



Istituto di Servizi per il Mercato Agricolo Alimentare

Copernicus and its potential for land policies implementation

AEIAR MEETING 2024

Camillo Zaccarini Bonelli



Direzione Supporto al Piano Strategico della PAC

Roma, 24 maggio 2024

1. Introduction and context
2. Prospects for the enhancement of ISMEA services with EO
3. Example case of EO application
4. Ideas for Land Policy

1

Introduction and context



MINISTERO DELL'AGRICOLTURA
DELLA SOVRANITÀ ALIMENTARE
E DELLE FORESTE



Common Agricultural Policy



EU CAP
NETWORK

National policies



Instrumental body of the Ministry



ISMEA MAIN INSTITUTIONAL SERVICES

- Support for the CAP strategic plan
- Start up and companies development
- Companies finance
- Guarantees
- Risk management
- Markets
- Training
- Monitoring LULUCF (agricultural section)

Context

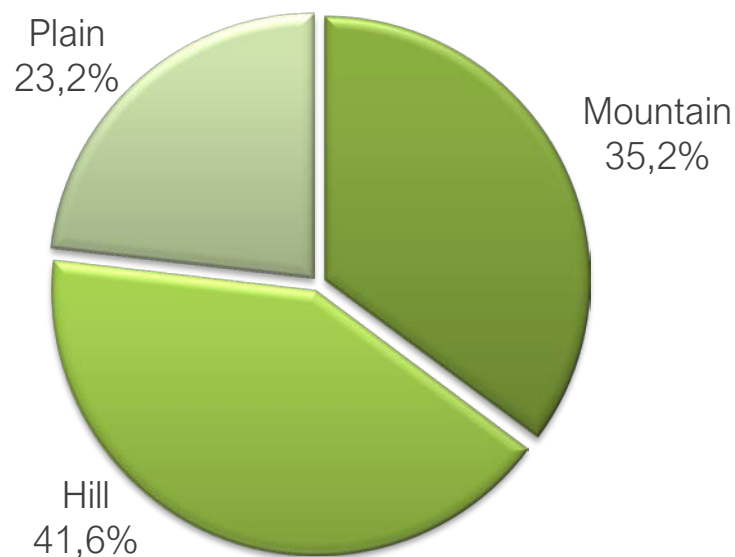
POLITICS IN EU

- CAP – LTVRA (*Long term vision for rural areas*)
- GREEN DEAL and Farm to fork strategies e Biodiversity
- LAND GRABBING

NATIONAL POLITICS

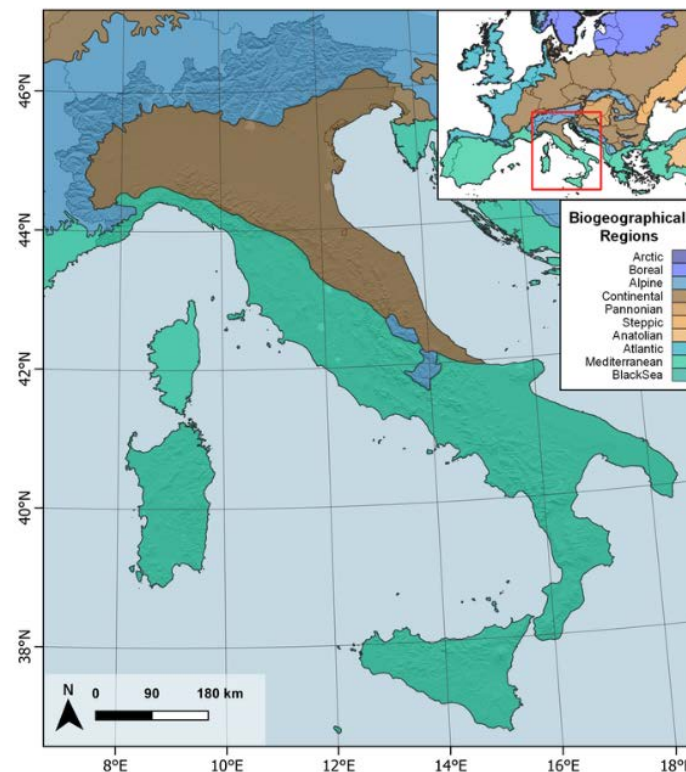
- Abandonment of agricultural land
- Land consumption
- Hydrogeological aspect

Italy. Territorial surface by altimetric area



Source: ISTAT

Italy. Biogeographical regions



- 3 biogeographical regions
- 2646 Natura 2000 network sites
- 131 habitats, 91 flora species, 119 species of wild fauna, 385 species of avifauna

Source: ISPRA

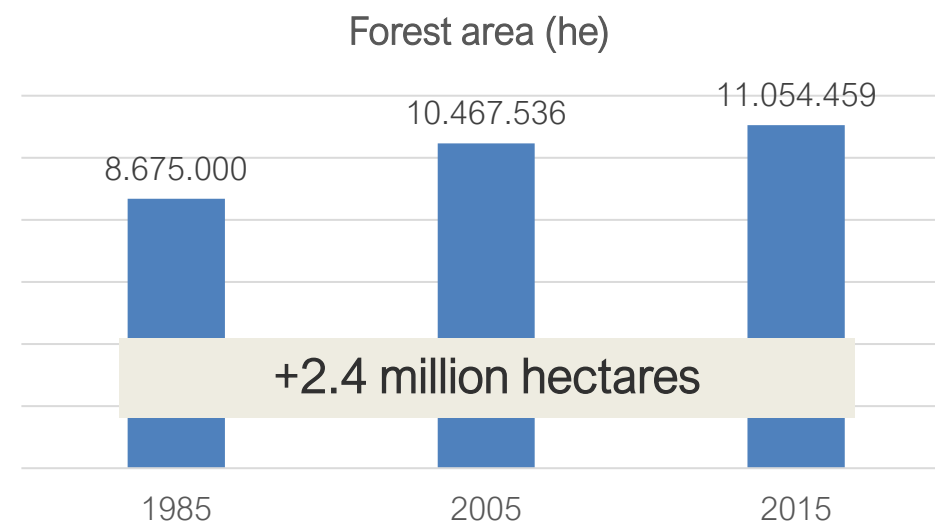
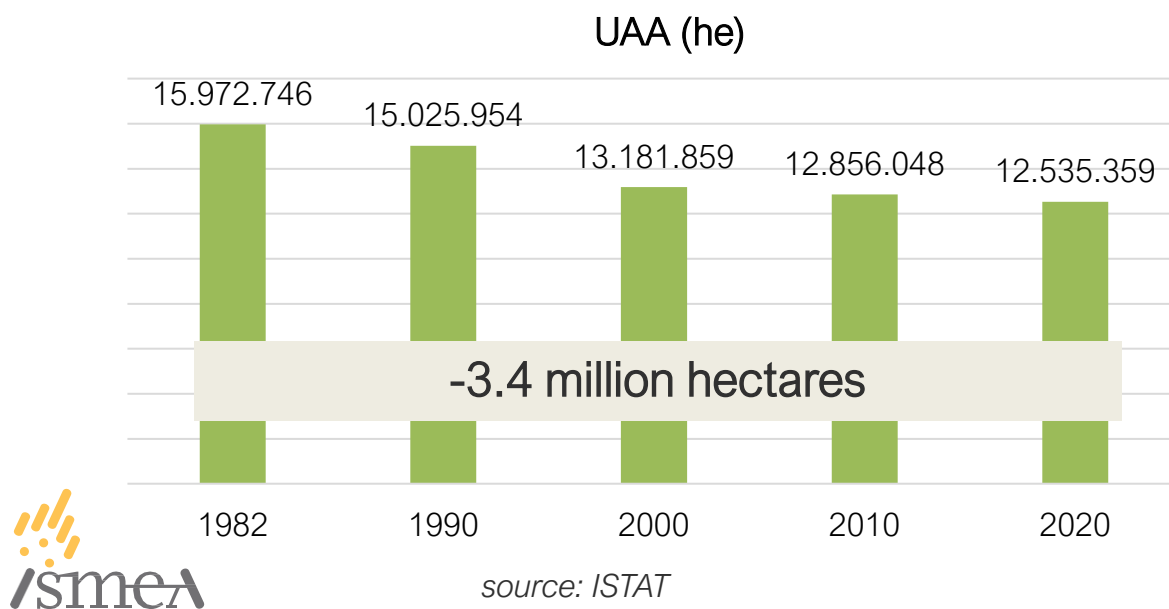
Evolution in number of agricultural holdings, UAA and Forest area in Italy

| YEAR | NUMBER OF AGRICULTURAL HOLDINGS | USED AGRICULTURAL AREA (UAA) (he) | AVERAGE FARM SIZE (he) |
|-------------|---------------------------------|-----------------------------------|------------------------|
| 2020 | 1.133.023 | 12.535.359 | 11,1 |
| 2010 | 1.615.590 | 12.856.048 | 8,0 |
| 2000 | 2.393.161 | 13.181.859 | 5,5 |
| 1990 | 2.842.949 | 15.025.954 | 5,3 |
| 1982 | 3.123.551 | 15.972.746 | 5,1 |

source: ISTAT

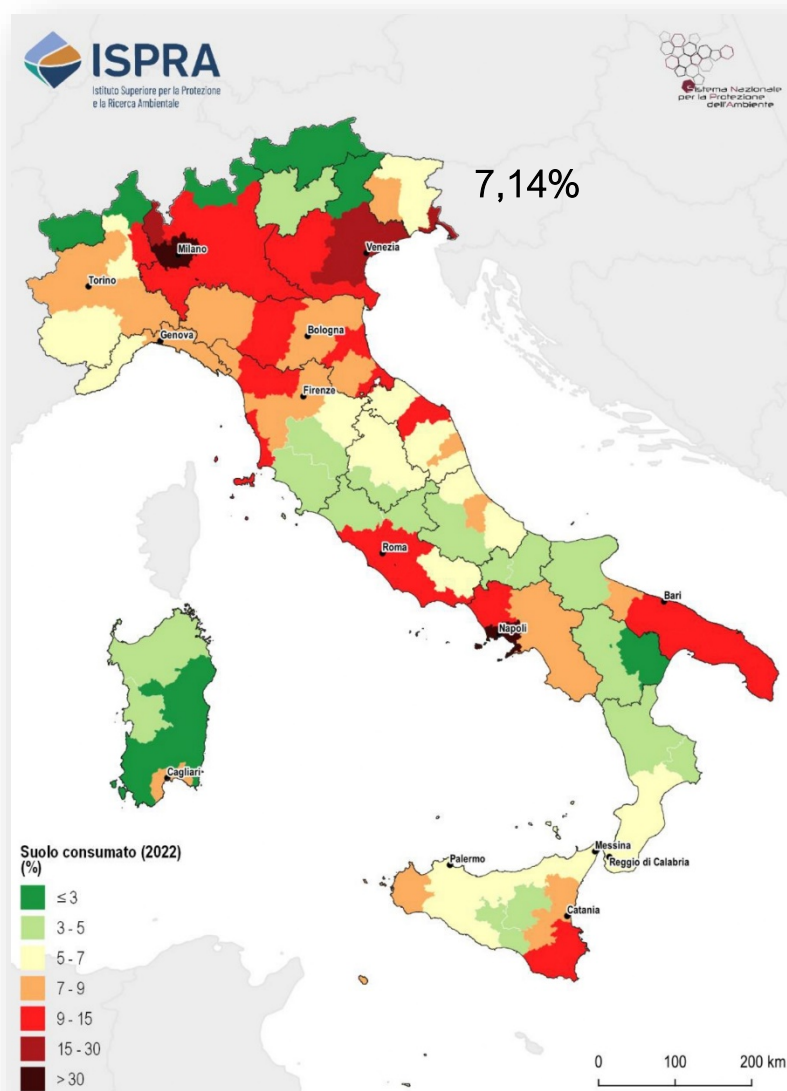
In 38 years, from 1982 to 2020:
 -63.7% of agricultural holdings (-2 million)
 -21.5% of UAA (-3.4 million he)

In 30 years, from 1985 to 2015:
 +27.4% of Forest area (+2.4 million he)



Source: National Forest Inventory

Soil consumption in Italy



Novara. New logistic center

2019



2020



2021



Source: ISPRA

Soil consumption in Italy



Annual soil consumption* 2022 **76,8 km²**



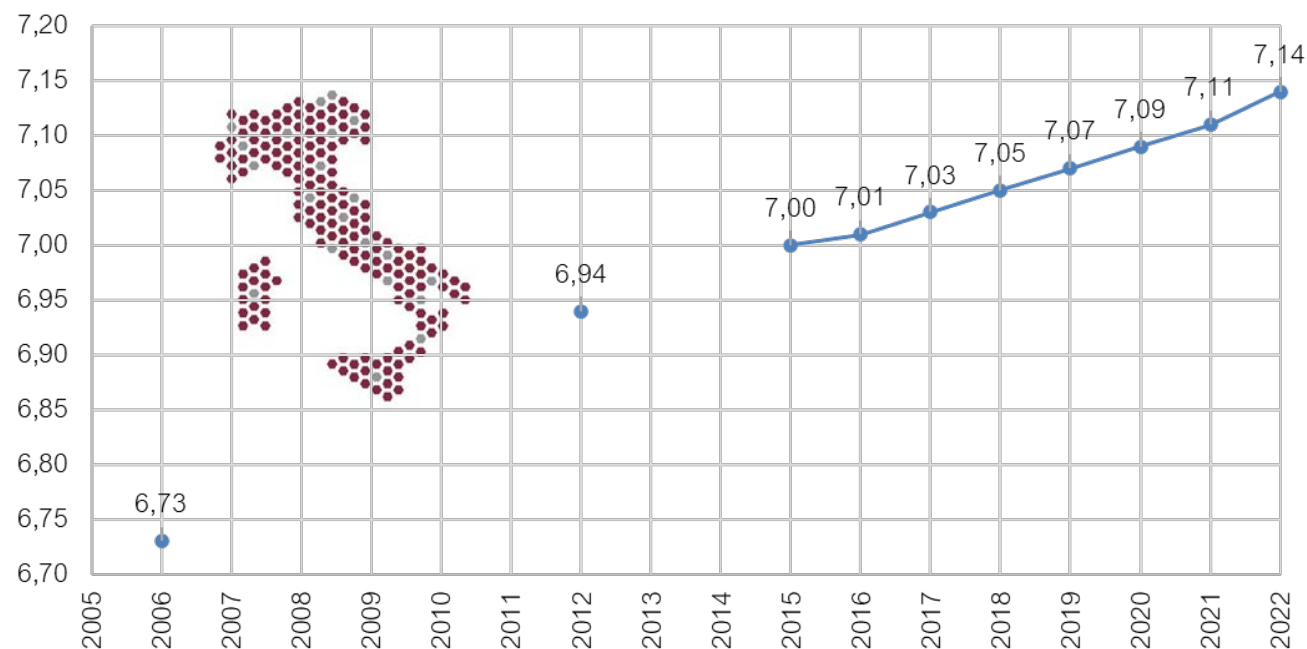
Net annual soil consumption** 2022 **70,8 km²**



76,8 km²

- 19,4 hectares a day
- more than 2,2 m² a second

Soil consumed (2006-2022) in percent, at national level.



*Annual soil consumption: new area with artificial cover

**Net annual soil consumption: balance between new consumption and areas restored in the last year

Source: ISPRA

2

Prospects for the enhancement of ISMEA services with EO

RURAL ENVIRONMENT



**RETERURALE
NAZIONALE
20142020**

**INFORMATION &
TRAINING**

RESEARCH

**OPERATIONAL
TOOLS**



National Doctorate in Earth
Observation

IRIDE Service Value Chain Project

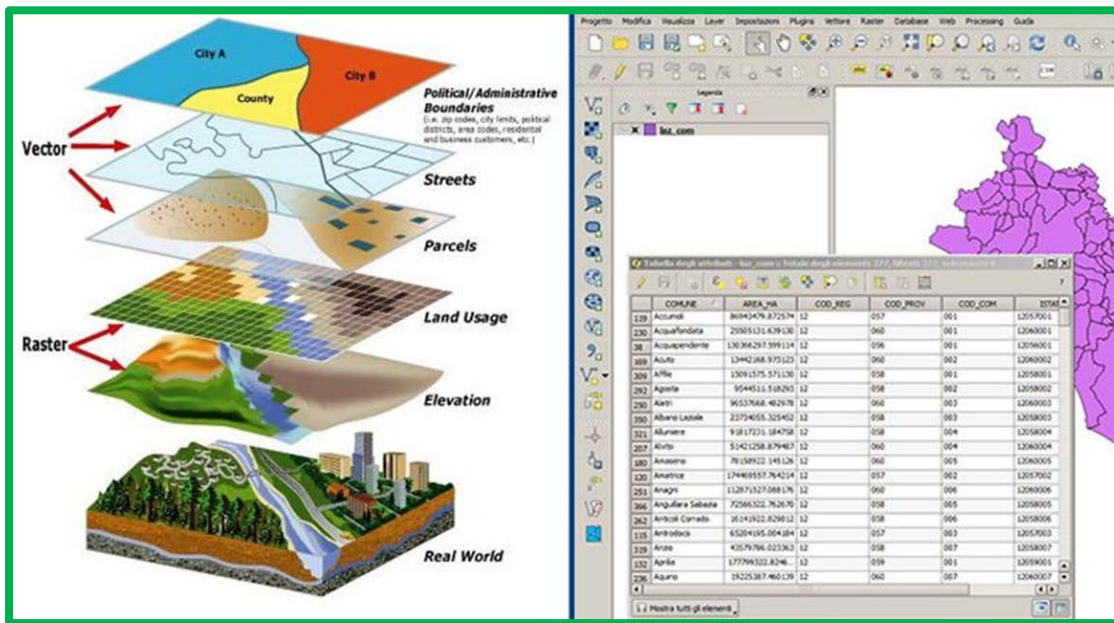
Copernicus Climate Change
Service (C3S) in partnership with
ECMWF

**ISMEA
SERVICES**

What's GIS - Geographic Information System

The **geographic information system** is a tool that allows you to analyse, represent, query entities or events that occur in the territory.

A **GIS** allows the construction of complete and complex geographical representations (maps) in which geographical elements (features) and their spatial relationships with the earth's surface are displayed.



Copernicus is an integrated system of satellite and in situ data

IRIDE - International Report for Innovative Defense of Earth

IRIDE is s one of the most important European Earth observation space programs. Sponsored by the Italian Government, it will be made in Italy and completed by 2026 with the support of ESA and ASI for a total value of 1.1 billion euro allocated under the **National Recovery and Resilience Plan** (PNRR - Piano Nazionale di Ripresa e Resilienza).

PNRR is the Plan that identifies the objectives, reforms and investments that Italy intends to achieve with **European funds Next Generation EU**, to mitigate the economic and social impact of the pandemic and to make Italy a fairer, greener and more inclusive country, with a more competitive, dynamic and innovative economy .



ISMEA (Pilot User)

Service Value Chain (SVC)

- Classification of herbaceous agricultural crops
- Erosion Risk Assessment
- CPA Mapping and Monitoring
- Identification of indexes for crop health assessment
- Satellite based support to CAP

Ismea services and output on which the use of OT, Georepresentation and Geomatics was investigated

Risk management

With what tools?

- Georepresentation
- GIS
- Monitoring
- Planning
- Change detection
- Delimitation of affected areas
- Vegetation indices
- Risk indices...

Land management

Data Base

- Historic rural landscape
- ...

Carbon farming

Marketing Intelligence

- Strategic stocks
- Market Analysis
- ...

With what tools?

- Georepresentation
- GIS
- Change detection
- Planning
- Monitoring...

With what objectives?

Planning, management and technical assistance, monitoring and control, analysis, studies and new services

GIS – ISMEA Open school and DNOT

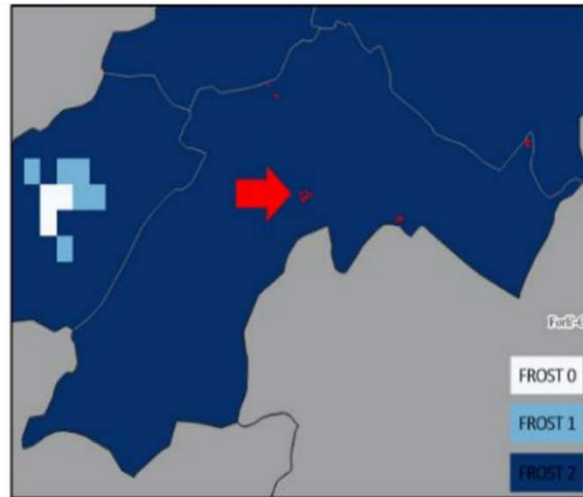
Risk
management

Land
management

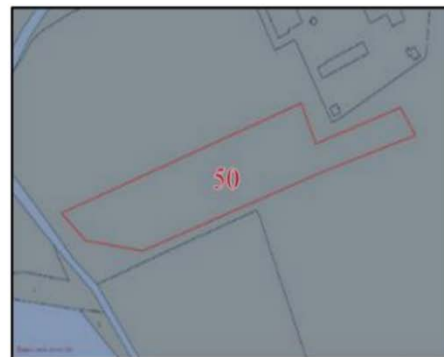
Rural
landscapes

Carbon farming

Damage assesement for catastrophic adversities Brisighella (RA) frost event of 13rd March 2022



| REGIONI AGRARIE | Danno d'area ponderato | |
|---|------------------------|------------|
| | Albicocche precoci | Albicocche |
| REGIONE AGRARIA N. 1 - Collina del Senio e del Lamone | 40% | 17% |
| REGIONE AGRARIA N. 2 - Pianura del Senio e del Lamone | 50% | 25% |
| REGIONE AGRARIA N. 3 - Pianura di Ravenna | 26% | 24% |
| REGIONE AGRARIA N. 4 - Pianura del Lamone | 28% | 7% |



"Frost 0": $T > 1^{\circ}\text{C}$; "Frost 1": $0^{\circ}\text{C} < T \leq 1^{\circ}\text{C}$; "Frost 2": $0^{\circ}\text{C} \leq T$

Source: ISMEA National Mutual Fund
experimentation (2022)

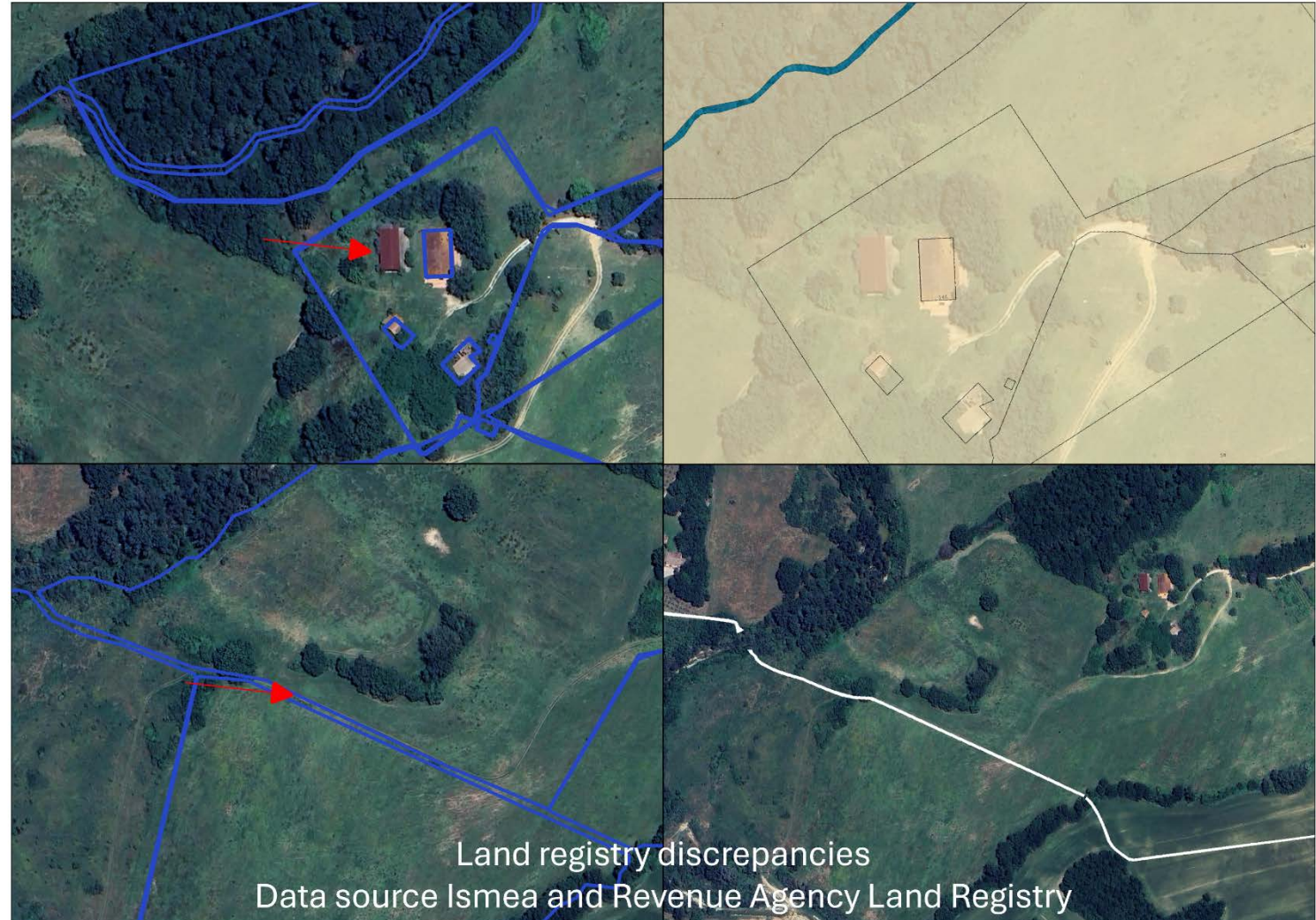
GIS – ISMEA Open school and DNOT

Risk
management

Land
management

Rural
landscapes

Carbon farming



Azienda BTA ISMEA located in the municipalities of Orte (VT) and Amelia (TR)

Extent: 43.076 hectares

GIS – ISMEA Open school and DNOT

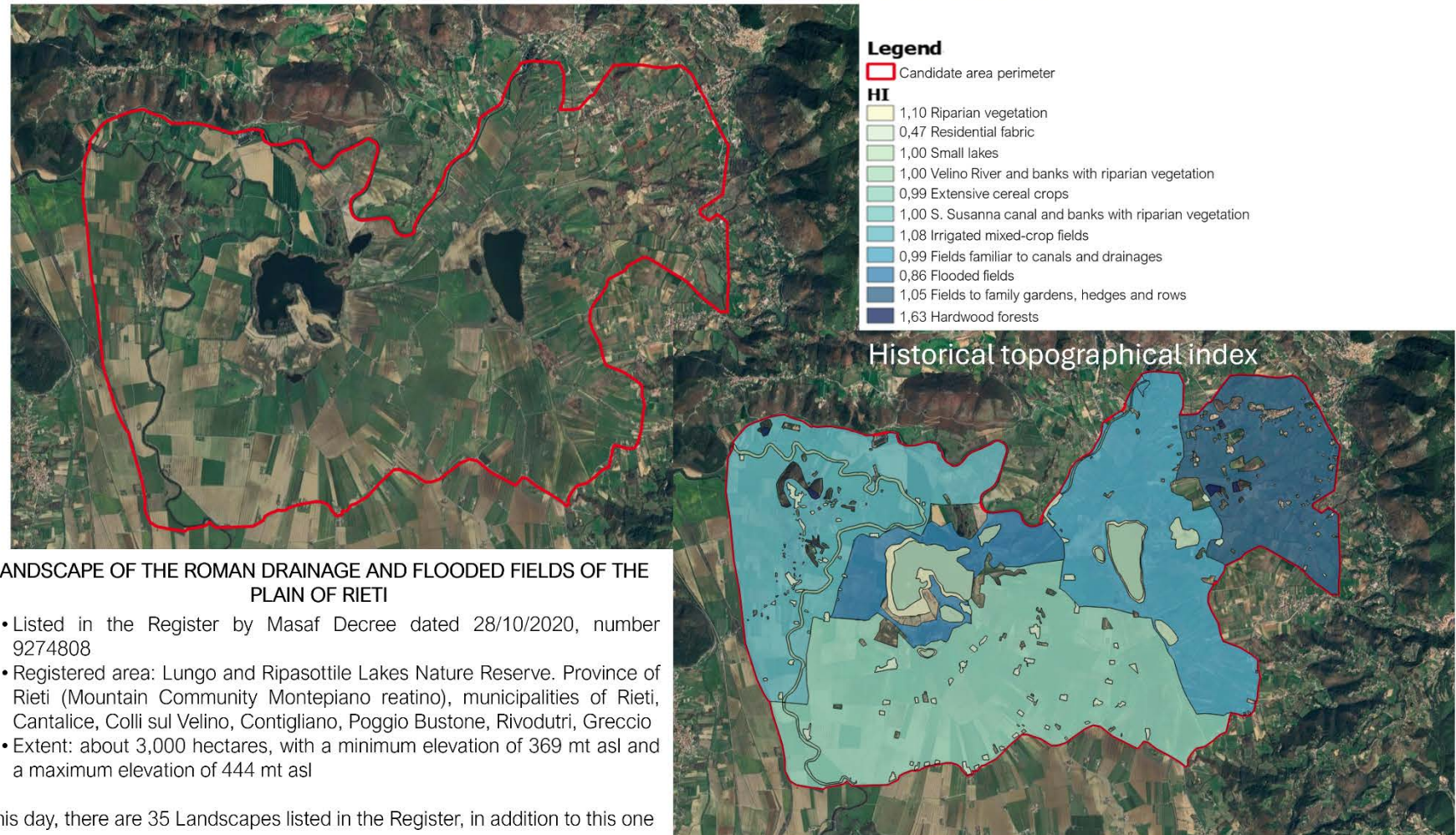
Risk
management

Land
management

Rural
landscapes

Carbon farming

Requirements maintenance for the Registry



Source: National Rural Network (1954 vs. 2017)

GIS – ISMEA Open school and DNOT

Risk
management

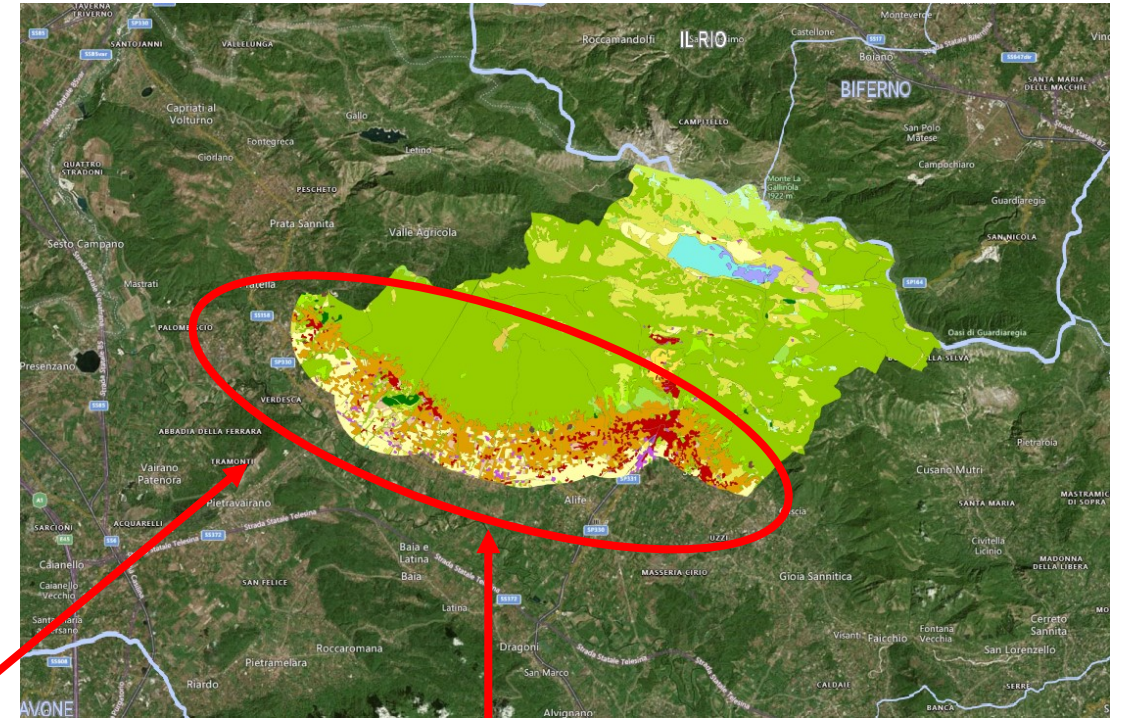
Land
management

Rural
landscapes

Carbon farming

- Area of approximately 368 km² within the Sannio-Alifano
- Reclamation Consortium, including the municipalities of: Calvisi, San Potito Sannitico, Piedimonte Matese, Castello Matese, San Gregorio Matese, Defenza, Sant'Angelo Alife, Raviscanina, Ailano

Agri-livestock-forestry district



Offsetting potential of practices versus livestock emissions within the same District.

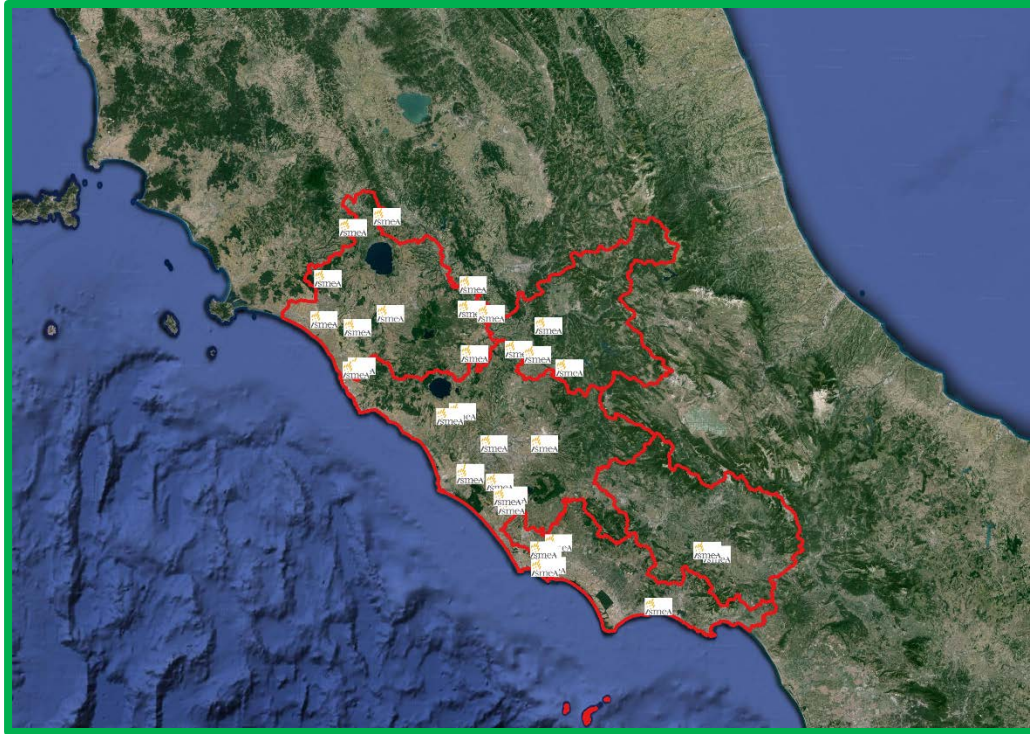
buffer strip: function of maintaining and caring for ecosystems that have been affected or subject to human use

3

Example case of EO application

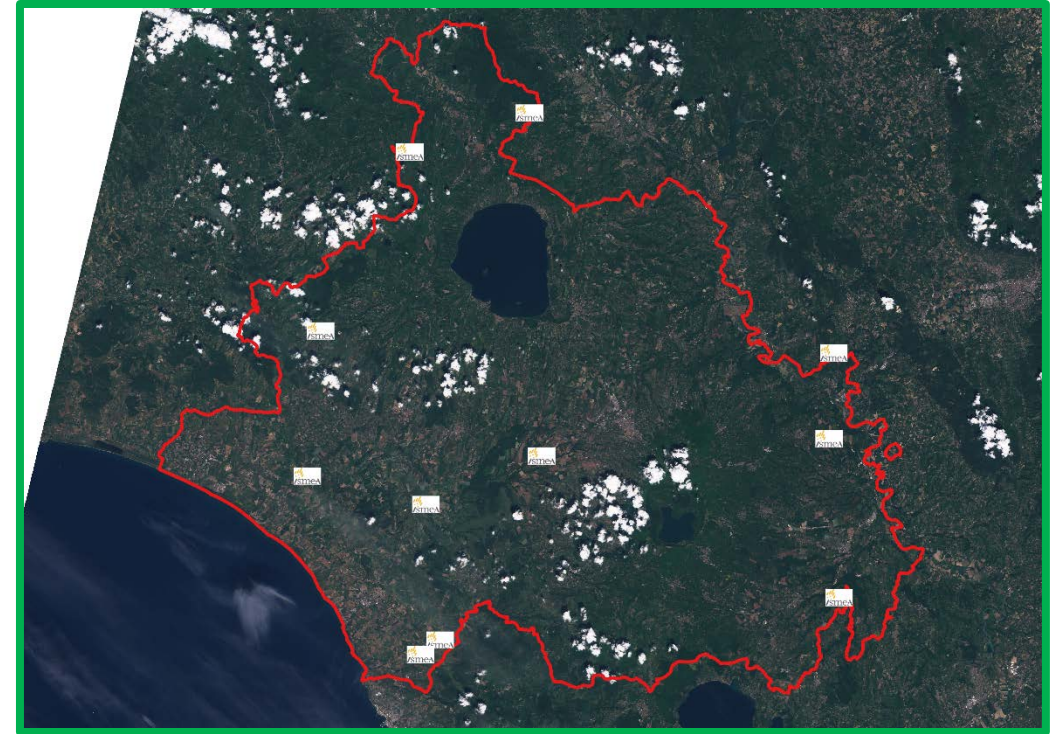
Examples of geoinformation and OT services applied to ISMEA land management

BTA BANCA NAZIONALE
DELLE TERRE AGRICOLE



BTA ISMEA companies located in Lazio
Geo-representation based on Google orthophotos

Lazio
37 Farms
875 hectares



BTA ISMEA companies located in the province of Viterbo
Geo-representation based on satellite images
(Sentinel 2) dated 05/13/2024

Viterbo
13 Farms
285 hectares

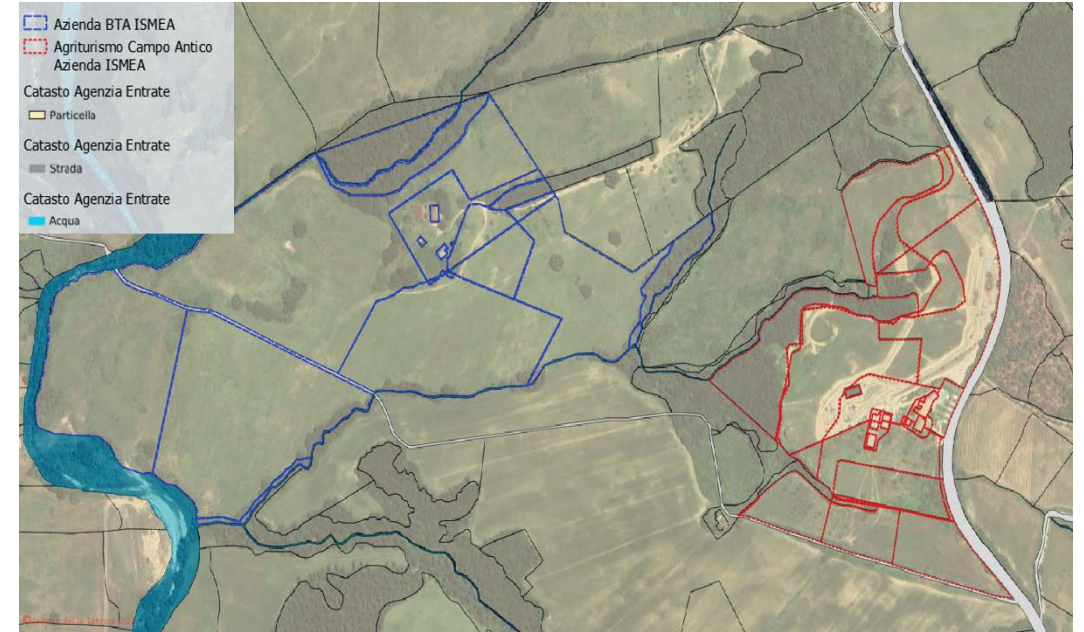
Examples of geoinformation and OT services applied to ISMEA land management

ISMEA company located in Orte municipality (VT) and **Campo Antico** farmhouse



Representation based on Google orthophotos

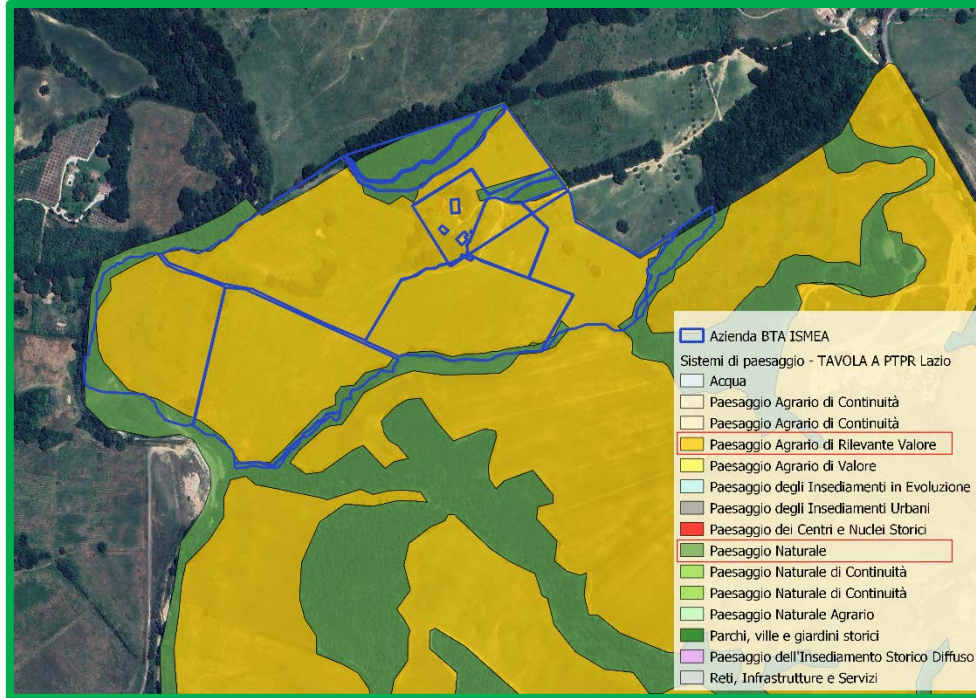
- BTA, ISMEA farm, ISMEA code 91V/652
- 43 hectares, all connected, with farm buildings
- Lazio-Umbria
- Arable land and pasture, with about 3 hectares of forest
- Near farmhouse



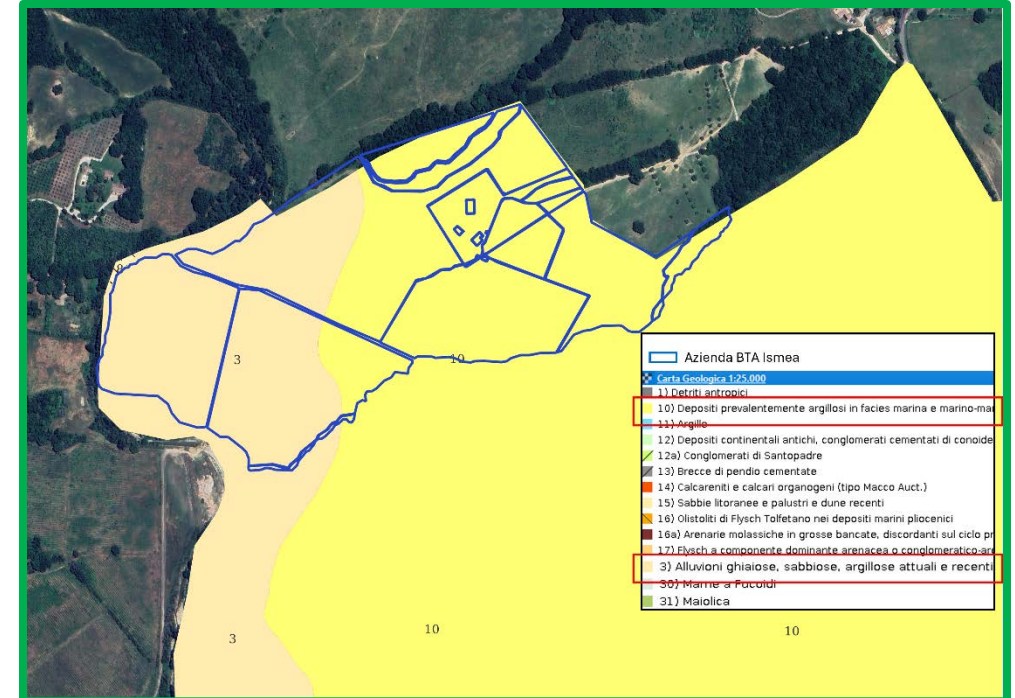
Representation on a cadastral basis

- Farmhouse, ISMEA code 91V/598
- 13 hectares, with farm buildings
- Lazio
- Livestock farming, agritourism activities

Examples of geoinformation and OT services applied to ISMEA land management

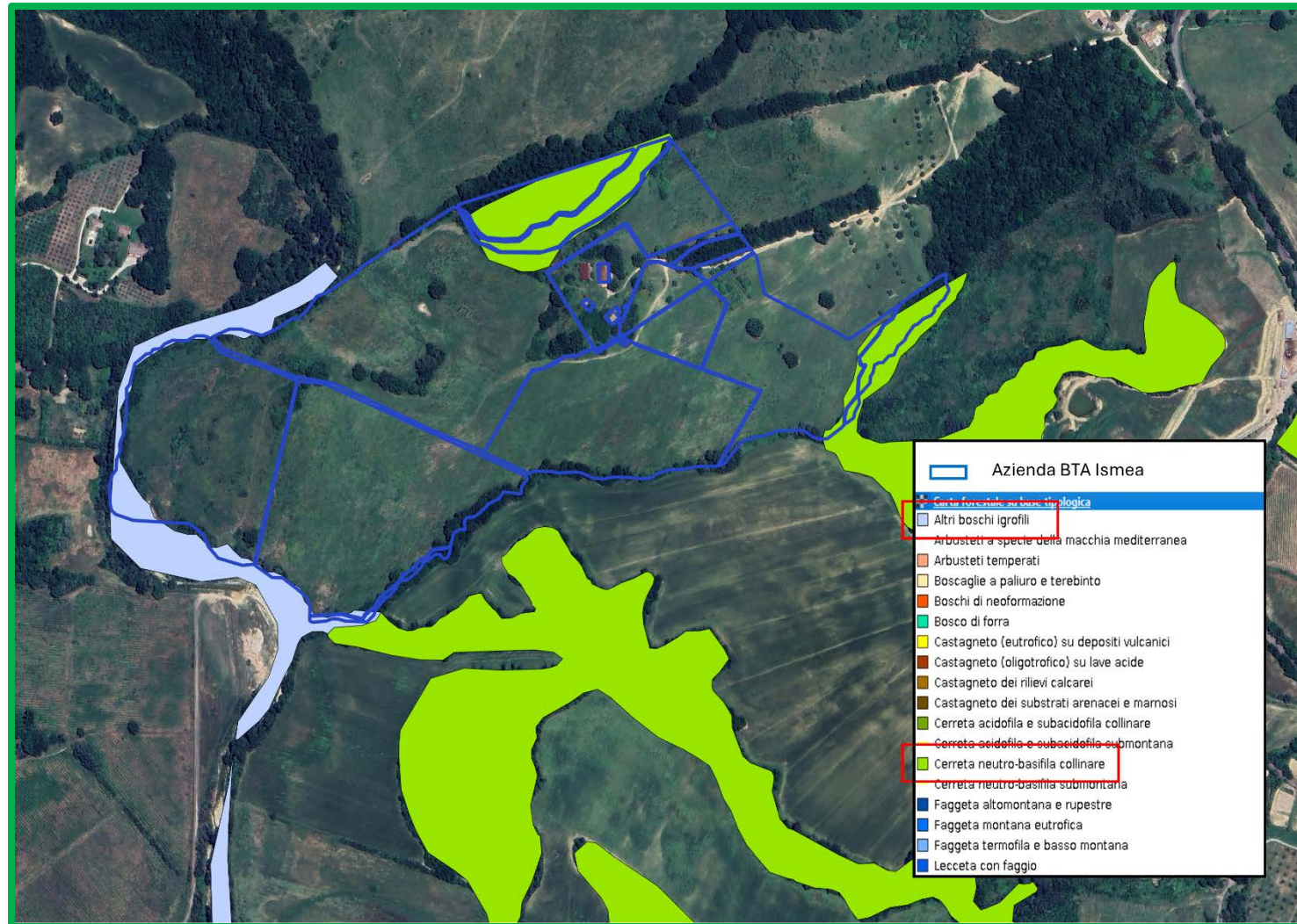


Representation on PTPR (landscape systems)
Lazio Region



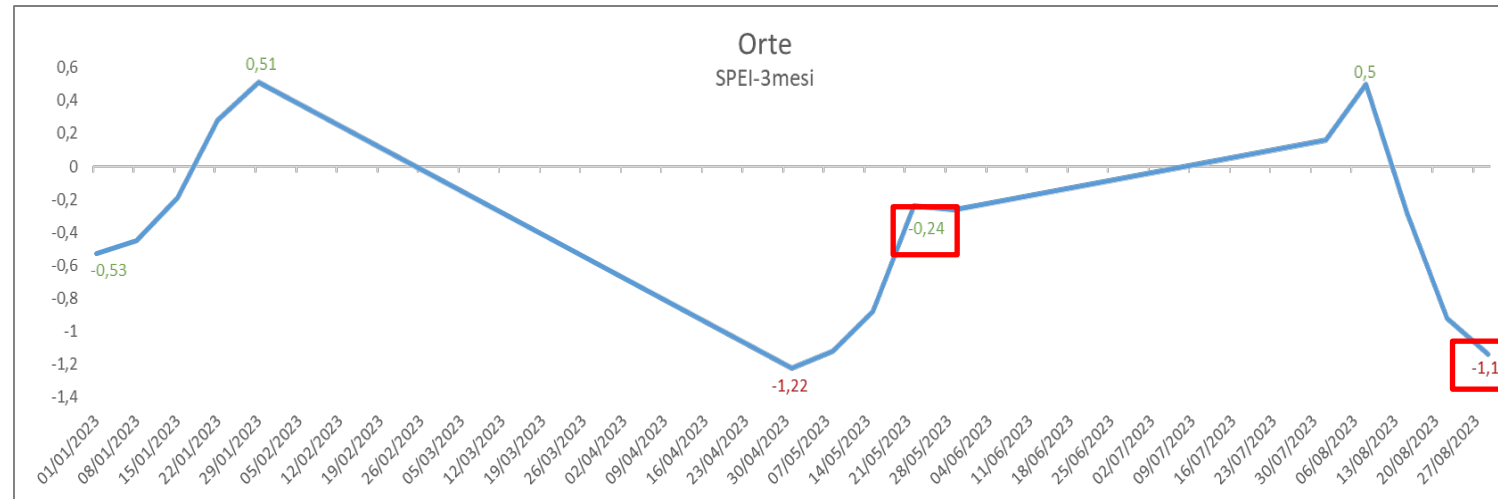
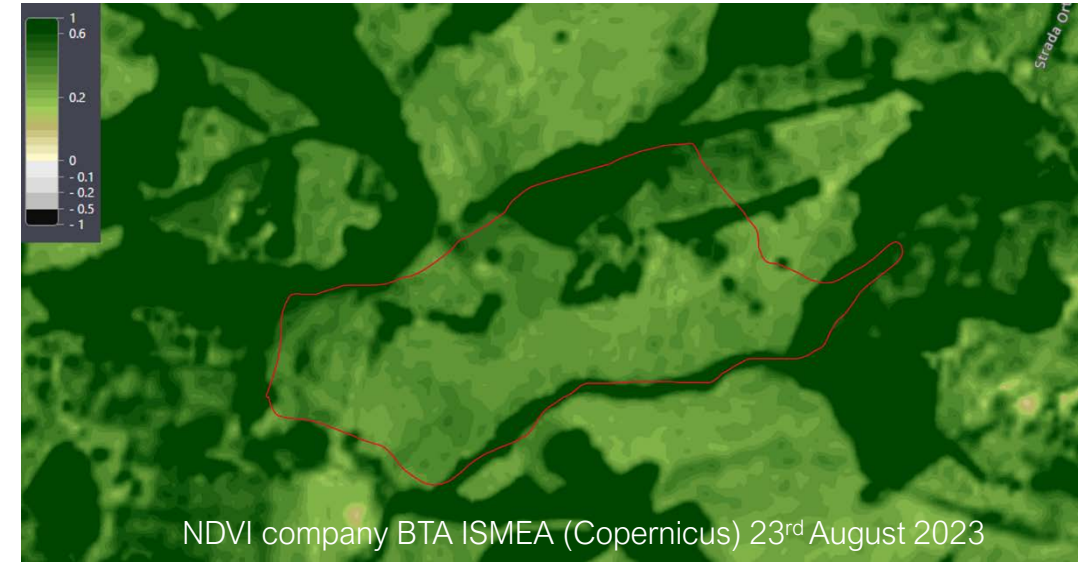
Representation on the basis of a geological map of
the Lazio Region

Examples of geoinformation and OT services applied to ISMEA land management



Representation based on Lazio Region forestry map

Examples of geoinformation and OT services applied to ISMEA land management



NDVI: Normalized differential vegetation index. Describes the level of crop vigor.

SPEI: Standardized precipitation evapotranspiration index.

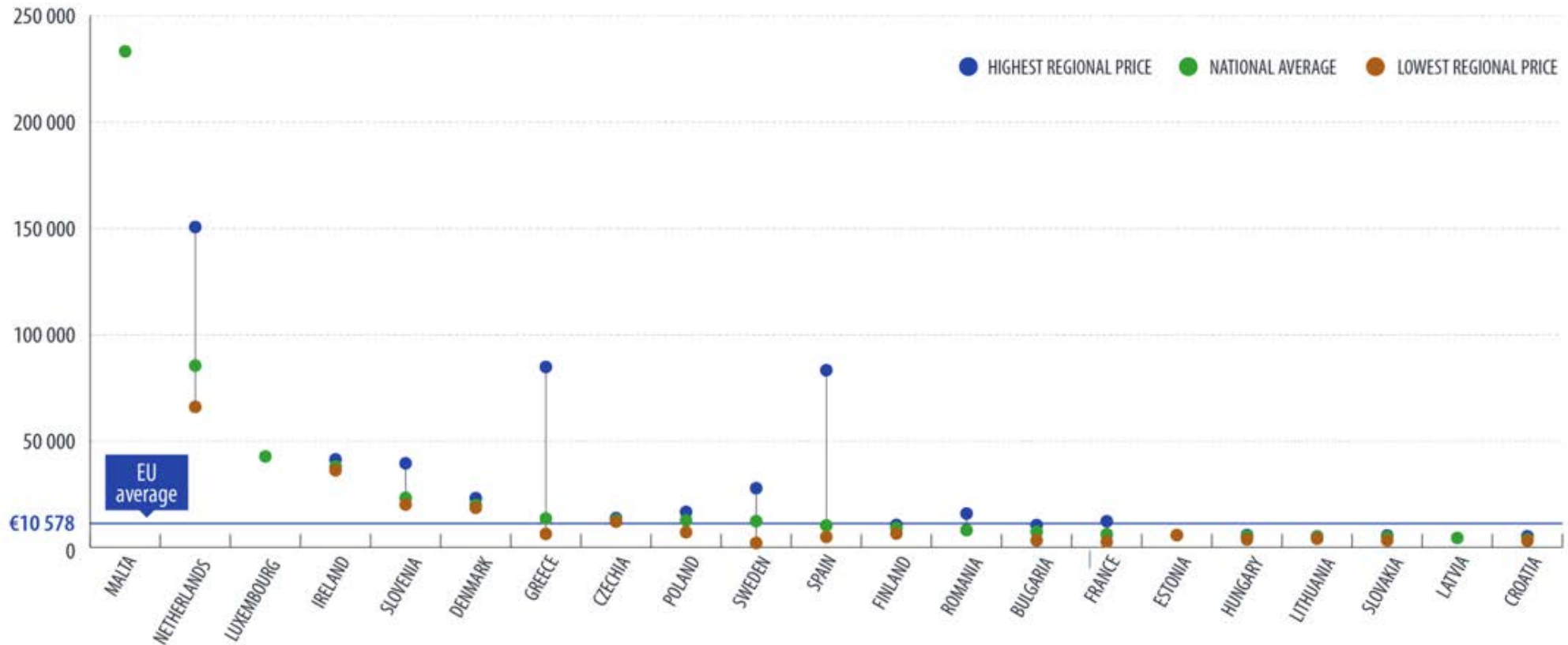
SPEI as of May 28 2023 shows improvement coincident with a high level of NDVI (crop in good condition). SPEI as of August 28 2023 shows a worsening coinciding with a low NDVI value.

4

Ideas for Land Policy

Context

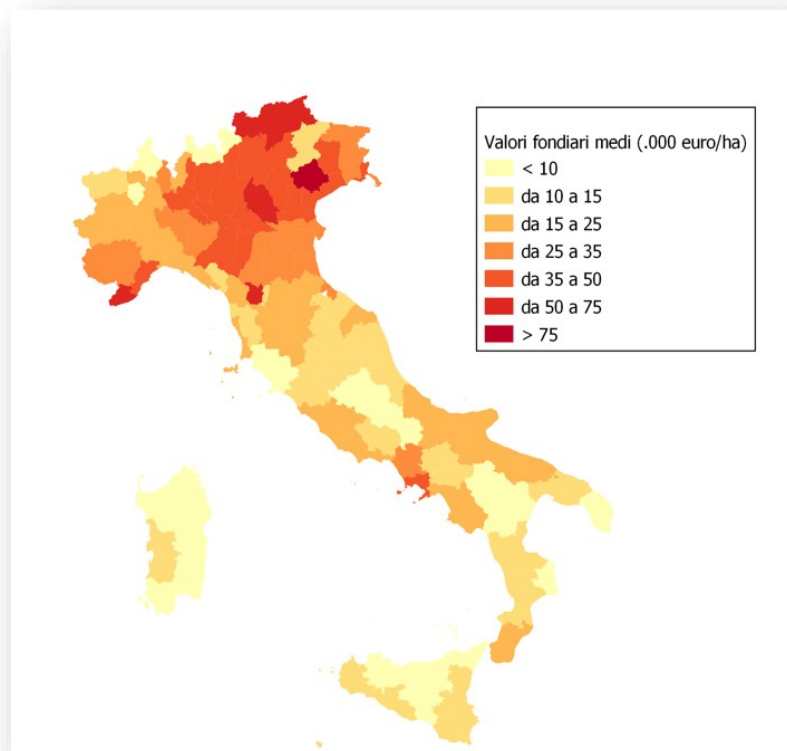
Average prices arable land in the EU, 2022



Data for Austria, Belgium, Cyprus, Germany, Italy and Portugal are not available. EU27: average Eusostat estimate.

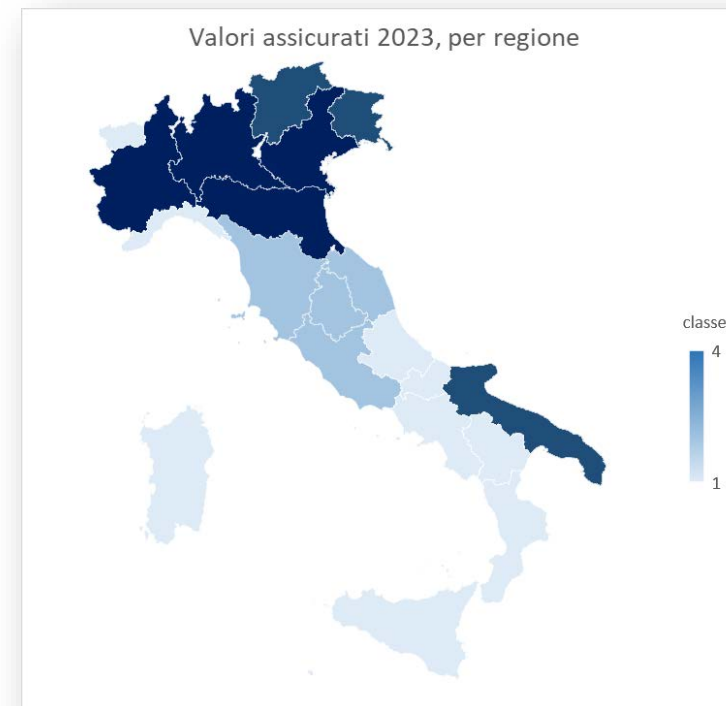
Eurostat

Average values of land

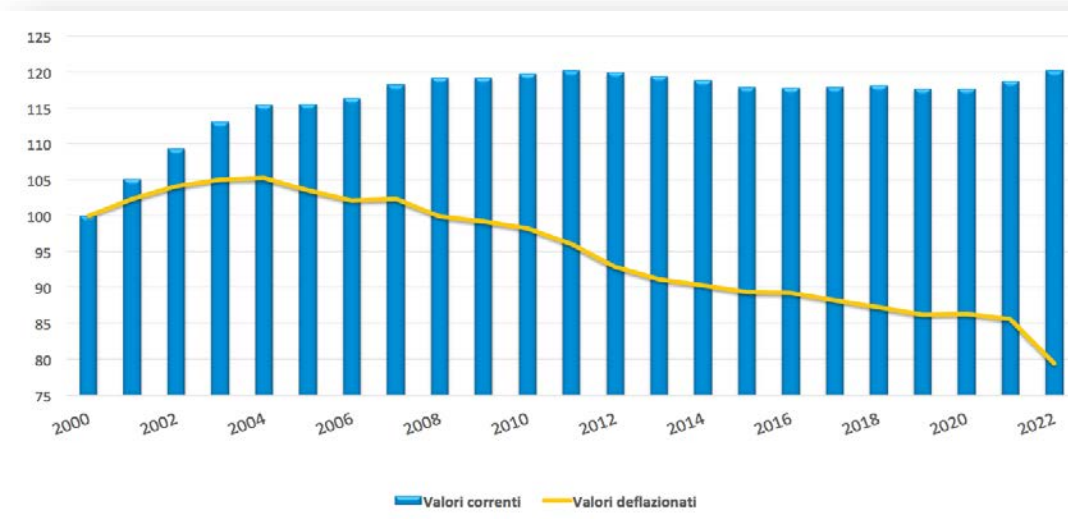


Source: Terra e Vita 5/12/2022

The land is worth less and less. Because of inflation.



Source: ISMEA elaborations on Risk management DB

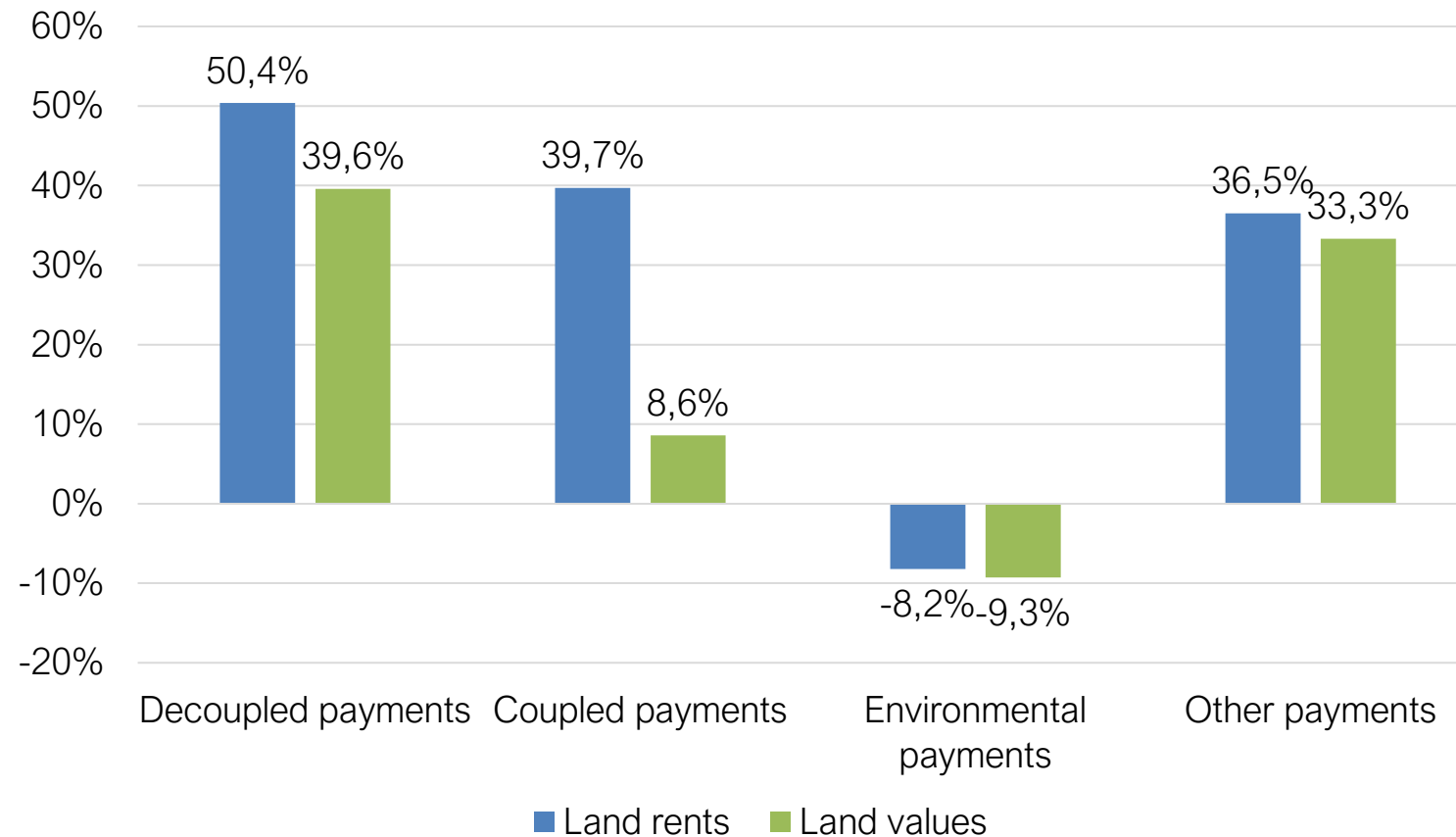


Source: Source: Terra e Vita 23/10/2023

Context

The capitalisation of CAP subsidies into land rents and land values in the EU

Estimated
subsidy
capitalisation
levels into land
rents and land
values across
empirical
studies (EU)



Context

The recent peasant protests are nothing new at a national or European level.
E.g. the riots in 1626 in Milan and those in 1848 which spread throughout Europe.



Sources: getty-images



Brussels March 2024 - Manure dumped in front of the blockade of the police in riot gear (behind the DG Agre headquarters, Rue de la Loi).

The Common Agricultural Policy



The CAP is born



The current CAP

CAP financing



- European agricultural guarantee fund (EAGF)
- European agricultural fund for rural development (EAFRD)

CAP objectives



- Farm income
- Competitiveness
- Food value chain
- Climate change
- Environmental care
- Landscapes
- Generational renewal
- Rural Areas
- Food & health
- Knowledge & Innovation

Income per inhabitant in rural areas is significantly lower
(by **approximately 50%**)
compared to urban areas

Agriculture weighs less than 2 percent of European GDP, **but** plays a political, social, landscape, environmental, cultural and food security role that is not replaceable.

So:
Agriculture.ec.europa.eu
<https://www.eunews.it/wp-content/uploads/2024/03/image-3.jpeg>

Conclusions

Toward a European land policy?

- A. Historically it has been a "put-in-attention" sector with a favor from the legislator for political, economic and social reasons.
- B. This peculiarity of the agricultural sector is slowly fading under the pressure of mercantilist and "transitionalist" (digital, green) "at all costs" logic.

Towards the new European legislature, what challenges among others?

- A. Financial perspectives new community budget (challenge of Ukraine's entry in the EU); risk of renationalisation of the CAP (food sovereignty)
- B. It is important to have a long-term vision of agricultural and rural development that pits the agricultural family model typical of European agriculture against it, although with a view to innovation (f.i. OT), socially, economically and environmentally sustainable development.
- C. Recovery of European leadership for peace, constitutive foundation of the EU
- D. But above all: A NEW CONSTITUENT SEASON OF EUROPE with the rediscovery of its historical, cultural and spiritual roots.

EU founding fathers



Konrad
Adenauer



Joseph
Bech



Johan Willem
Beyen



Winston
Churchill



Alcide De
Gasperi



Walter
Hallstein



Sicco
Mansholt



Jean
Monnet



Robert
Schuman



Paul-Henri
Spaak



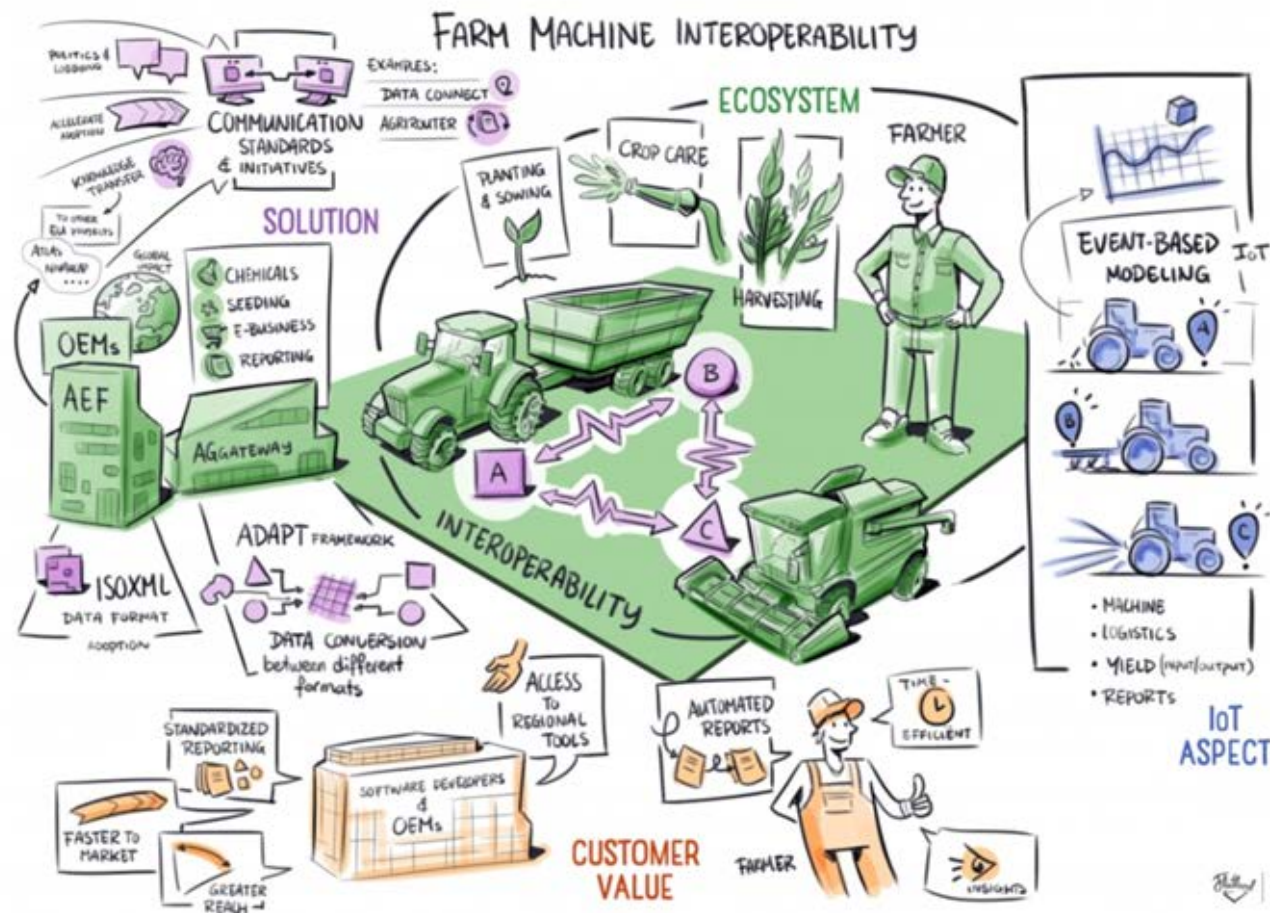
Altiero
Spinelli



Spaak Report: Benelux Experience, Free Trade Area between Belgium-Netherlands and Luxembourg (1945).

Basis for the establishment of the EEC (Treaty of Rome 1957), preceded by the establishment of the Council of Europe (1951) and the ECSC (1952).

The future of agriculture lies with digital natives



L'interoperabilità è essenziale per far parlare differenti sistemi di agricoltura digitale

(Fonte foto: CNH Industrial)



Istituto di Servizi per il Mercato
Agricolo Alimentare



Thank you for your attention 😊

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