



**1<sup>ST</sup> EUROPEAN CONFERENCE  
SMALL FOREST HOLDINGS**

**20 » 22  
MAY 2025**

**ROME » ITALY  
FAO Headquarters**

**Forest fragmentation:  
causes, consequences and challenges**

Daide Pettenella and Mauro Masiero  
University of Padova - Italy  
Italian Society of Silviculture and Forest Ecology

**8** DECENT WORK AND ECONOMIC GROWTH  
**12** RESPONSIBLE CONSUMPTION AND PRODUCTION  
**15** LIFE ON LAND

**ESSEF**

**TESAF** Dipartimento Territorio e Sistemi Agro-Forestali

**UNIVERSITÀ DEGLI STUDI DI PADOVA**

1

## Two initial clarifications

- When we use the concept of "**land fragmentation**", we are not referring to its ecological impacts (changes in how the land is used across a landscape because of human activities), but to the **division of a forest into smaller blocks** due to the changes in land tenure rights.
- Our focus is to the **European context**.

**TESAF** Dipartimento Territorio e Sistemi Agro-Forestali

**UNIVERSITÀ DEGLI STUDI DI PADOVA**

2

## Prevailing private forest management schemes till the '50s of last century in many countries (esp. Mediterranean and Eastern Europe)

Small wooded plots mainly managed for self-consumption (coppices for fuelwood and wood poles production) that are that are part of farms.



Source: Regione Piemonte. Il ceduo

**TESAF** Dipartimento Territorio e Sistemi Agro-Forestali



3

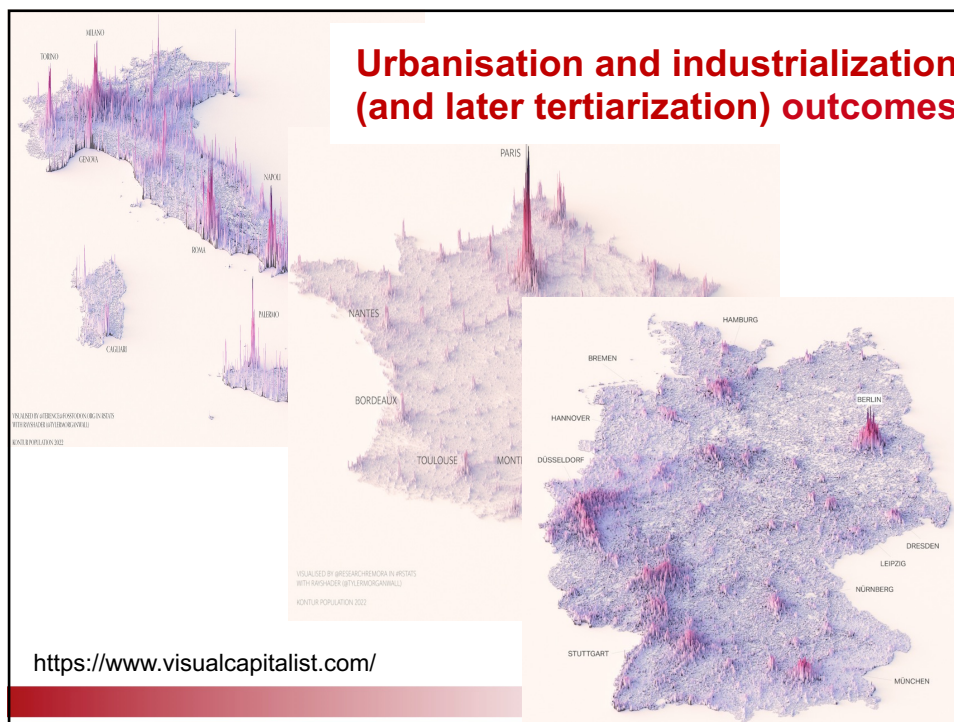
## Causes of land fragmentation (and abandonment): declining workforce on agriculture and forest land

- Total European population in the '50s was approx. **550 million**; now (2025) is **744 million**.
- Workforce in agriculture and forest activities in Europe: **from 35–40% in the '50s (2024) to 3%**
- **country-level examples:**
  - **France:** from ~31% to 2.5%
  - **Germany:** from ~24% to 1.2%
  - **Italy:** from ~42% to 3.7%
  - **Spain:** from to 3.8
  - **Poland:** from over 70% to 10%
  - **UK:** from 5% to 1%

**TESAF** Dipartimento Territorio e Sistemi Agro-Forestali



4



5

**Some common trends in Europe:  
land extensivisation, farmland  
abandonment, conversion of  
farmland to forests, growing  
forest stocks, ...**

... but quite different patterns of forest land fragmentation  
(and land consolidation). No exact figures are available  
(while we know the presence of 9 M the farmers in the EU  
we have only a broad estimate of 6 M forest holdings)

6

## Land fragmentation process. Different patterns in forest land use connected to:

- a. The traditional juridical systems
- b. The traditional land tenure systems
- c. The problems connected to land renting and estate market dynamic
- d. The action of the State to reduce the problems of land fragmentation

### a. The traditional juridical systems

According to the inheritance practices related to the land, the Roman law is in contrast with German law where the land is considered an estate *indivisum*:

- in the tradition of **Roman law** land is **inherited by all sons and daughters** → land splitting
- In the **German law** the land is **passed exclusively to the first-born male child** → relatively large agriculture and forest productive units are maintained

## An interesting case: the two Autonomous Provinces of Bolzano (German law) and Trento (Italian Law) in Italy

Average size of the agriculture and forest farms (source: ISTAT):

- in Bolzano: 30.7 ha
- in Trento: 9.6 ha (a figure not including a lot of abandoned small holdings)



**TESAF** Dipartimento Territorio e Sistemi Agro-Forestali



9

## b. The traditional land tenure systems

At State and regional level, the influence and power of small, fragmented forest owners is greatly affected by the presence and organization of other owner typologies:

- The public forest owners:
  - State forests (see EUSTAFOR)
  - The municipal forests (see FECOF)
- The community forests
- The Industrial Forest Owners (IFO) and the large investors (Pension funds)
- The farmers (ELO, COPA-COGECA -see budget allocation of EU Rural Development funds)

Fragmented landowner with a weak (or even zero) representation. No power without representation

**TESAF** Dipartimento Territorio e Sistemi Agro-Forestali

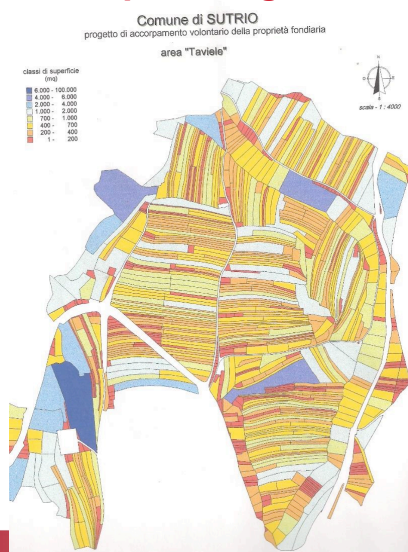


10

## c. The problems connected to land renting and estate market dynamic

- **Leasing of forest land is problematic:** when defining the annual rent, it is difficult to split the rent component related to the use of the growing stock from that depending on annual wood increment.
- The experience and diffusion of **alternative contracts** between owners and managers (stewardship contracts, long-term increment contracts: see US experience) is **limited**.
- The **different dynamism of the land market** (ease of carrying out land transactions).

**These factors have had a big effect on the process of land fragmentation in Italy, where we speak of «pathological land fragmentation»**



High inheritance transaction costs +  
low value of the land  
→ no inheritance process  
→ land that is becoming *res nullius*

Source: S.Di Bernardo

## d. The action of the State to reduce the problems of land fragmentation

Many countries have been able to reform their institutional and regulatory framework:

- to make it easier to bring **land consolidation** (and, as a first step, to create and update the **cadastre system** and its updating) and to allocate land.
- The **legislation** regulating land consolidation **dates back to the 70's** (e.g. in Austria, Belgium, Germany, Norway and Sweden) or to the **80's** (e.g. in the Netherlands, Poland, France and Hungary) with special focus on farmland consolidation (Source: Vitikainen, 2004)

## The action of the State to reduce the problems of land fragmentation

Other areas of policy action where countries have been able to reform their institutional and regulatory framework:

- to support contracts that **give land management responsibility to other organisations.**
- to help small forest owners with **technical and financial support.**
- to encourage forest landowners to form **associations.**

Some positive examples



## Forest landowner associations and related services provided to the members: France

Public agency to support private forest owners

**3.5 million ha**

**11** Regional Centres

Technical assistance, forest planning

Project management, research and advisory services

Training



Source: [www.cnpf.fr](http://www.cnpf.fr)

**TESAF** Dipartimento Territorio  
e Sistemi Agro-Forestali



15

## Forest landowner associations and related services provided to the members: Finland

Public agency to support the nearly 600,000 forest owners of the country, with a special attention to the 13.9 million ha of private forests.

Advisory services for taking advantage of public incentives, information services

14 Provincial forest councils and offices in 69 locations



Source: <https://www.metsakeskus.fi/>

**TESAF** Dipartimento Territorio  
e Sistemi Agro-Forestali



16



## Forext



A **network organization** for **training and education** of private forest owners, supporting the development of their associations, **inventorying** and **marking** of private forests, preparation of forest **management plans** for private forests, enforcement of forest legislation in private forests, providing **subsidies**, organizing **sale of wood** from private forests, **capacity building** for private forestry

<https://forext.eu/members/>

TESAF Dipartimento Territorio e Sistemi Agro-Forestali



17

## Some off the Forext members

- [Agricultural Advisory Service, Forestry Service Office \(LAAS\)](#), Lithuania
- [Centre de la Propietat Forestal](#), Catalonia
- [Forest Advisory Service Centre](#), Latvia
- [Skogsstyrelsen](#) Swedish Forest Agency, Sweden
- [Narodne lesnicke centrum](#) National Forest Centre, Slovakia
- [Sogkurs](#) Forestry Extension Institute, Norway
- [Teagasc](#) Ireland



Centre de la Propietat Forestal



MEZA KONSULTACIJU  
PAVALDIO BIRALI CENTRE



SKOGSSTYRELSEN



SKOGKURS  
Forestry Extension Institute



Teagasc  
Agriculture and Food Development Authority

TESAF Dipartimento Territorio e Sistemi Agro-Forestali



18

## The action of the State to reduce the problems of land fragmentation

Other areas of policy action where countries have been able to reform their institutional and regulatory framework:

- to support contracts that **give land management responsibility to other organisations.**
- to help small forest owners with **technical and financial support.**
- to encourage and support forest landowner **associations.**

Some positive examples

TESAF Dipartimento Territorio e Sistemi Agro-Forestali



19

## Forestland owner associations and related services provided to the members: Scandinavian countries

NSF

Home Nordic family forestry Members Contact



**Denmark**  
Danish Forest Association  
**0.62 million hectares** = 15%  
Annual fellings: 3.2 million m<sup>3</sup>

**Norway**  
Norwegian Forest Owners' Federation  
**12 million hectares** = 37%  
Annual fellings: 7 million m<sup>3</sup>

**Sweden**  
Federation of Farmers Forestry Division - LRF Skogsägarna  
**28 million hectares** = 62%  
Annual fellings: 95 million m<sup>3</sup>

**Finland**  
MTK (Central Union of Agricultural Producers and Forest Owners)  
**23 million hectares** = 76%  
Annual fellings: 62 million m<sup>3</sup>



Source: <https://www.nordicforestry.org/>

TESAF Dipartimento Territorio e Sistemi Agro-Forestali



20

## Forest landowner associations and related services provided to the members: Portugal

**17 500 landowners**  
**31 forest associations**  
**(private entities)**  
**1.5 million ha**



Technical, legal, economic assistance  
Project planning  
Training  
Communication

Source: [www.forestis.pt](http://www.forestis.pt)

**TESAF** Dipartimento Territorio  
e Sistemi Agro-Forestali



21

## Representing the interests of private forest landowners at local and international level

### CEPF – Confederation of European Forest Owners

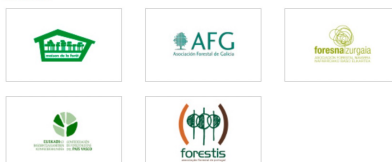


[www.cepf-eu.org](http://www.cepf-eu.org)



<https://www.usse-eu.org/en/inicio>

#### MEMBERS



**TESAF** Dipartimento Territorio  
e Sistemi Agro-Forestali



22

**Italy: one of the worst country in Europe for the problem of land fragmentation.**  
**One of the few countries without a strong private forest landowner association and a national technical service for their support**

## Proposta di un Servizio Tecnico Forestale Nazionale nell'interesse del Paese

REDAZIONE SHERWOOD | GESTIONE | 15 OTTOBRE 2024 | 1995 2025  
 a cura del Consiglio Editoriale e della Redazione di Sherwood  
 Nel 2019 il Consiglio Editoriale di Sherwood ha evidenziato la necessità della costituzione di un'Agenzia Forestale Nazionale con ruolo tecnico. Oggi, a distanza di 5 anni, il contesto si è molto evoluto e l'idea va quindi rivista e aggiornata, ma la sua realizzazione risulta ancora più utile e urgente che mai.

**SHERWOOD**  
 · FORESTE ED ALBERI OGGI ·

La riflessione e la proposta del Consiglio Editoriale (CE) di Sherwood del 2019 venivano a seguito dell'accorpamento del Corpo Forestale dello Stato (CFS) all'Arma dei Carabinieri (1 Gennaio 2017), della nascita della Direzione Foreste - DiFor (2017) e della promulgazione del Testo Unico in materia di Foreste e filiere Forestali - TUFF (3 Aprile 2018).

In quel momento risultò evidente la mancanza di un coordinamento e di un supporto tecnico, di valenza nazionale, che potesse collocarsi a servizio di Ministero e Regioni. Sembrava avere senso, anche alla luce dell'organizzazione forestale in altri Stati europei, che le attività di programmazione, quelle tecniche e la raccolta di informazioni statistiche fossero nettamente separate da quelle di vigilanza e sanzionatorie, assicurate dall'attività del neo-istituto Comando Unità Forestali, Ambientali e agroalimentari dell'Arma dei Carabinieri (CUFA).

<https://www.rivistasherwood.it/t/gestione/proposta-servizio-tecnico-forestale-nazionale.html>

**TESAF** Dipartimento Territorio  
e Sistemi Agro-Forestali



23

## Not only problems, but also positive challenges, for example:

- Potentially, quite a lot of land available for implementing the **Nature Restoration Law** ("associations for restoration under indenisation")
- Fragmented land: well suited for **supporting an integrative approach** vs. a segregative approach in forest land use (fully protected forest, plantations, ...)



Source: <https://www.tabledebates.org/building-blocks/what-land-sparing-sharing-continuum>

**TESAF** Dipartimento Territorio  
e Sistemi Agro-Forestali



24

## Take home messages

- Forest land fragmentation is **not an issue of the same importance** in Europe: we may observe **different outcomes of the policies** designed to deal with it.
- There are **good lessons to be learned** of how to deal with problems caused by land fragmentation, but these examples are **not well known and shared**.
- There are also **good potentialities** that can come out of the problem.