soy beans, rapeseed)	**1,736**	**3,111**
Potatoes	**166**	**2,683**
Vegetables	**225**	**3,517**
Vineyards	**177**	**938**
Orchards	**138**	**837**

*2019

Cereal production in Romania (1995-2021 - MARD, 1995-2021)

Year	Winter wheat			Barley			Corn		
	Cultivated areas (x1000ha)	Production (x1000t)	Avg. production (kg/ha)	Cultivated areas (x1000ha)	Production (x1000t)	Avg. production (kg/ha)	Cultivated areas (x1000ha)	Production (x1000t)	Avg. production (kg/ha)
1995	2,480.8	7,666	3,090	581.7	1,816.1	3,122	3,109.2	9,899.7	3,184
2000	1,937.9	4,438	2,290	411.9	867.0	2,105	3,049.4	4,888.2	1,603
2007	1,987.1	3,065	1,542	363.8	531.4	1,461	2,524.7	3,854.0	1,527
2014	2,123.1	7,609	3,584	516.0	1,712.4	3,319	2,512.8	11,988.6	4,771
2020	2,146.0	6,410	2,987	438.0	1,121.0	2,559	2,639.0	10,844.0	4,109
Avg.	**2,135.0**	**5,838**	**2,734**	**494.0**	**1,209.6**	**2,449**	**3,086.6**	**8,294.9**	**2,687**

2. Mapping functional rural areas in Romania

Background and problem setting:

… the Romanian rural areas – a cumulative frame of territorial disadvantages, but not only

… the double status of the functional rural areas – policy intervention and **bassin de vie**

… a limited amount of indicators to be engaged for the delineation of the functional rural areas (FRA) on national and ESPON space.

ESPON
EUROPEAN UNION
Co-financed by the European Regional Development Fund

ESPON EGTC
Inspire Policy Making with Territorial Evidence
SO4 on-demand activity
"Functional rural areas for Romania"

Main findings:

… providing two complementary definitions of the Romanian functional rural areas (FRA) , one based on **the economic dimension**, the second focusing on the **territorial functionality.**

… delivering refined versions of definitions, delineations and projections of FRA

… elaboration of policy recommendations.

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The economic dimension of the FRA in Romania

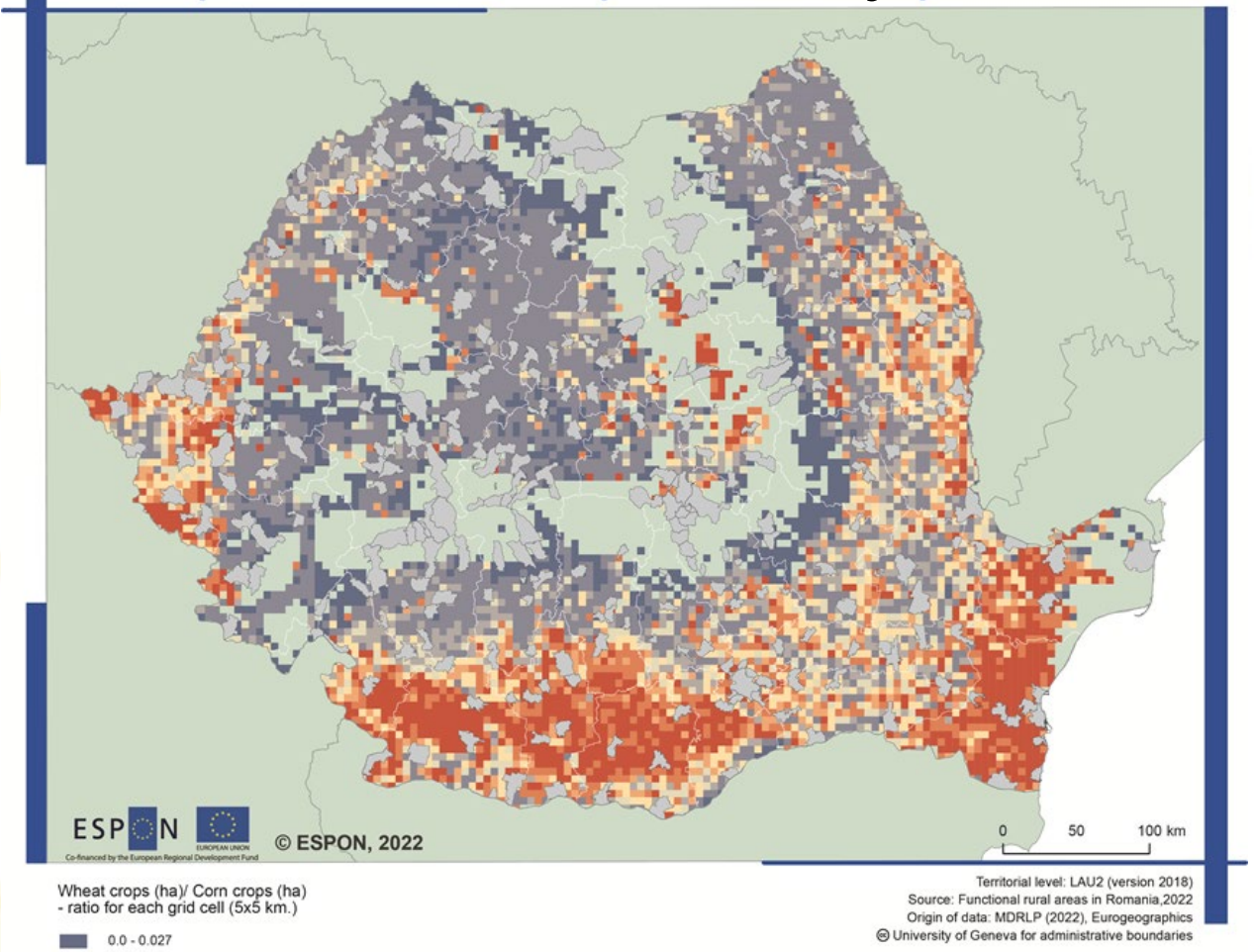
1. Stock of companies active in Romania, at LAU level. Time series for 1992-2021.
2. Agricultural specialization at local level (main cultivation patterns). Parcel size, data available only for 2021.
3. Services of general interest in the Romanian rural areas
4. EU funding and absorption capacity, at local level.

Territorial functionality

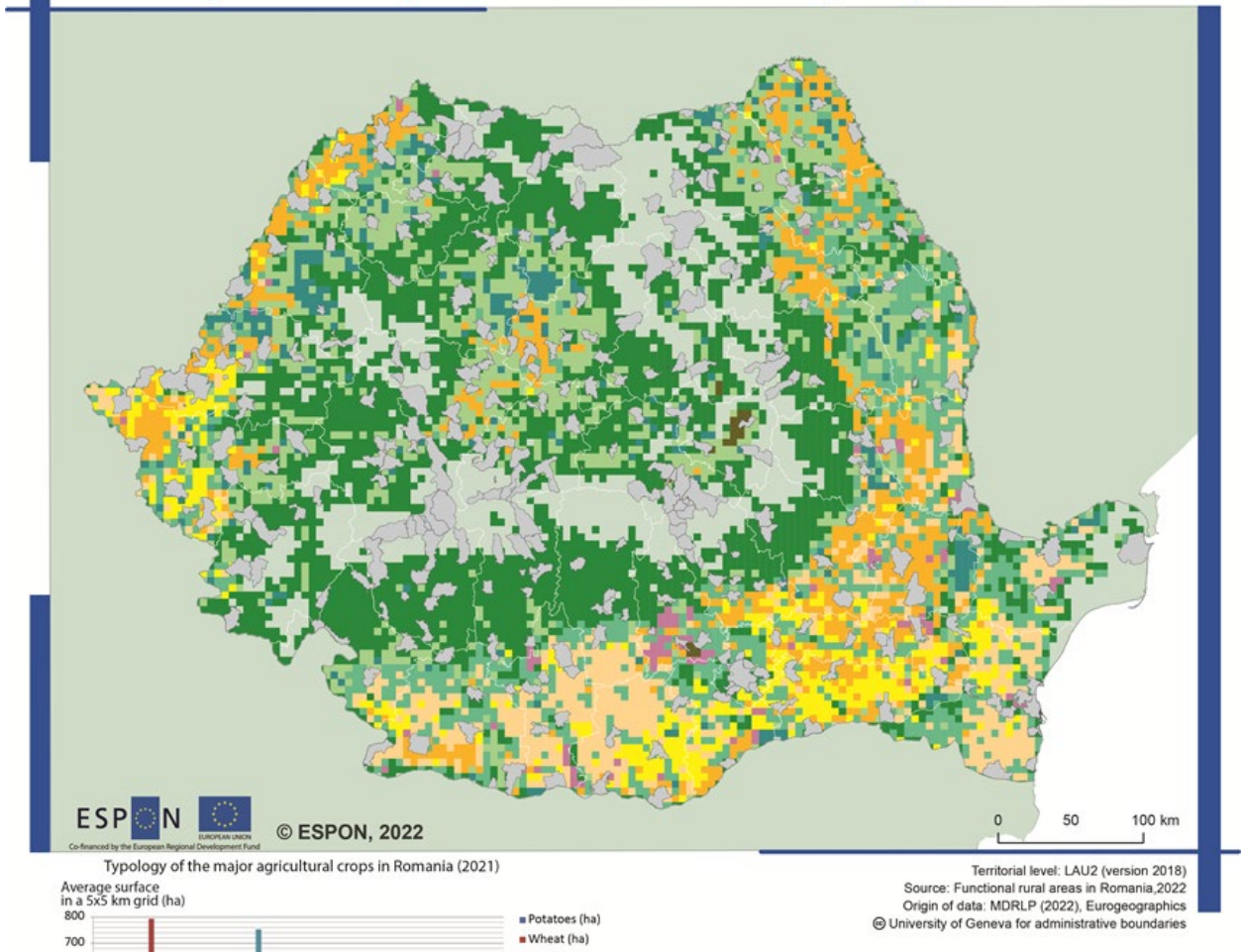
1. Accessibility indicators and spatial interactions, at local level.
2. Typologies of the agricultural specialization.
3. Demographic densities and trends.
4. First set of FRA delineations (V1)
5. Second set of FRA delineations (V2)

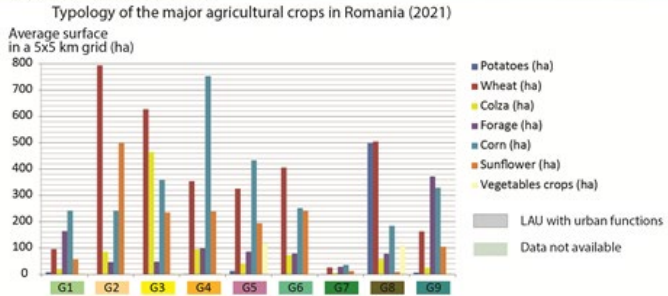
The economic dimension & Territorial functionality

Local specialization: wheat crops versus corn crops in 2021



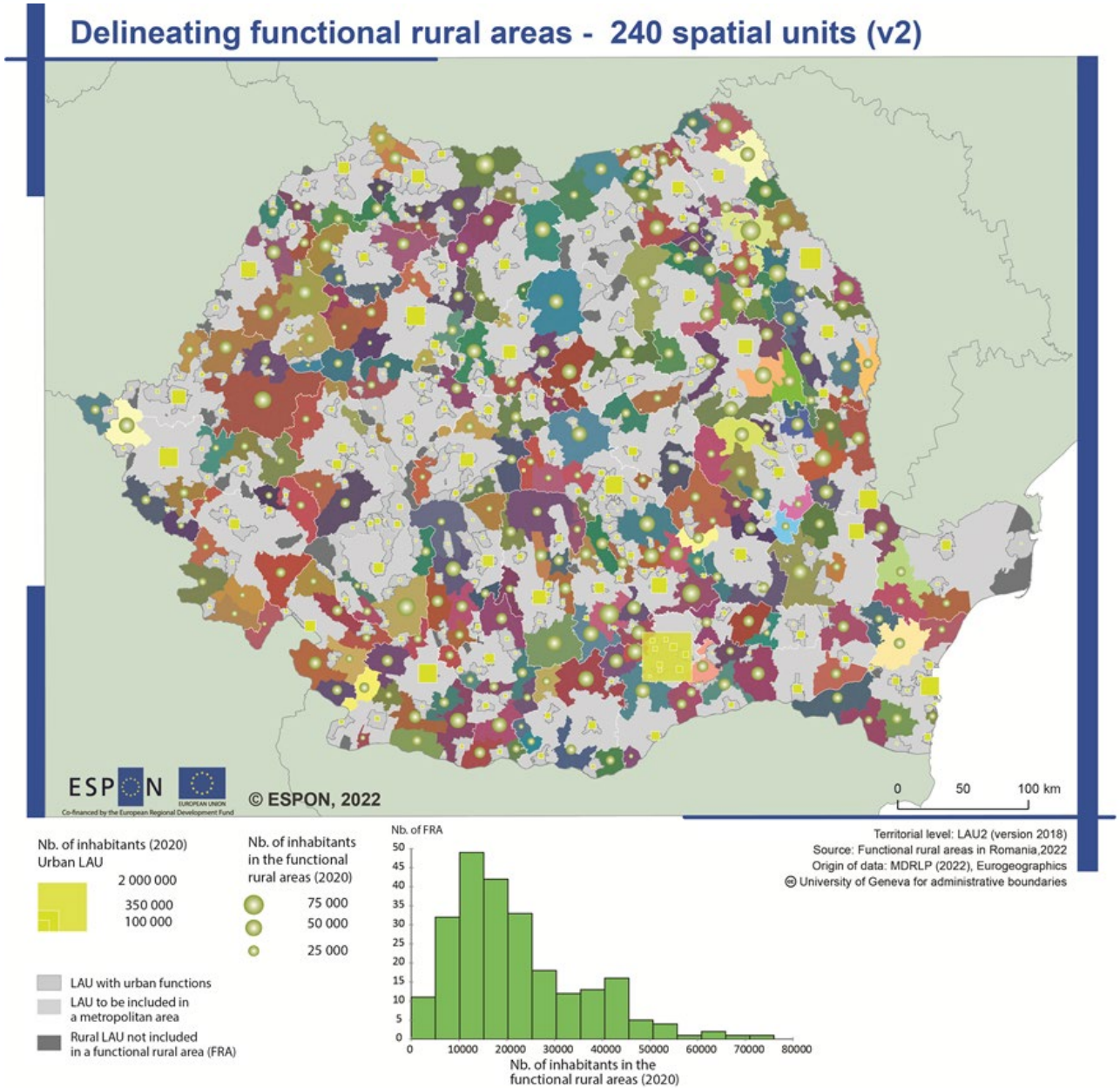
Local agricultural specialization in Romania (2021)





Key findings:

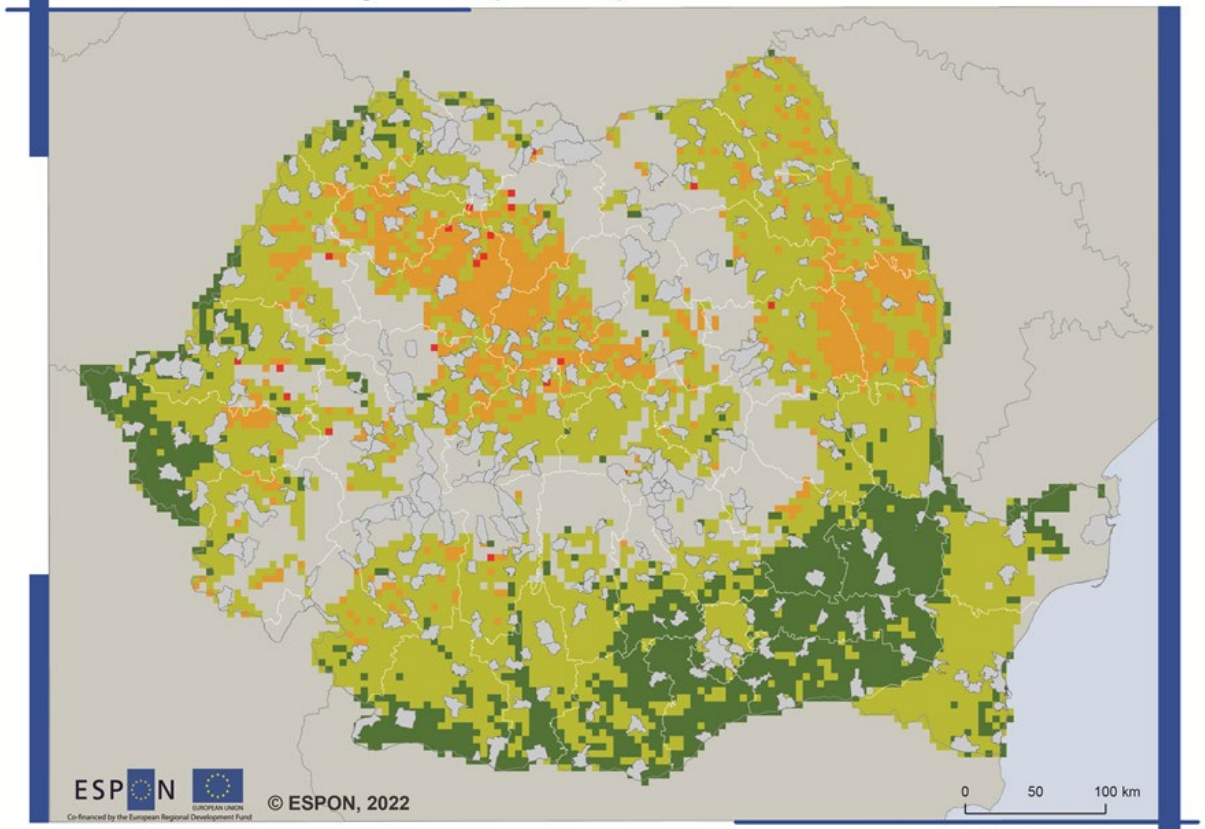
1. Ignoring the LAU to be included in potential metropolitan areas, the set of indicators retained for the delineation provided a first version of the FRA
2. List of indicators:
- mean altitude
- distance to the NUTS3 administrative centers
- demographic density (2020)
- demographic evolution (2011-2020)
- PNDL absorption during the project's lifetime PNDL absorption/inhabitant
3. Constraints: contiguity, territorial imbrication,homogeneity



3. Future challenges

dealing with the **agriculture** in the context of the need to ensure food security & sustainable development in a changing world

Net soil erosion by water (RUSLE) in Romania



Net annual erosion

- 0-1 tons/ha/year
- 1-7 tons/ha/year
- 7-15 tons/ha/year
- > 15 tons/ha/year

Areas affected by erosion (RUSLE)

Erosion class	Percentage	Surface (ha)	Surface (kmp)
1 (0-1 t/ha/y)	35.4	3003868	30039
2 (1-7 t/ha/y)	51.7	4385023	43850
3 (7-15 t/ha/y)	9.9	840815	8408
4 (>15 t/ha/y)	3.0	251809	2518
Total	100	8481515	84815

Territorial level: LAU2 (version 2018)
Source: Functional rural areas in Romania,2022
Origin of data: MDRLP (2022), Eurogeographics
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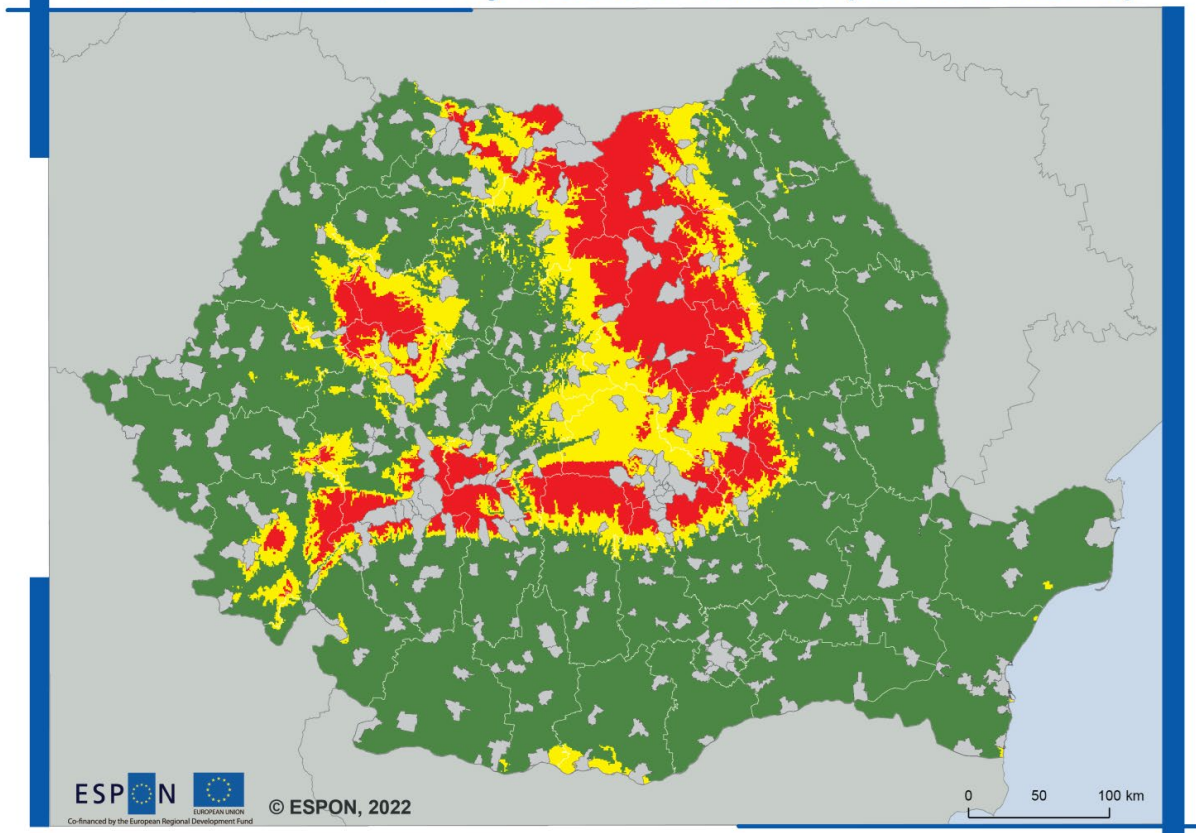
Wheat thermal restrictivity classes in Romania (current situation)



Legend

- Low restrictivity
- No restrictivity
- Major restrictivity

Territorial level: LAU2 (version 2018)
Source: Functional rural areas in Romania,2022
Origin of data: MDRLP (2022), Eurogeographics
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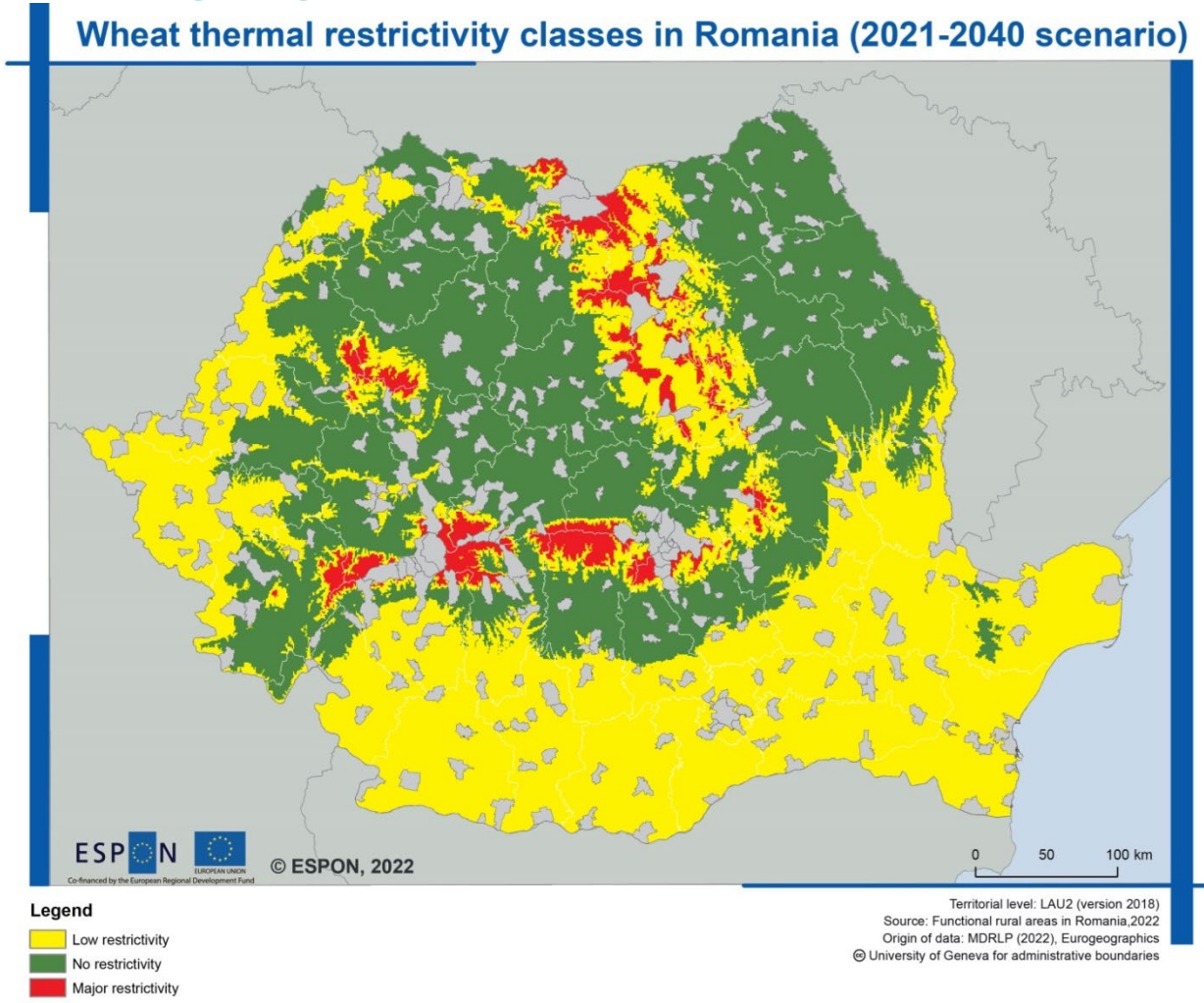

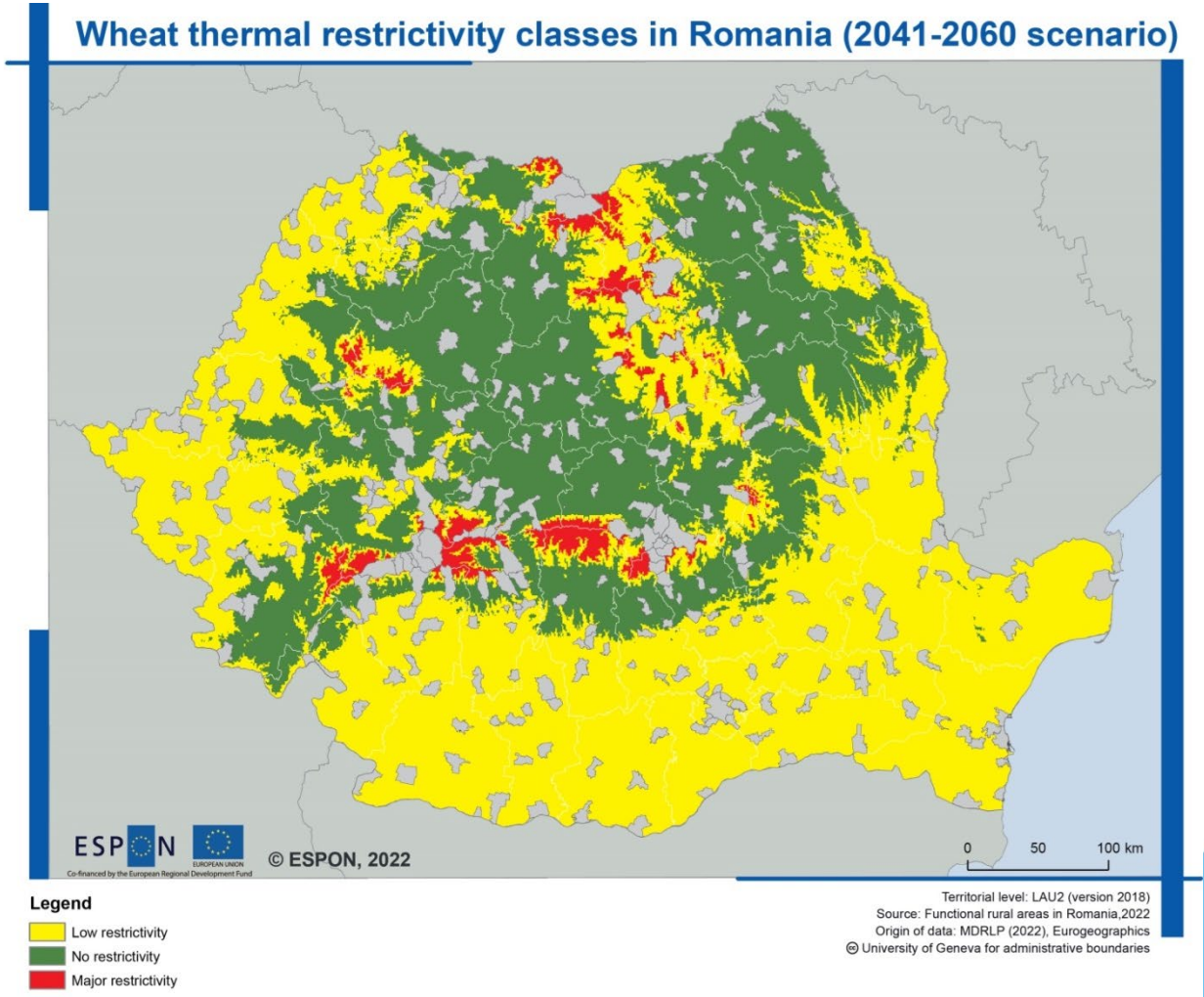

Thank you