Steering Animal Production Systems towards a Sustainable Future

New EU27 livestock typology reveals areas for targeted innovation

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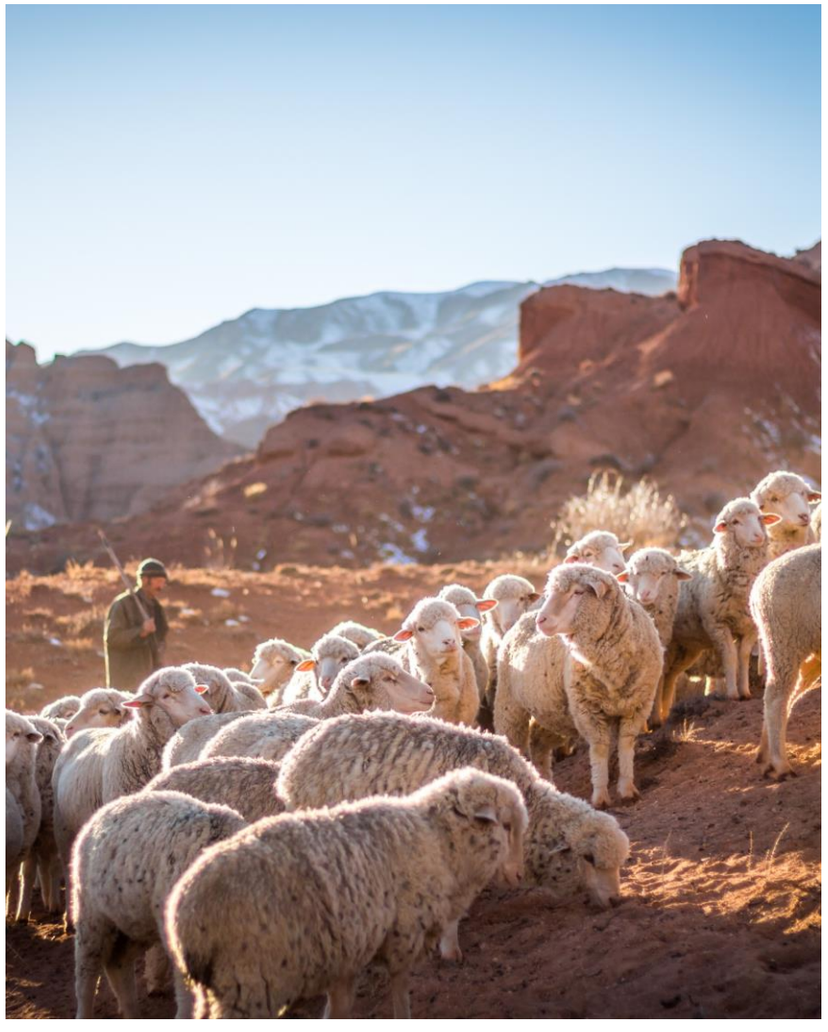
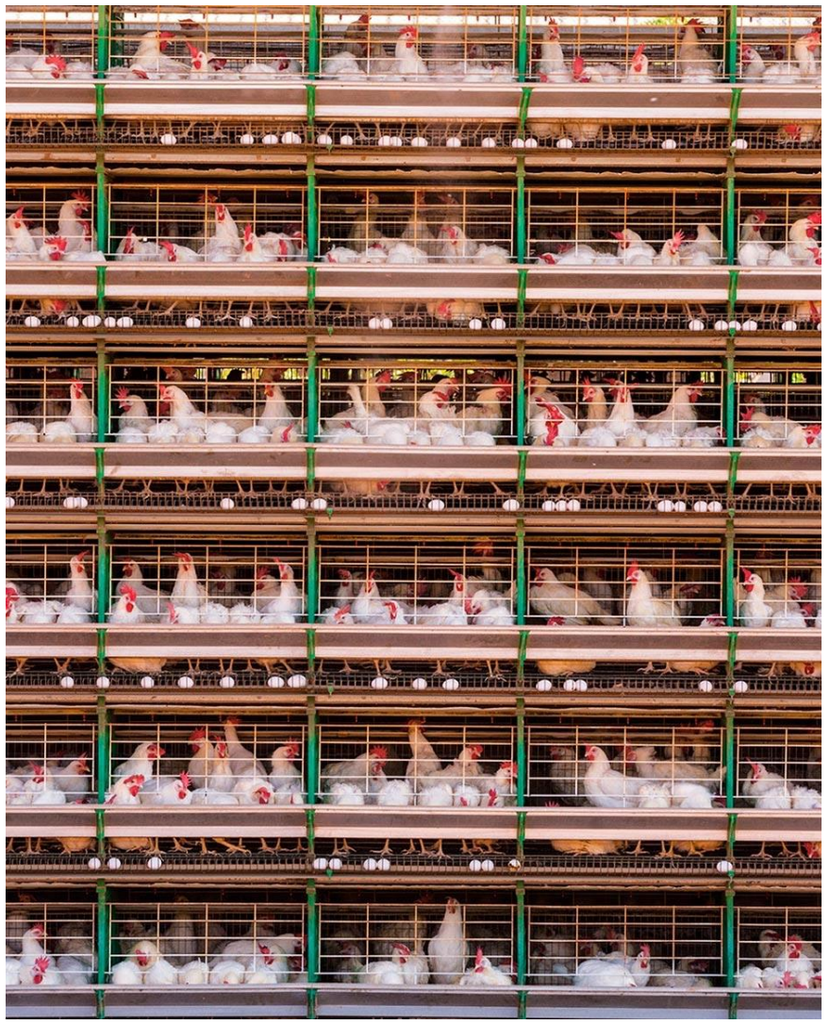
EU27 Diverse livestock farming systems

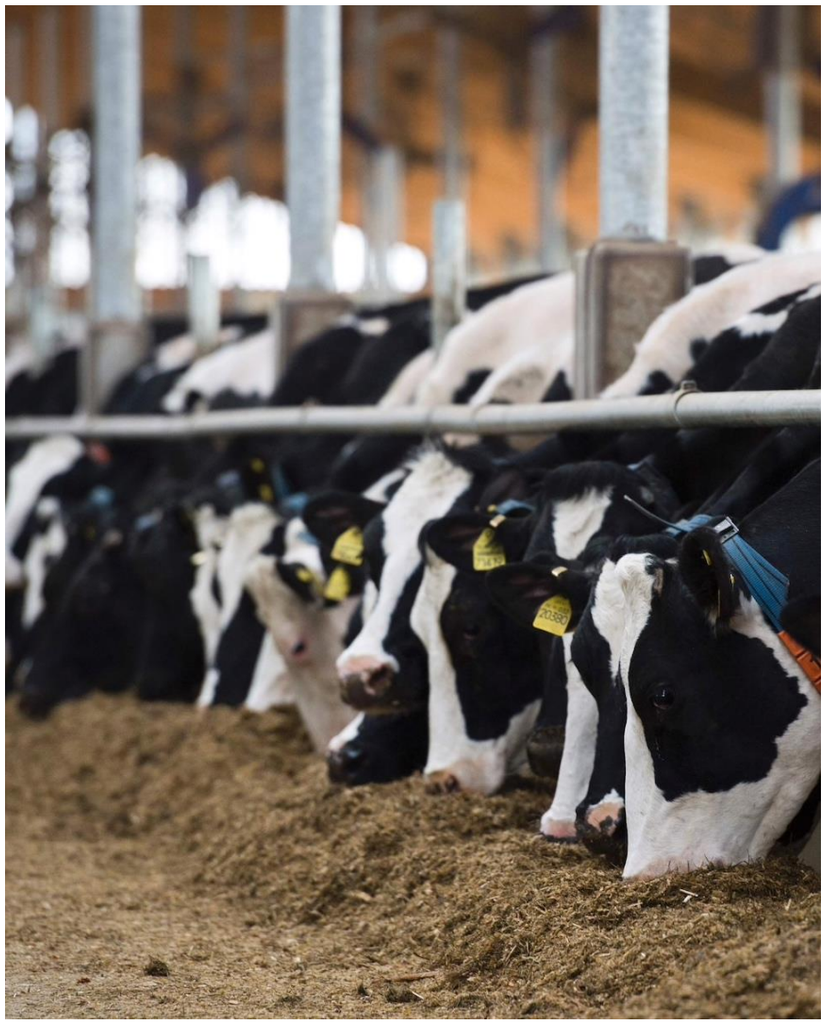


Species **Categories** **Breeds** **Environment** **Landscape**

EU27 Diverse livestock farming systems



Intensity



Arable lands

Infrastructure

Why diversity is important?

Multi-functionality of agriculture and service provisioning

Provisioning, regulating, supporting, cultural

Resilience

Climate change

Global market

Use of resources

Criteria for studying the diversity

Composition of species

Stocking rates

Biogeographical condition

Land use

Product differentiation (quality-label schemes)

Objective

Mapping the spatial diversity of livestock regions across 27 Europe Union countries

AnimalFuture

Identifying areas to which specific innovations can be applied to improve sustainability of livestock production

- Assessing the multi-dimensional consequences of innovations on benefits and costs of animal production systems.

Methodology

Variables

- share of agricultural area in the NUTS3

- share grasslands area in the agricultural area

- monogastric stocking rate

- poultry stocking rate

- pig stocking rate

- ruminant stocking rate

- small ruminant stocking rate

- share of dairy cows

- share of area classed in LFA scheme

- livestock products classed as PDO or PGI

Sources: Hercule et al. 2017; JRC

Spatial Scope - EU 27

909 NUTS3 UNITS

K-means

Group similar NUTS3 areas and to identify underlying patterns

Results – Mapping spatial diversity

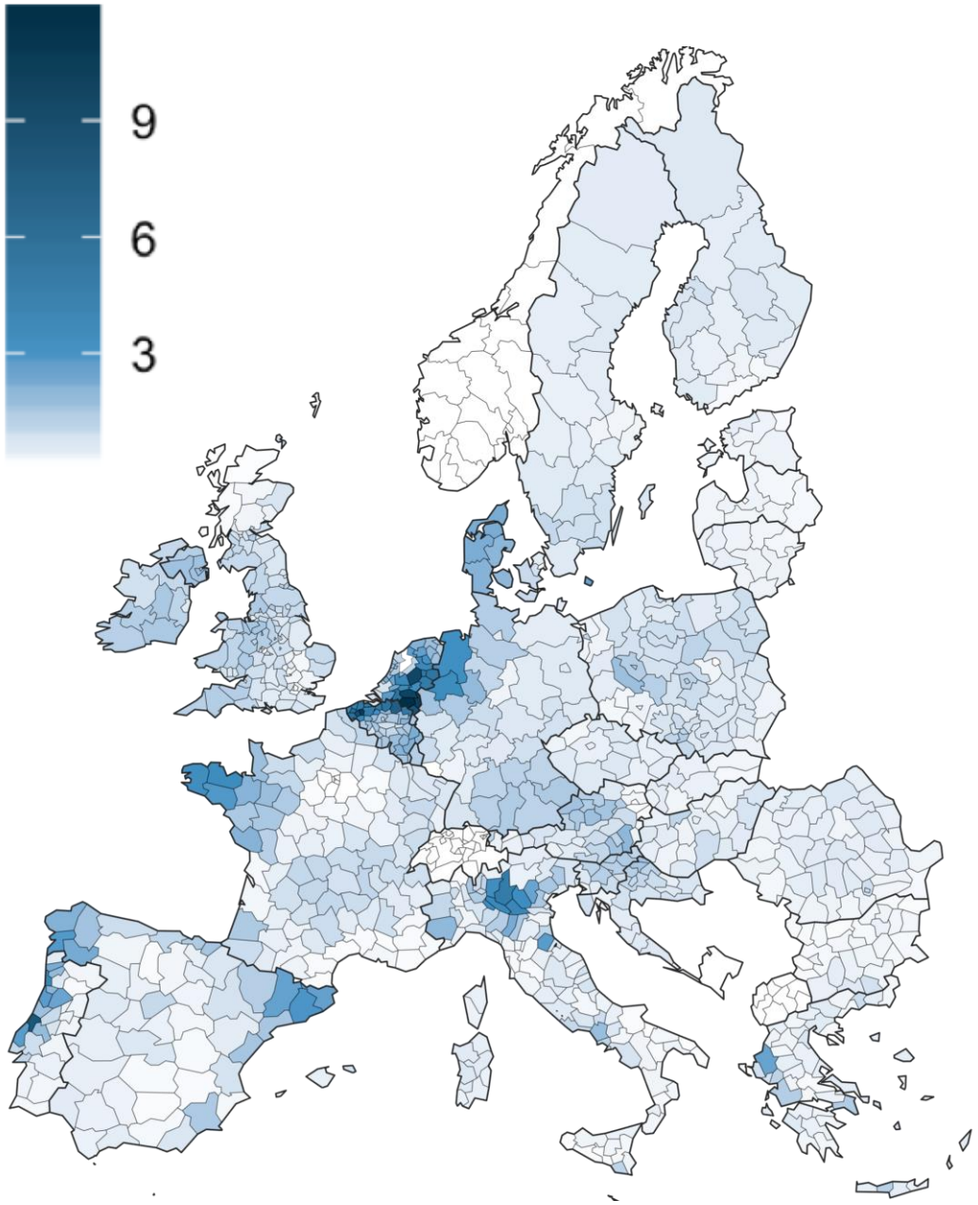
Stocking rate

LU.ha^{-1}

9

6

3



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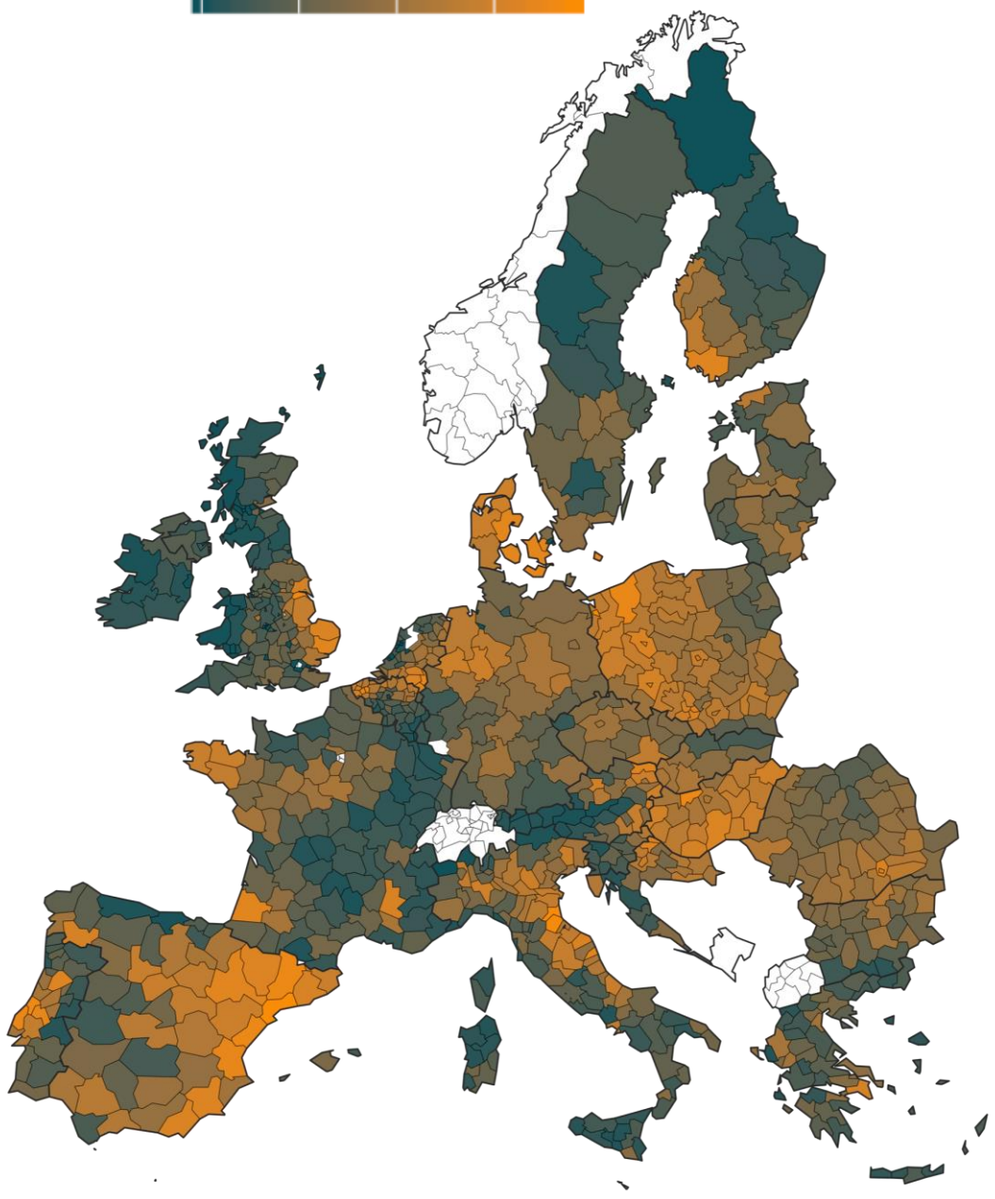
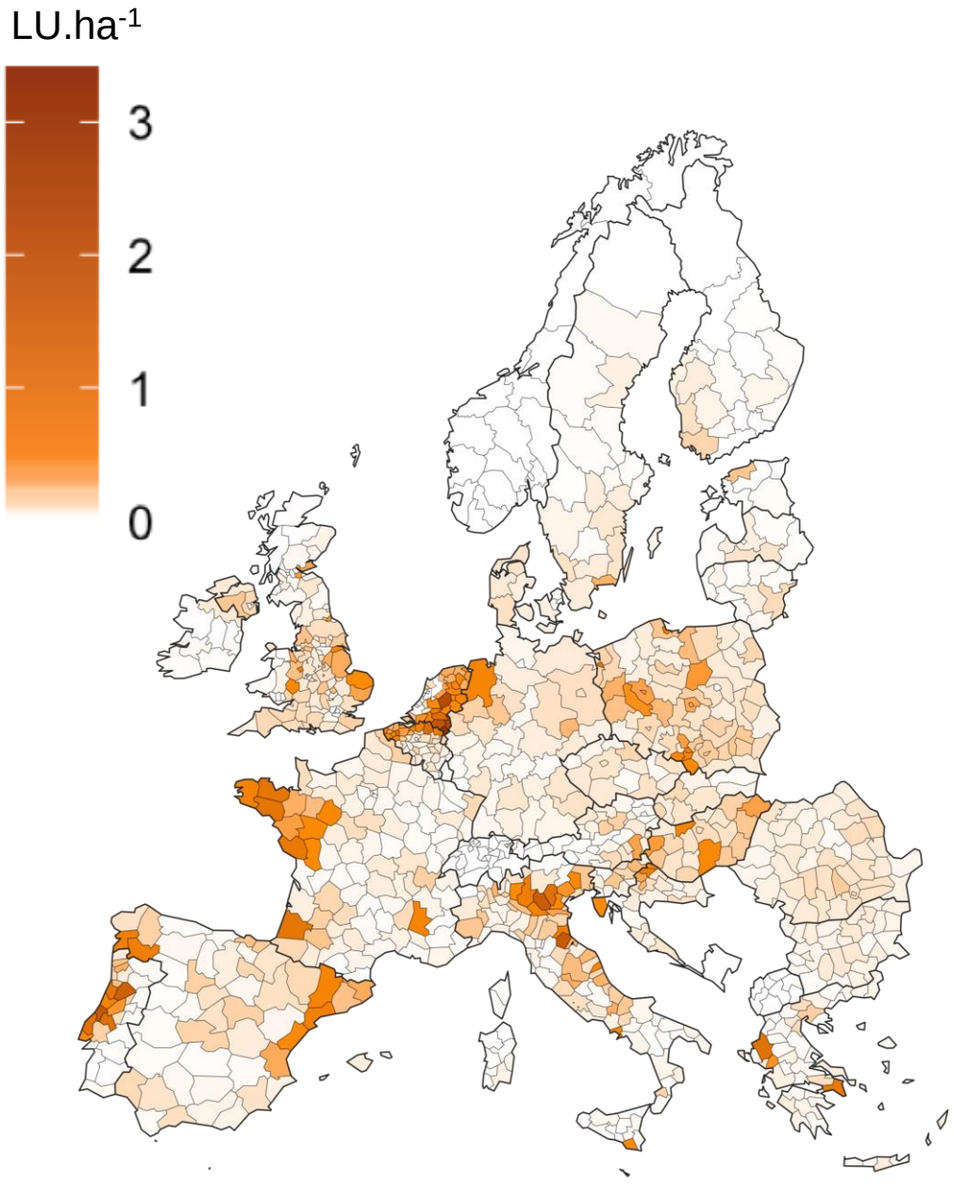
Ruminant-Monogastric

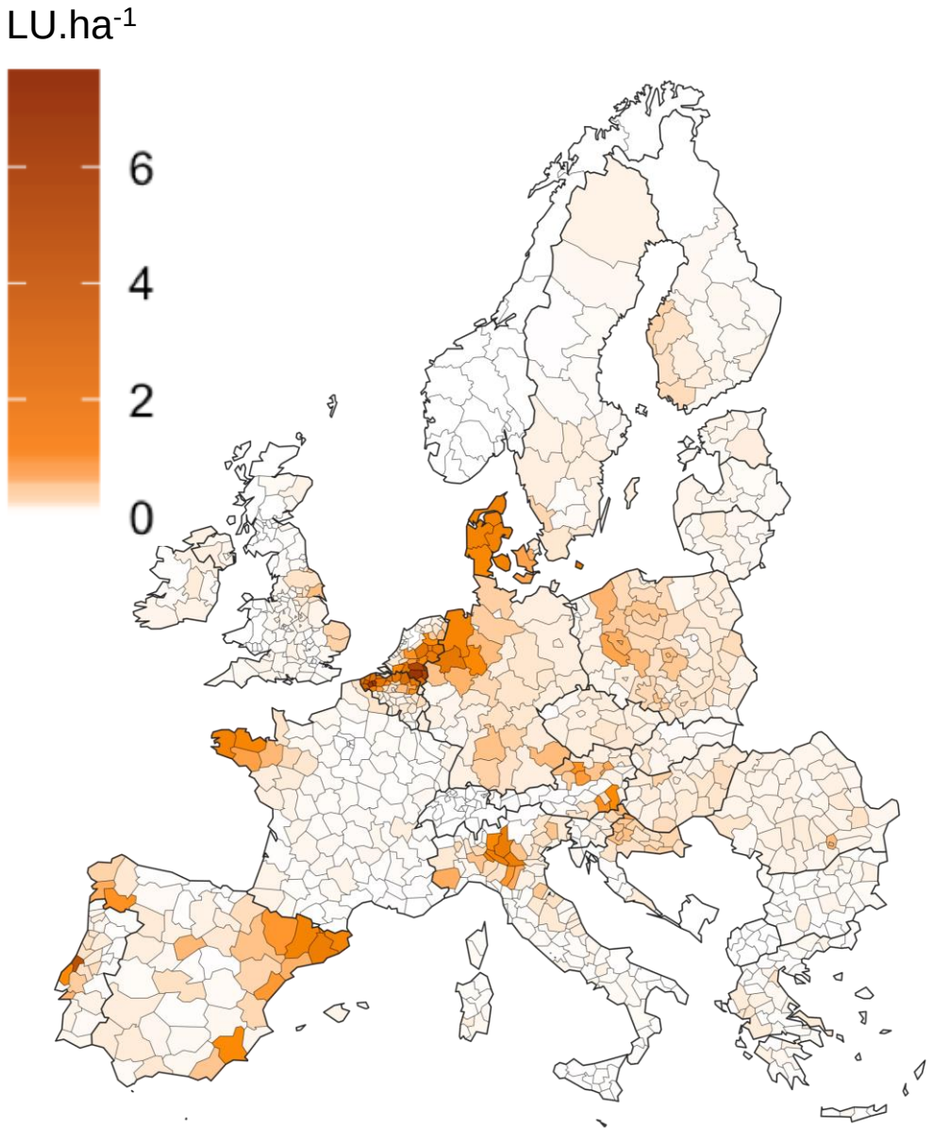


Results – Mapping spatial diversity

Poultry stocking rate

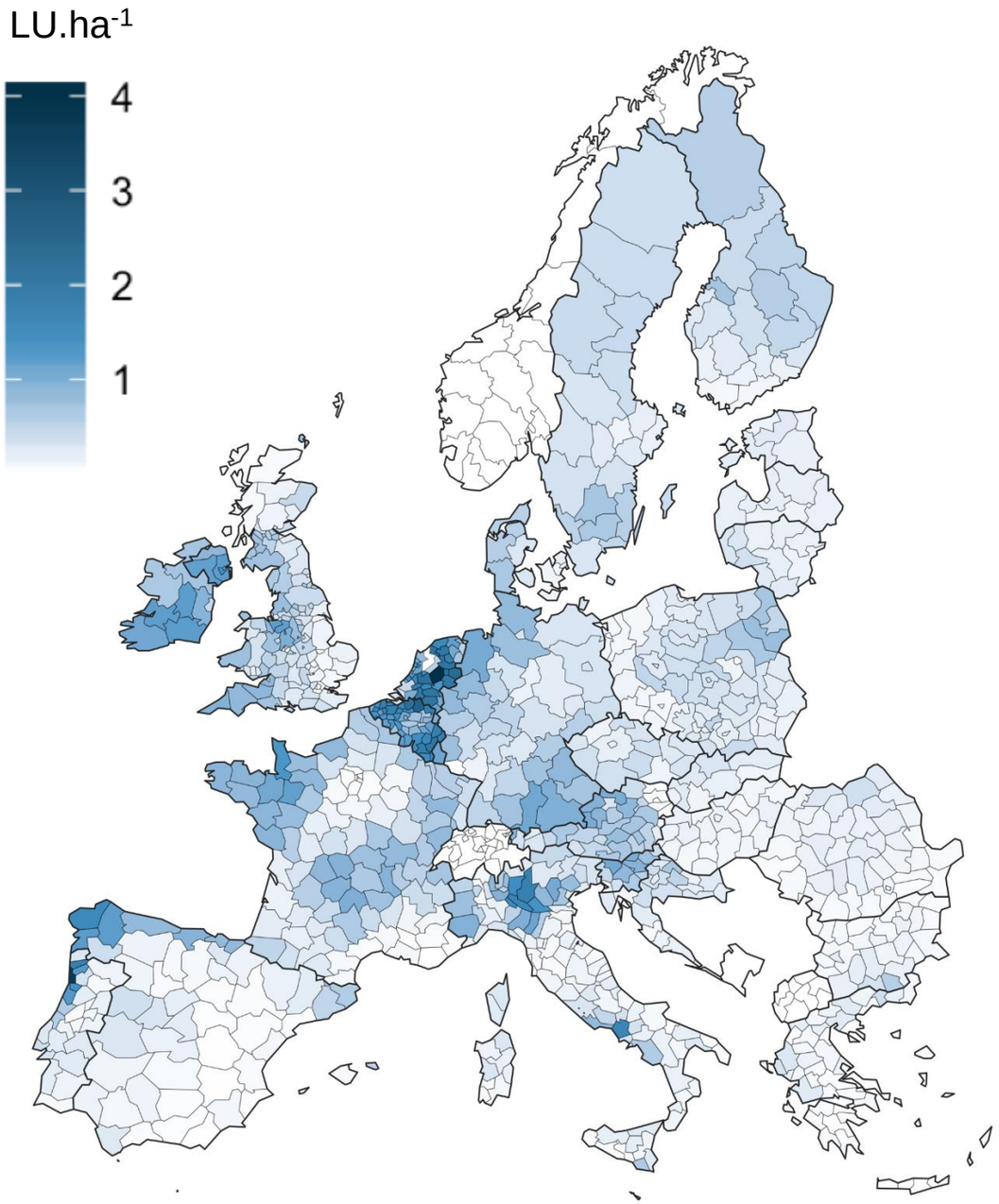


Pig stocking rate

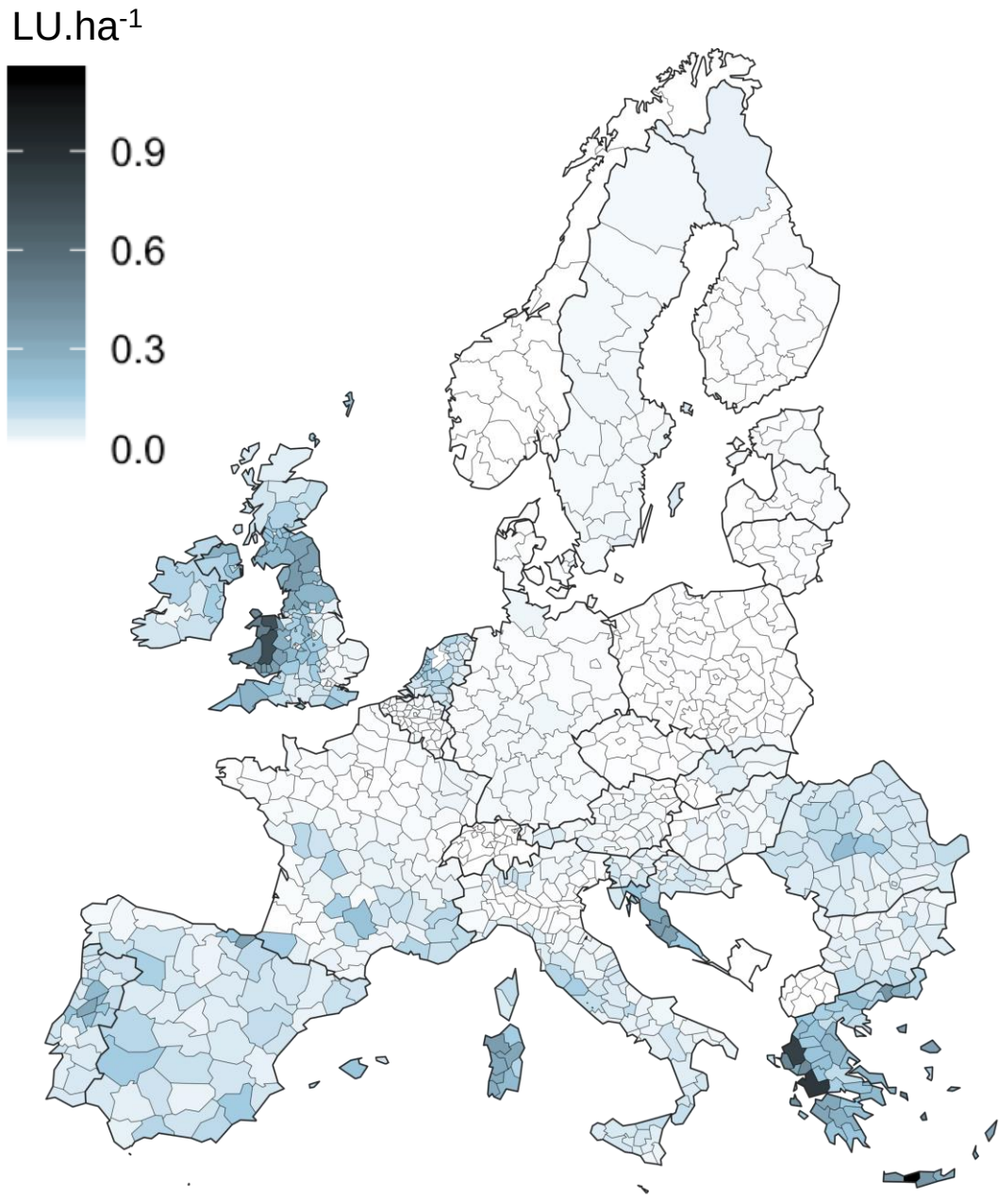


Results – Mapping spatial diversity

Cattle stocking rate

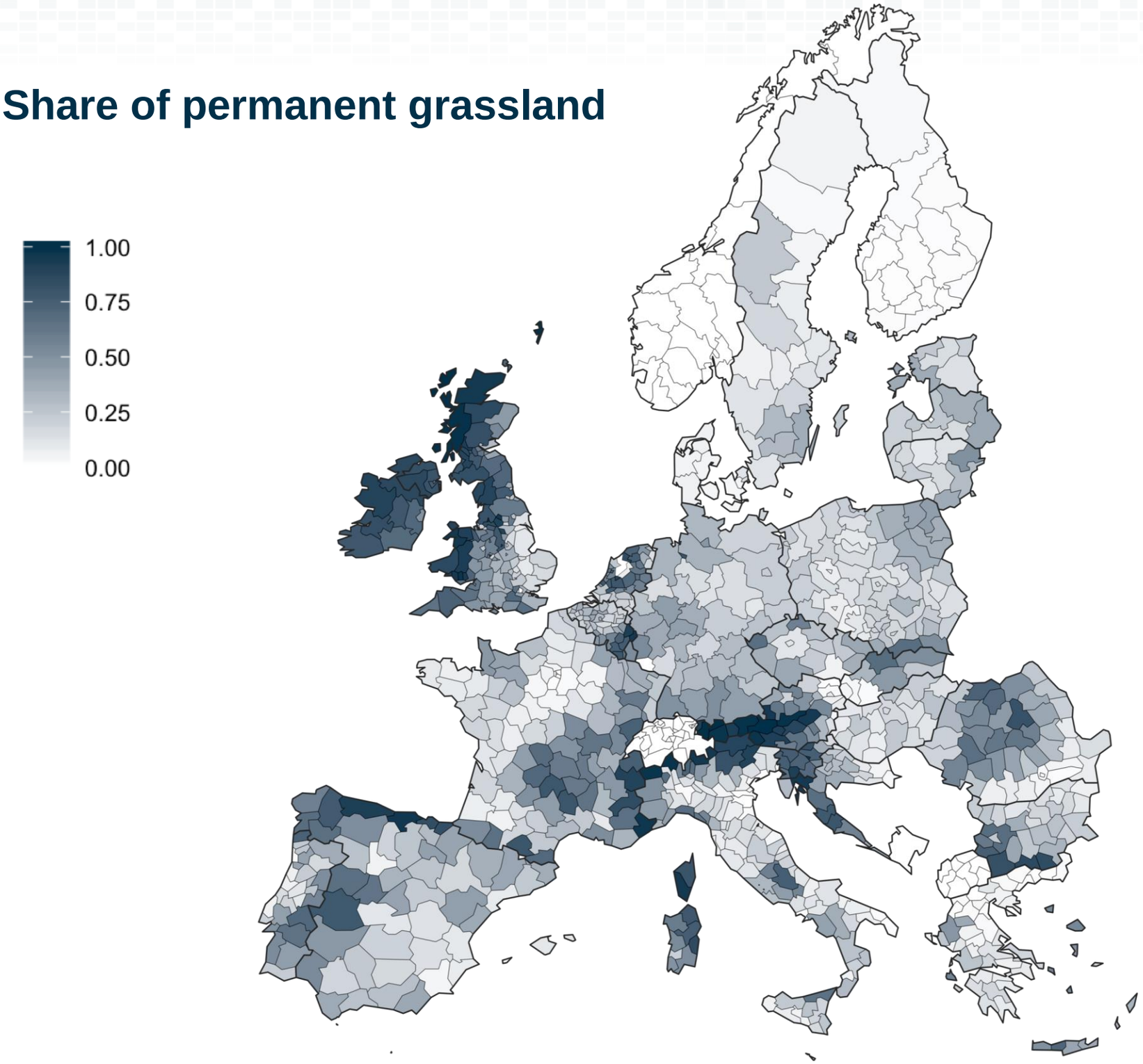


Small rum stocking rate



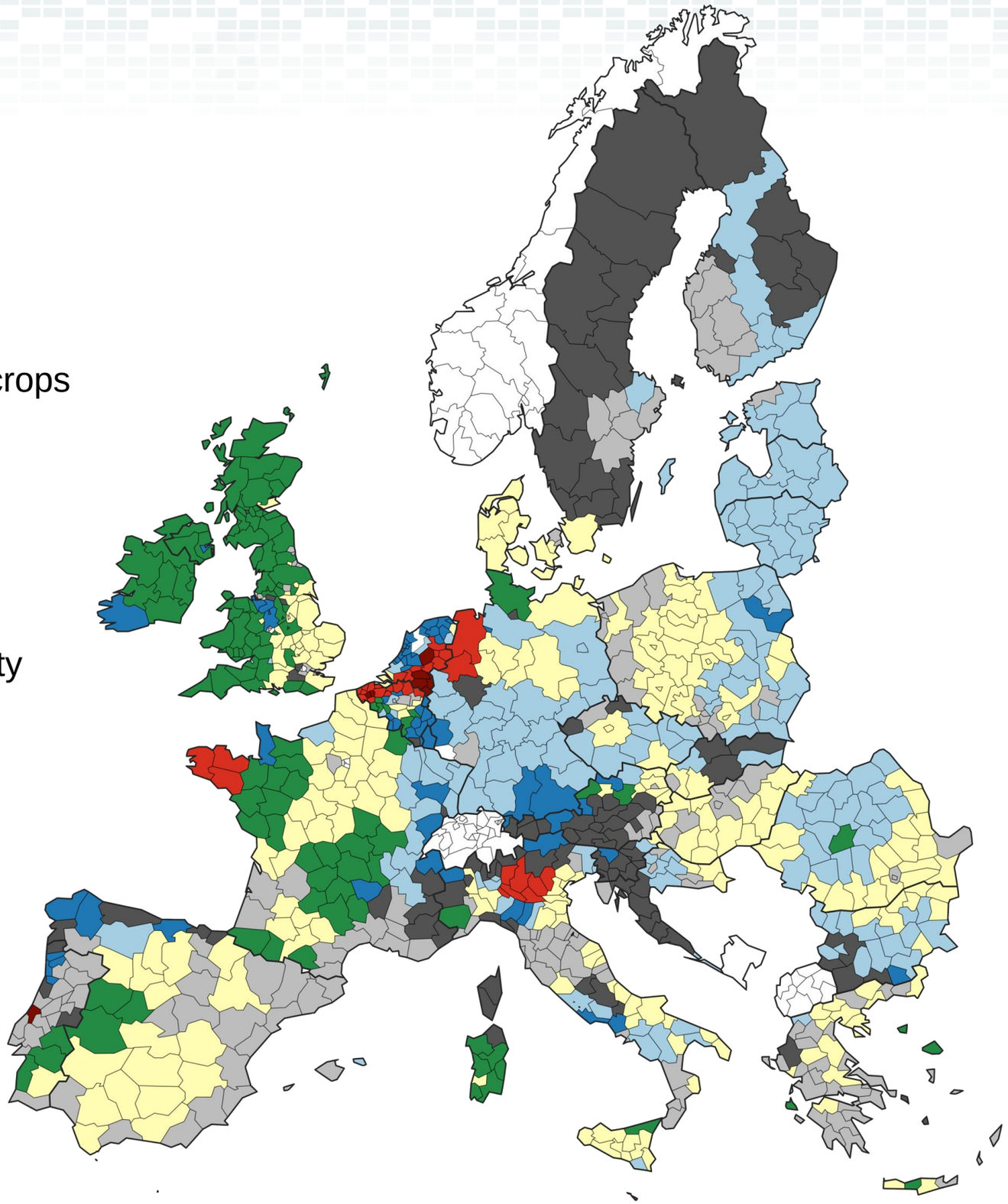
Results – Mapping spatial diversity

Share of permanent grassland



EU27 - Livestock typology

- Reduced agricultural activity - Mountain grazing
- Reduced agricultural activity - Perennial, other crops
- Crop specialized, Mixed
- Grazing livestock dominated
- Crop oriented - Dairy predominant - Low intensity
- Dairy predominant - High intensity
- Intensive monogastric and ruminant systems
- Very Intensive monogastric dominated systems



EU27 - Livestock typology

Reduced agricultural activity - Perennial, other crops (n = 186)

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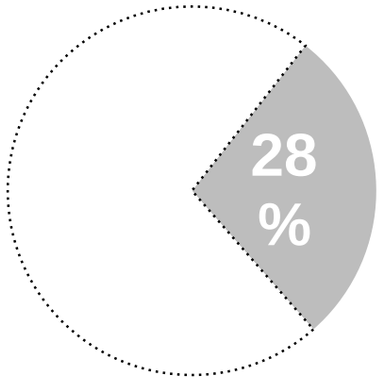
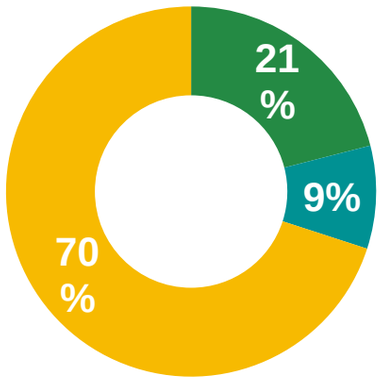
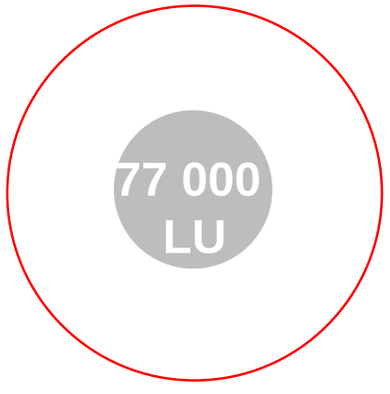
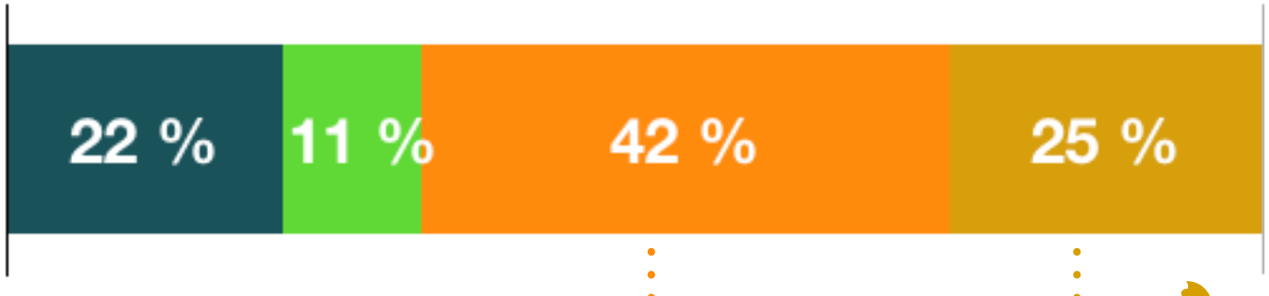


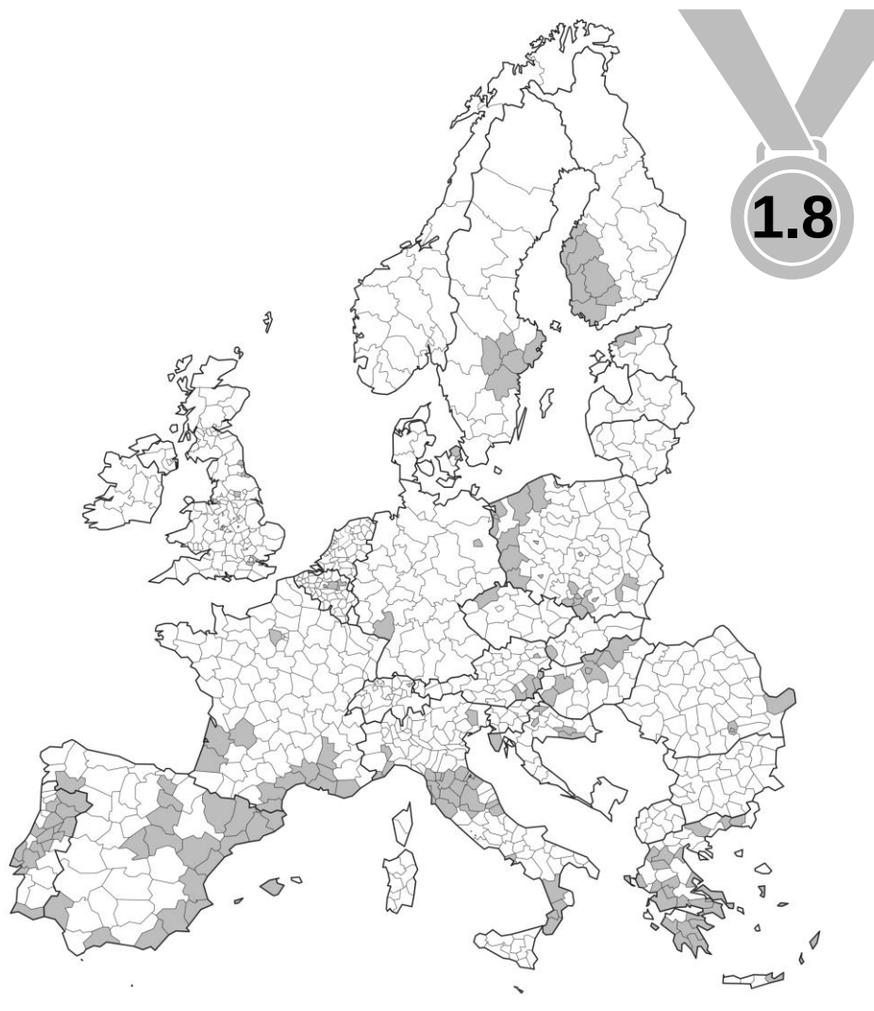
Land use



Livestock population







EU27 - Livestock typology

Crop specialized, Mixed (n = 223)

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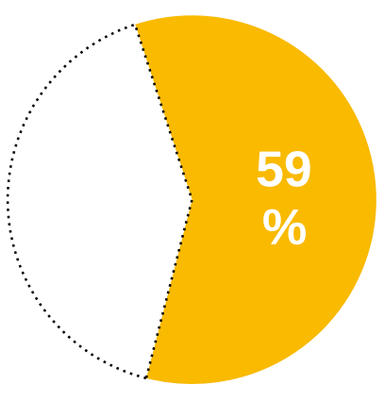

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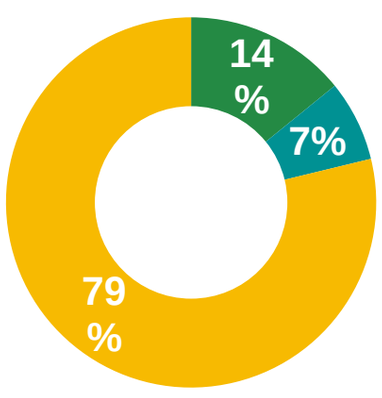
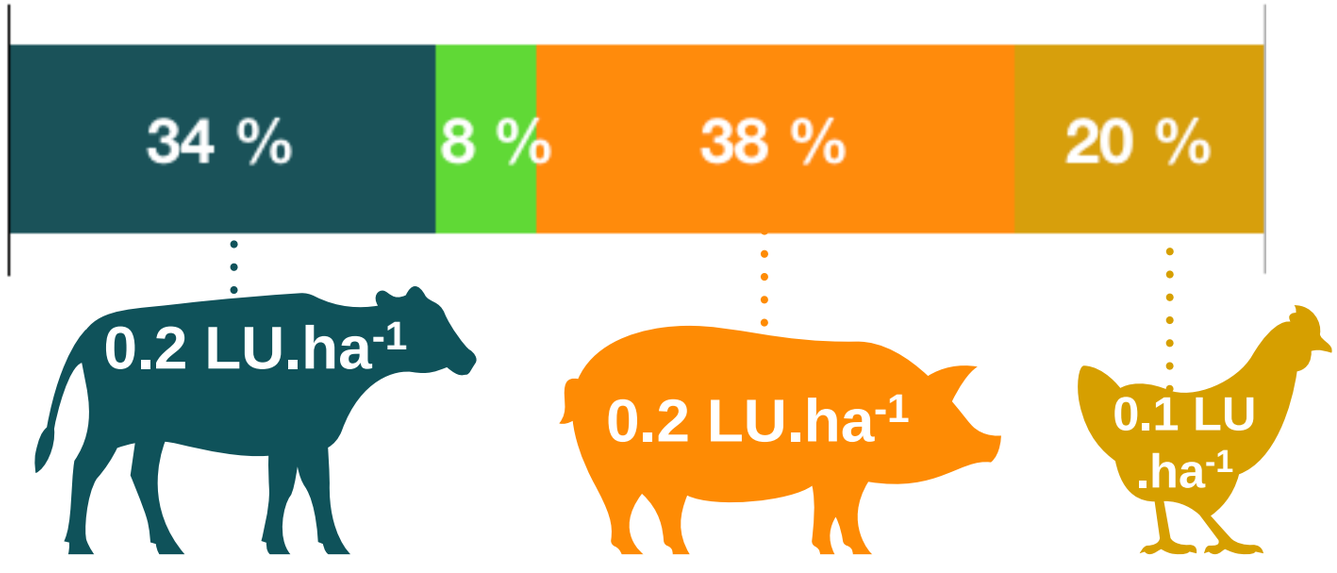
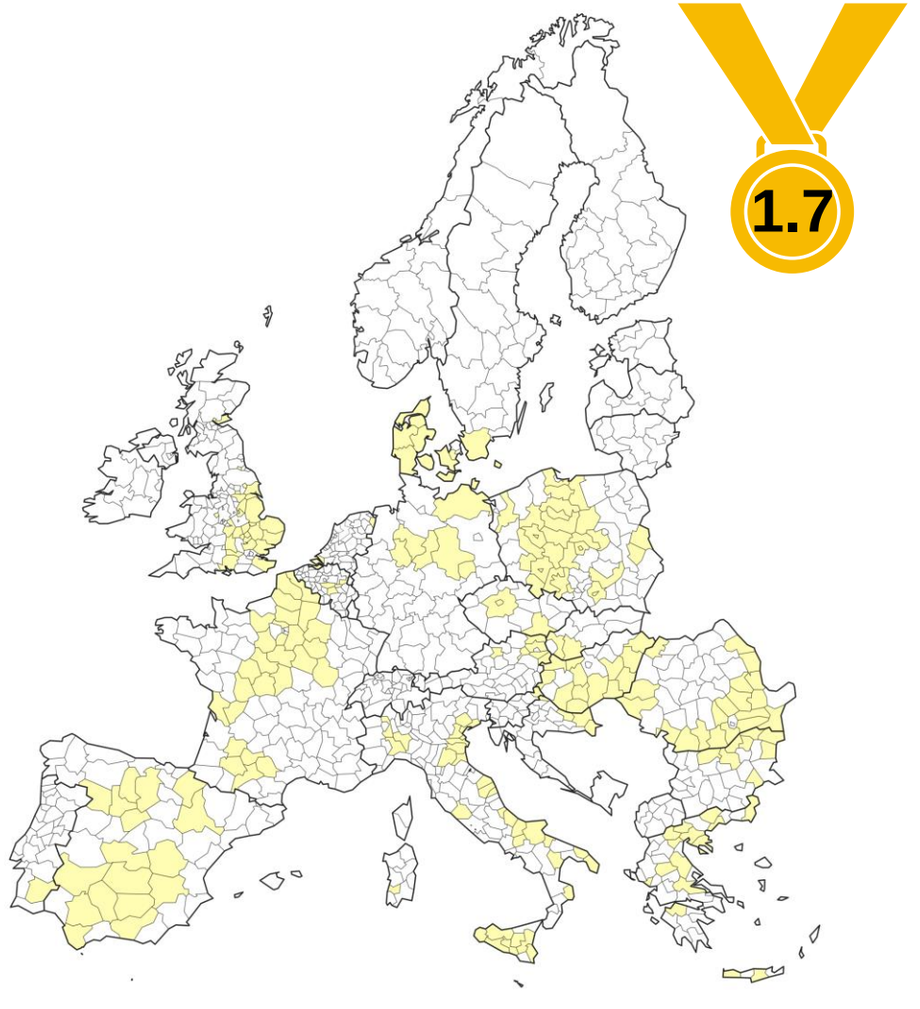


Livestock population





EU27 - Livestock typology

Crop oriented - Dairy predominant - Low intensity (n = 155)

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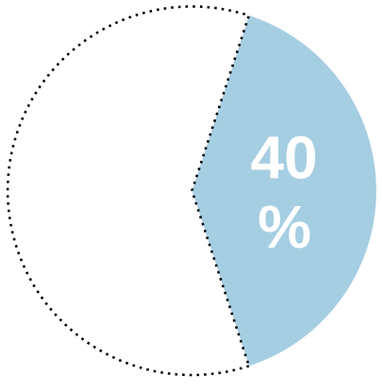

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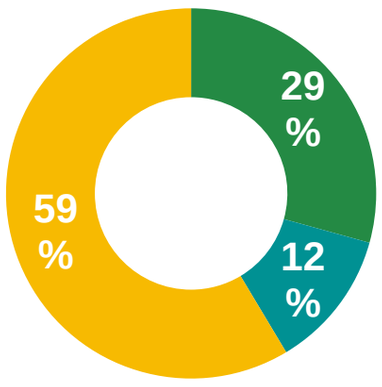
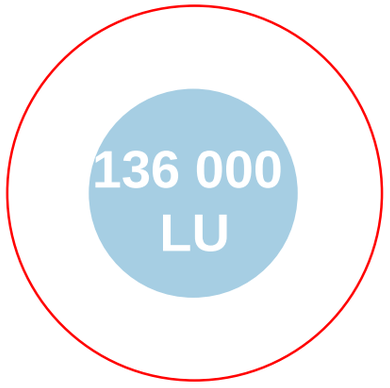
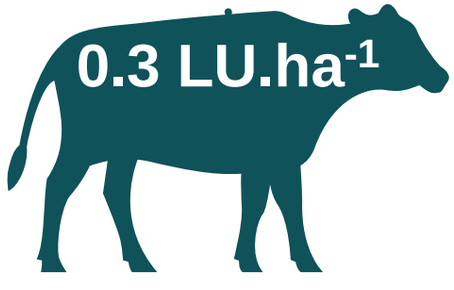
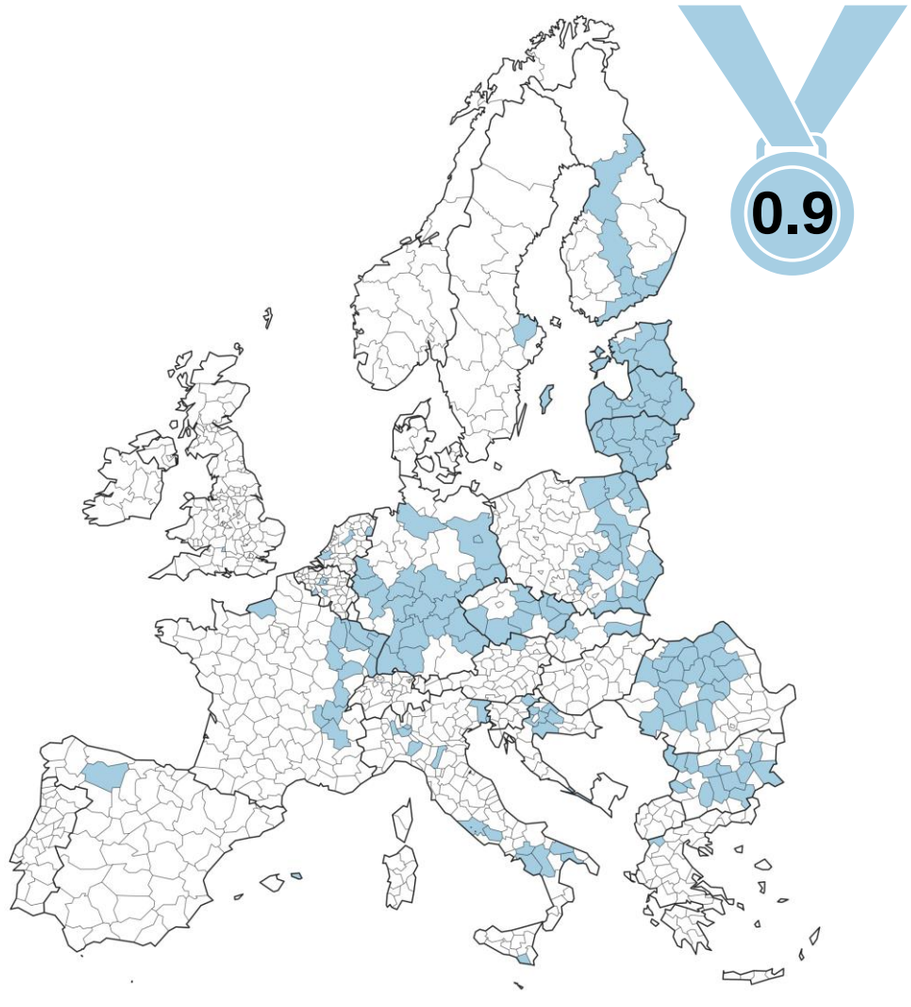


Livestock population







EU27 - Livestock typology

Reduced agricultural activity - Mountain grazing (n = 111)

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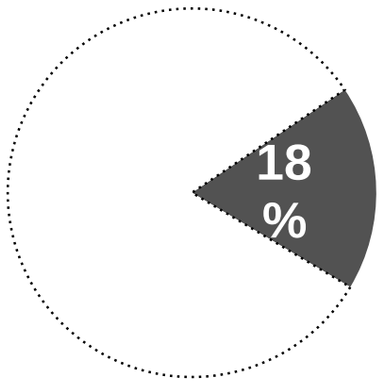
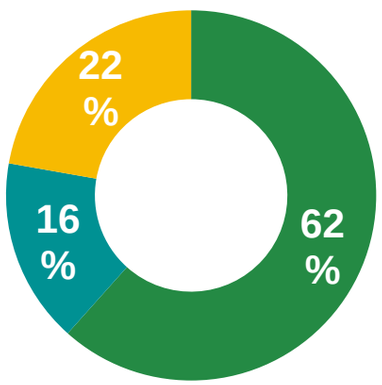
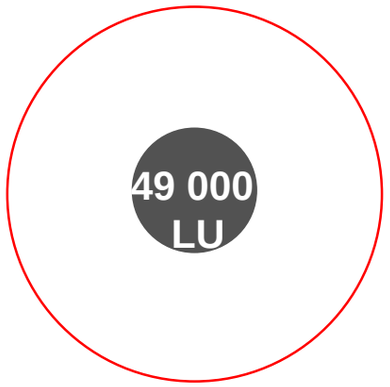


Land use



Livestock population



EU27 - Livestock typology

Grazing livestock dominated (n = 123)

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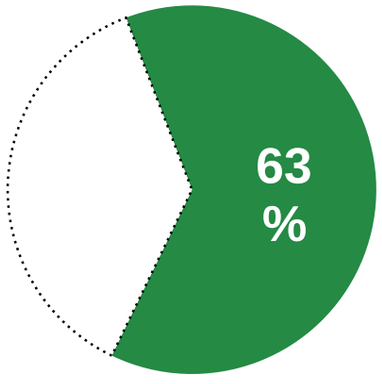
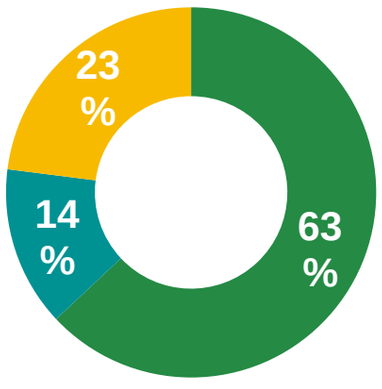
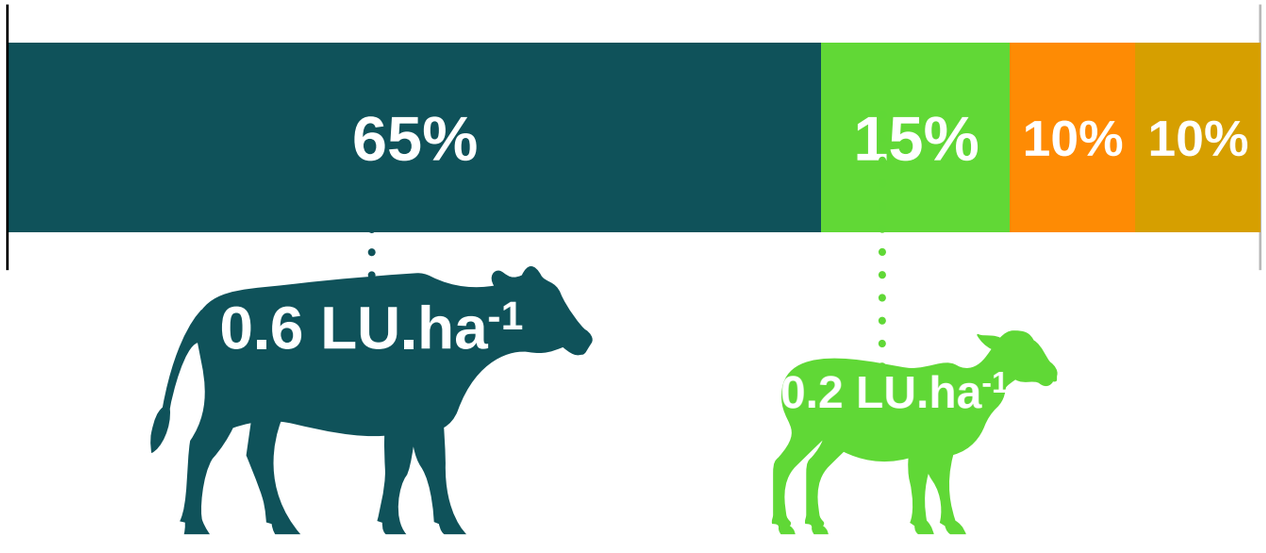


Land use



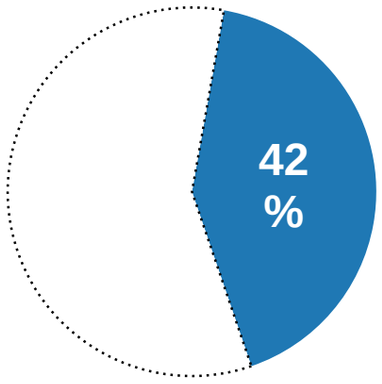
Livestock population



EU27 - Livestock typology

Dairy predominant - High intensity (n = 68)

% UAA



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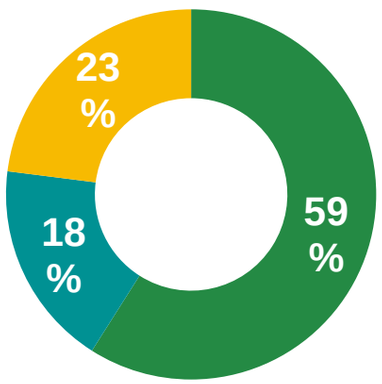
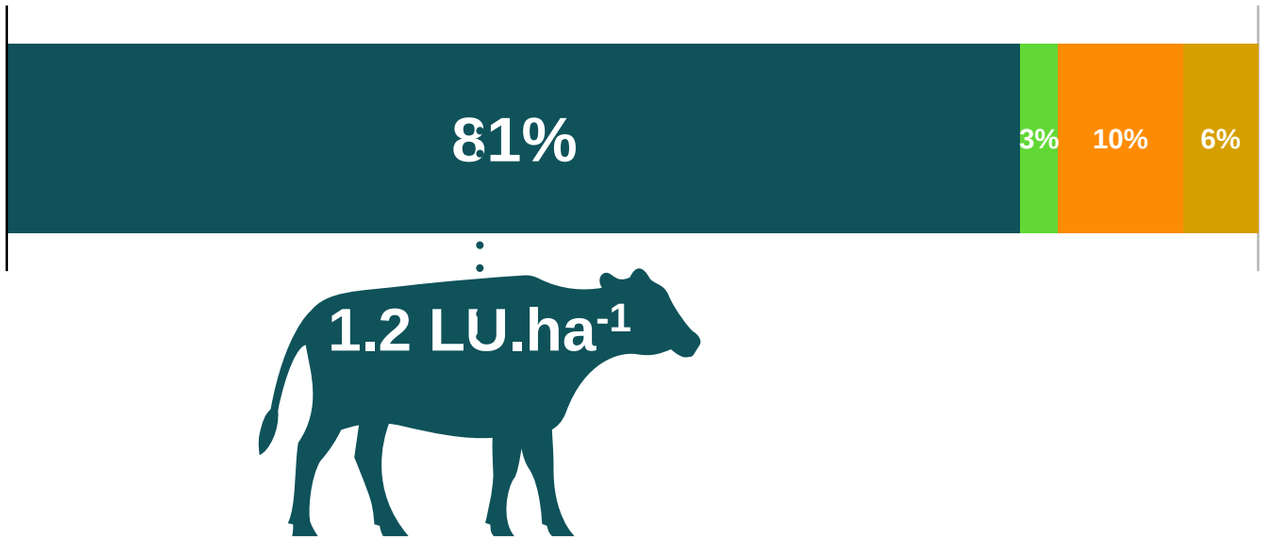
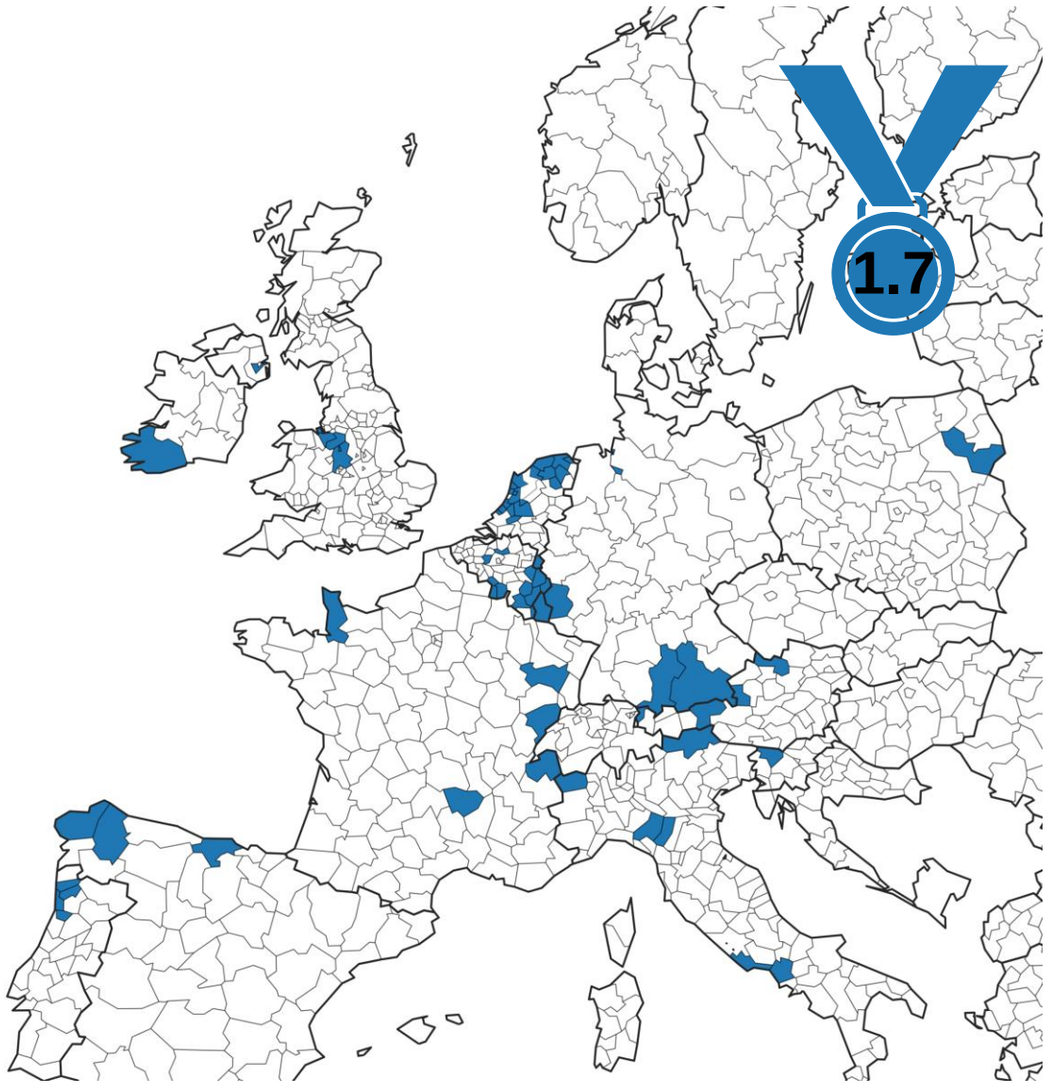


Livestock population





EU27 - Livestock typology

Intensive monogastric and ruminant systems (n = 35)

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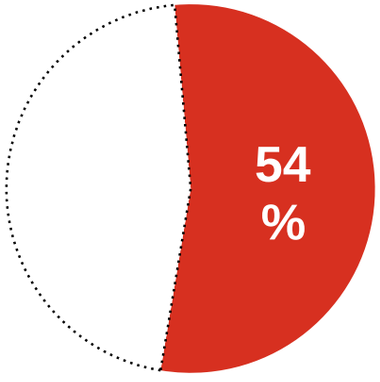

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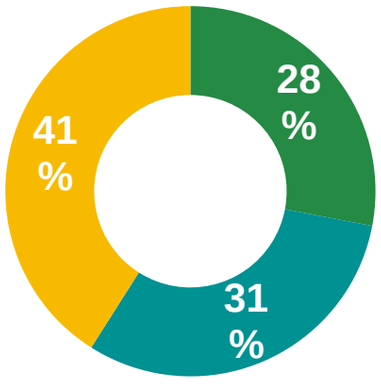
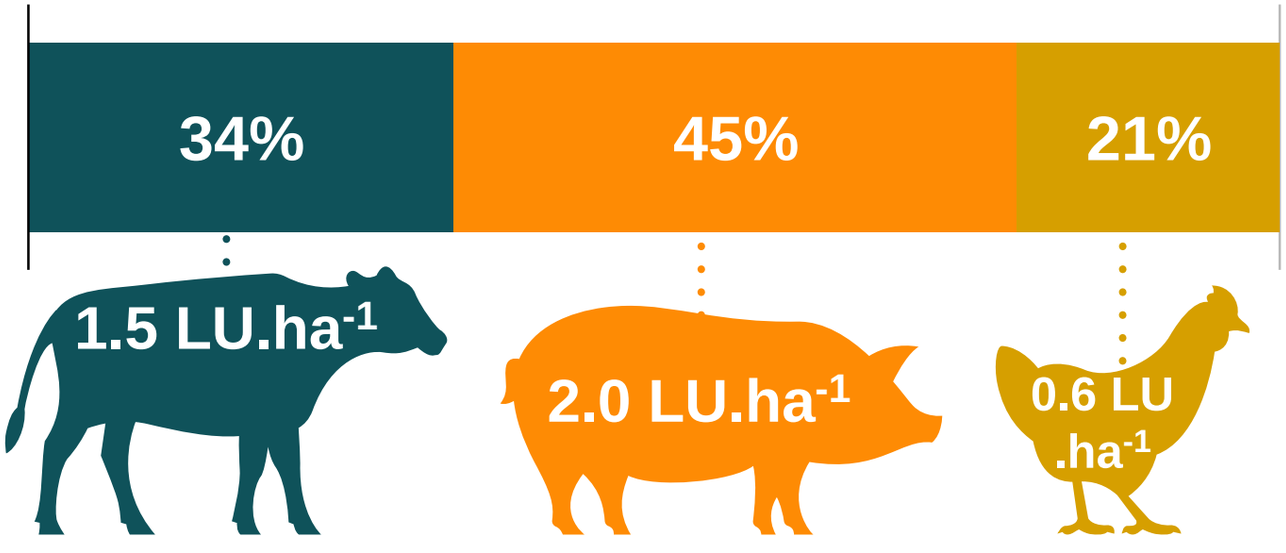
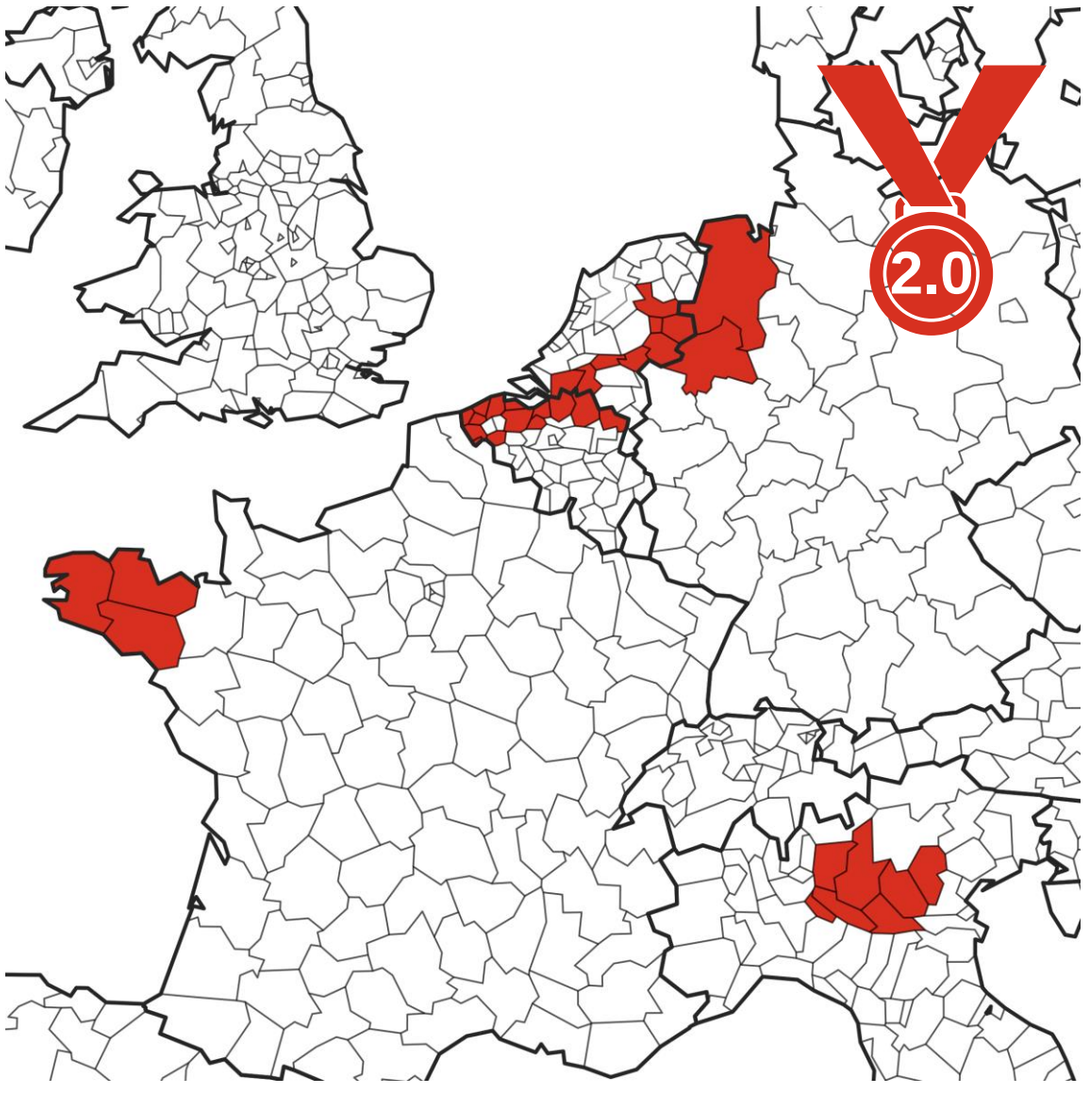


Livestock population





EU27 - Livestock typology

Very Intensive monogastric dominated systems (n = 8)

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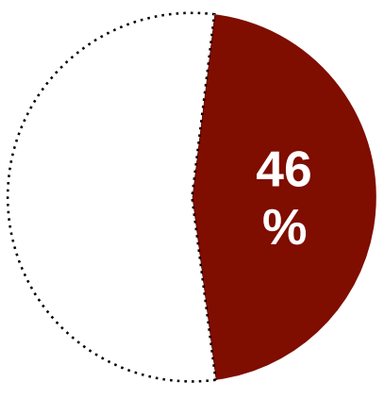
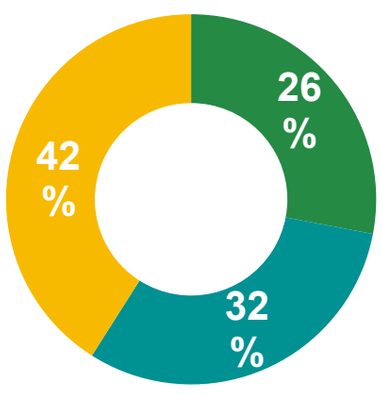
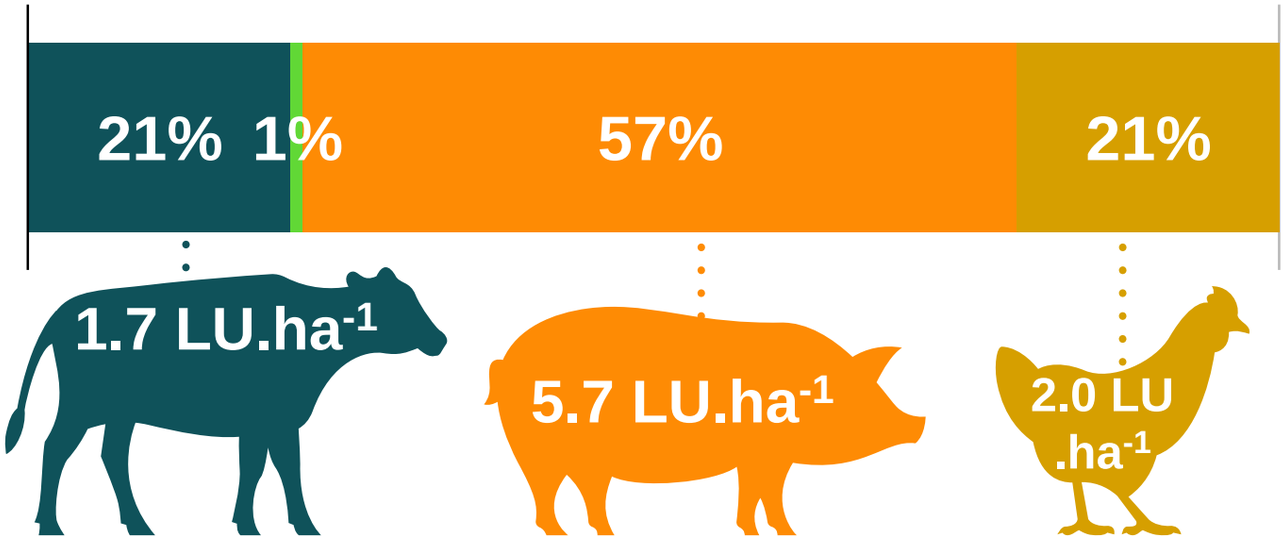
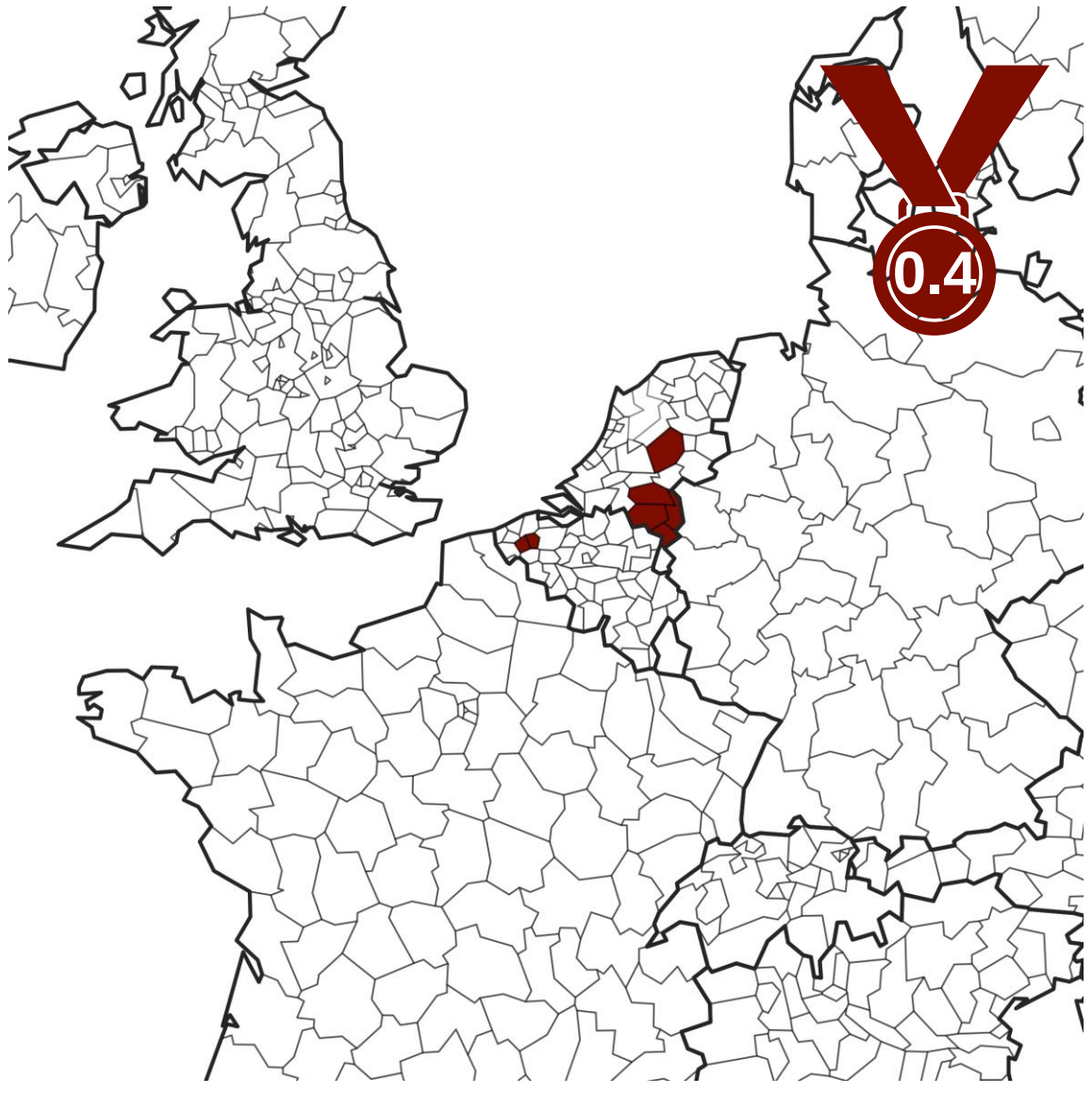


Land use



Livestock population





Matching innovation per Type

Egg production

Use of by-products

Use of insects

Technology to reduce emissions

Dairy production

Differentiated milk production

Increase protein self-sufficiency

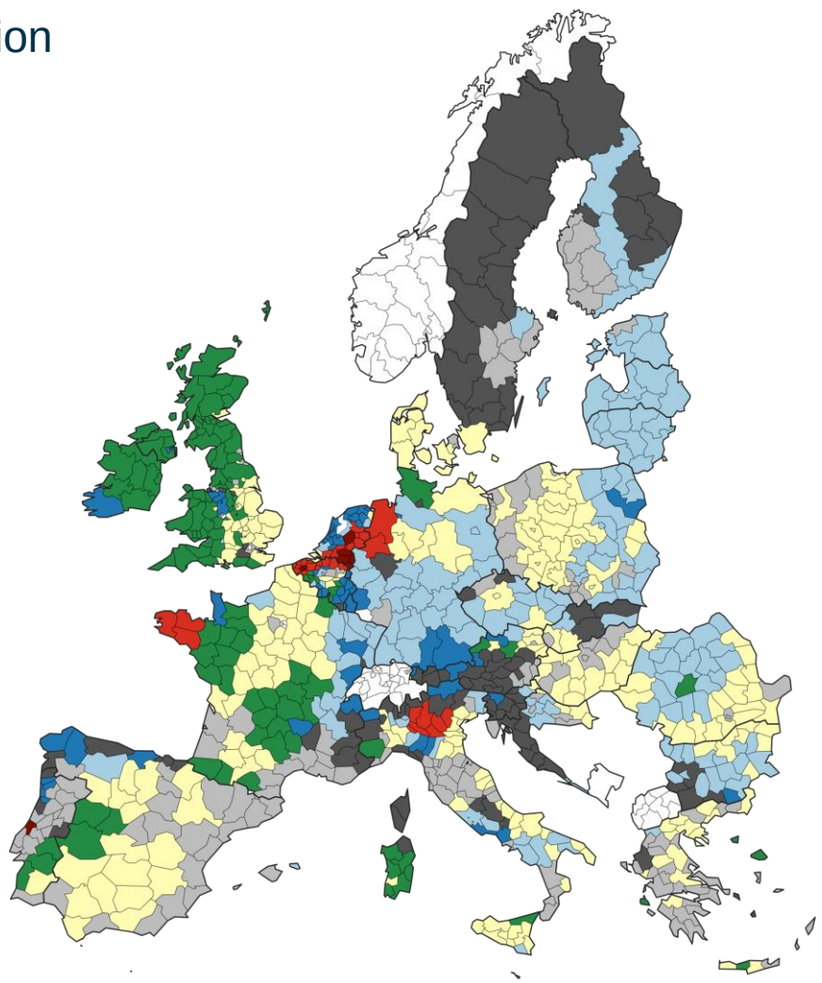
Grass-based milk production

Sheep production

Increase use of by-products

Use labels based on type of production

Payment for ecosystems services



Beef production

Grazing dynamic rotation

Optimised feeding

Optimised GHG emissions

Pig production

Using alternatives to GM soy

Welfare improvement

Conclusions

Challenging exercise to map livestock diversity

- Large spatial extent (909 NUTS3 units)
- Very heterogeneous (biogeographical, historical, socio-economic)
- Typology groups are very sensible to the set of variables

Interesting process to capture similarities across EU

- Identify regions livestock is present and plays a role
  - Economies of scale, quality-label, landscape conservation
- Highlight regional patterns that are linked to sustainability questions

Thank you for your attention!

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