Land Use Management driver database

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Land use change in general

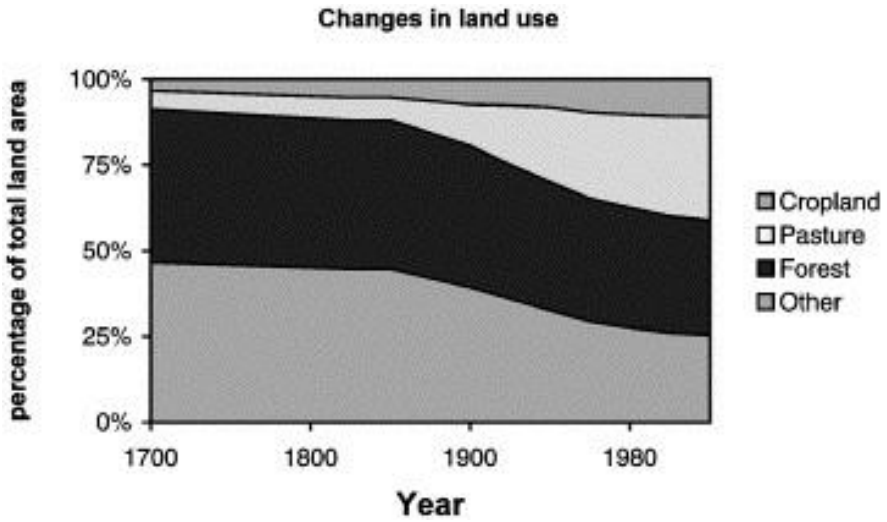

Fig. 1. Estimated changes in land use from 1700 to 1995 (Goldewijk and Battjes, 1997).

Substantial change since ~1850

We see:

- moderate growth of cropland
- massive growth of pasture
- both at the expense of forests and other lands

What drives land use management change?

Classifying causes/drivers of land use change is of multidimensional nature

- Proximate vs. underlying
  housing vs. pop growth
- Local vs. global
  Soil conditions vs. techn. progress
- Economic vs. non-economic
  GDP vs. soil conditions
- Intentional vs. unintentional
  Food prod vs. natural disturbances
- Quantitative vs. qualitative
  Market size vs. property rights

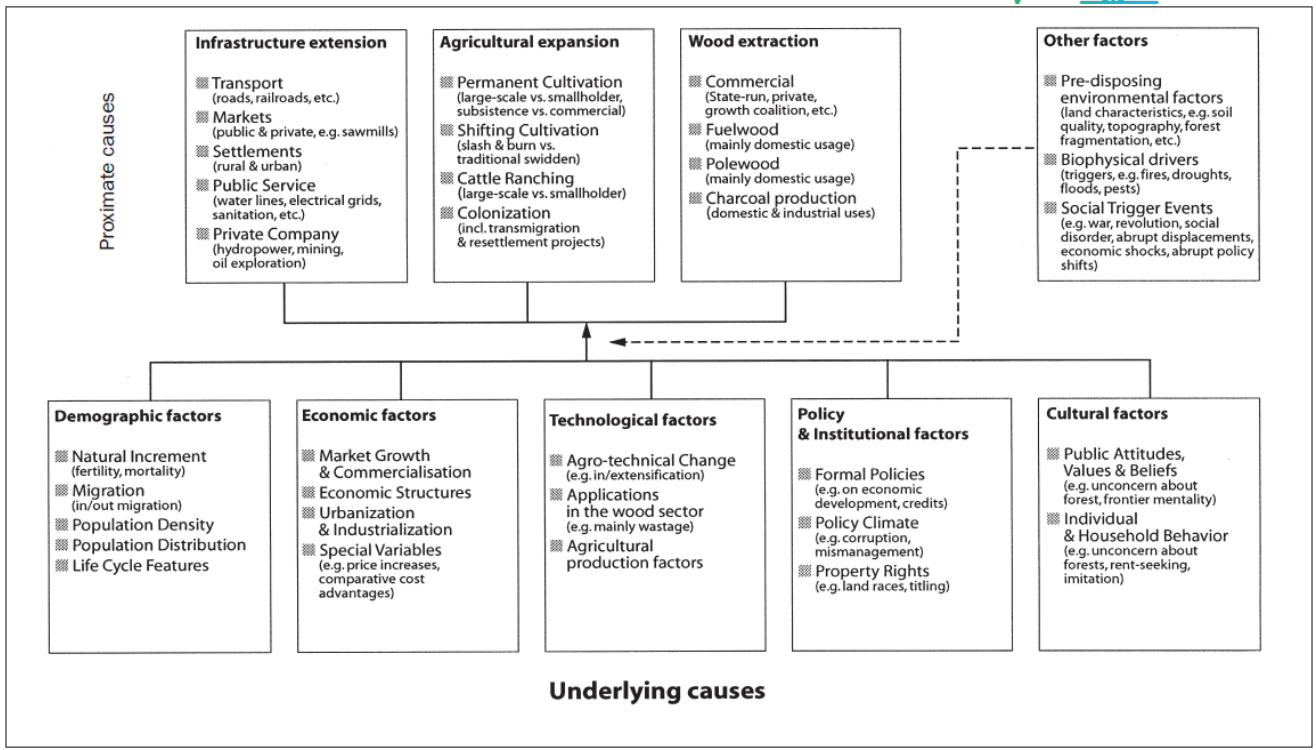

Fig. 2. Proximate vs. underlying drivers (Geist and Lambin, 2002).

Location factors vs. intensity factors

Intensity rather than location:

- Population (#, structure)
- Gross domestic product (GDP)
- Prices (import, export, consumer, producer)
- Trade (restrictions, subsidies)

Location rather than intensity:

- Climate data (precipitation, temperature)
- Economic data (employment, human capital, sectoral composition)
- Biophysical data (Elevation, Slope, Soil)
- Agricultural data (FADN, farm structure)

Working with the LUM driver database

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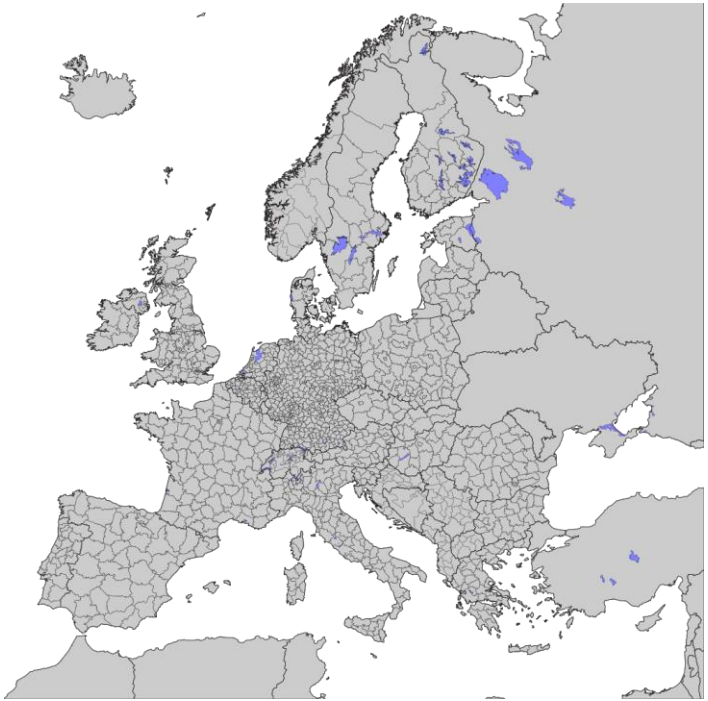
Accessing the data?

https://zenodo.org/communities/lamasus/records?q=&l=list&p=1&s=10&sort=newest

- Data is derived from publicly available data sources and harmonized to the LAMASUS NUTS regions.
- Easy to use and merge between the sources.

At what regional detail?



The **NUTS (Nomenclature des unités territoriales statistiques)** is a standardized regional classification used by the EU for collecting and comparing regional statistics.

Blessing in disguise:

- Updated on a 3-year period to reflect the changing nature subnational entities.
- 4 different levels (country, states, provinces, districts)

LAMASUS tries to harmonize to 2016 version

What is available?

Climate Data (Monthly, NUTS)

Precipitation (pr): kg/m²/s

Max Temperature (tasmax): °C

Min Temperature (tasmin): °C

Biophysical Data (Static, NUTS)

Elevation: Mean height above sea level (m)

Slope: Mean slope (degrees)

Aspect: Orientation (degrees)

Topsoil Properties (0–20cm)

- % share of USDA textural classes (clay, silt, sand)

FADN-Based Farm Typology Data (Annual, NUTS)

- Weighting: Number of farms represented
- SE Variables: Standard economic variables (e.g., output, input costs, subsidies)
- Detailed variable definitions: variable_description_zenodo.xlsx

Economic & Demographic Data (Annual, NUTS)

Employment by Sector:

- empHour_: Hours worked in 1000h
- emp_: Employment in 1000 jobs
- empl: Total employment

Economic Output:

- gdp: GDP (2015 constant prices, mio EUR)
- gva_: GVA by sector (mio EUR)

Workforce & Population:

- labour: Labour force in 1000 jobs
- pop: Total population

Wages:

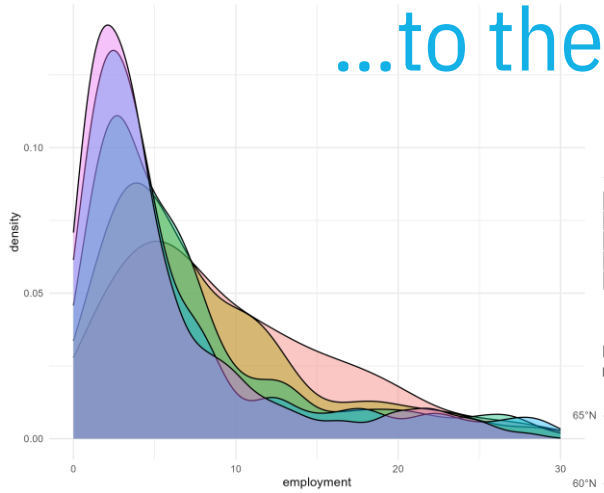
- wage_: Compensation by sector (mio EUR)

Education Shares:

- loweduc, terteduc: % of low/high education (NUTS1/NUTS2 only)

A quick guide from…

…here…



…to there.

April 8, 2024 (0.1) | Dataset | Open

LAMASUS NUTS-level economic data 1980-2021

Krisztin, Tamás; Piribauer, Philipp

This dataset comprises spatial and temporal economic data compiled from the Annual Regional Database of the European Commission (ARDECO) and…

Part of EU Open Research Repository, Land use and Management modelling for SUStainable governance

Uploaded on April 8, 2024

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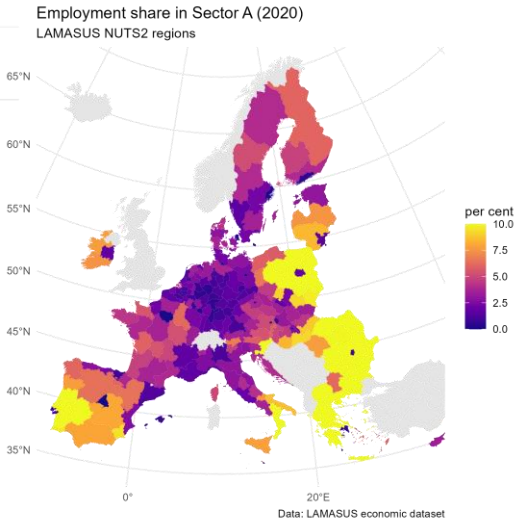

Git repository – github.com/michidoubleu/LAMASUSSS

What do I need to work with R?

- R – The base programming language. It handles the core functionality like computations, data structures, and statistical modeling.
- RStudio – A user-friendly interface (IDE) for writing and running R code. It includes helpful tools for script editing, plotting, and managing your environment.
- Packages – Add-ons that extend R's capabilities. Examples: tidyverse for data manipulation and plotting, mlogit for discrete choice models.
- A dataset – You'll need data to analyze. This could be a CSV file, Excel spreadsheet, or a built-in dataset from R packages.
- Basic coding mindset – Willingness to experiment, troubleshoot, and learn by doing. R is beginner-friendly but rewards curiosity.

Please provide your feedback!

- https://www.menti.com/alavbf5ep7y3

Thanks for your attention!

Any Questions?

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