



Circular Forest Bioeconomy in Southern Europe
Brussels, European Parliament - 10th October 2018

Forest goods & services and Bioeconomy: **Ecosystem services**

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TESAF Dipartimento Territoriale
e Sistemi Agro-Forestali



Presentation outline

- Some general considerations on ecosystem services (ES) from a South-European perspective
- Grasping ES value: an overview and some examples
- Recent trends and societal demand for cultural ES
- Looking forwards between gaps and potentialities

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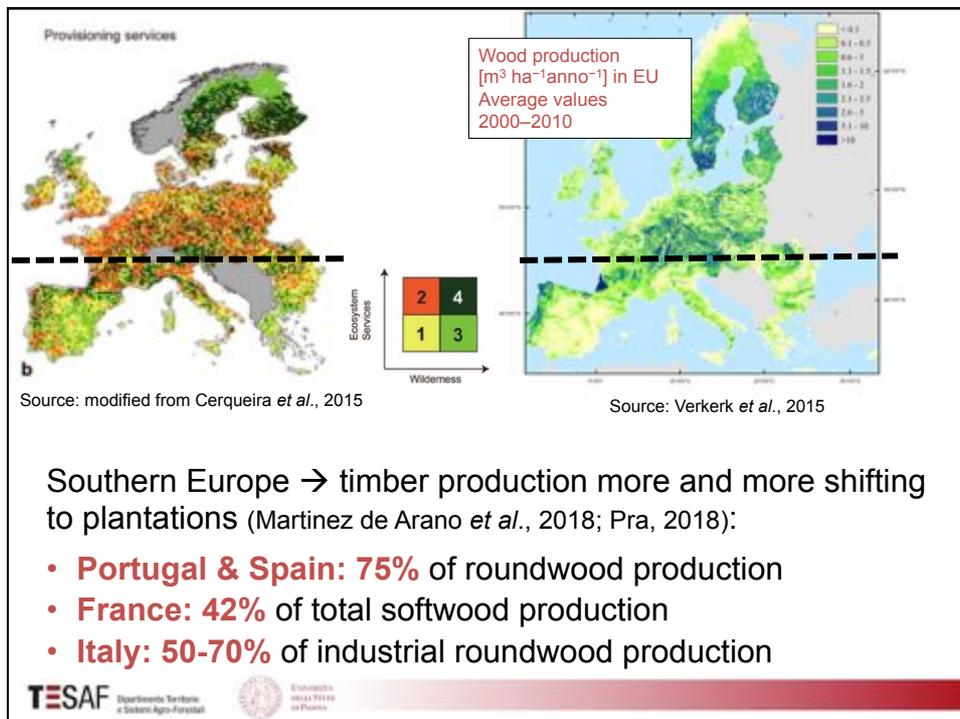
Ecosystem services: an overview (1/2)

Provisioning services

= products obtained from ecosystems

- Food
- Fresh water
- Firewood
- Fiber
- Biochemicals
- Genetic resources
- ...





Ecosystem services: an overview (2/2)

Provisioning services

= products obtained from ecosystems

- Food
- Fresh water
- Firewood
- Fiber
- Biochemicals
- Genetic resources
- ...

Regulating services

= benefits obtained from regulation of ecosystem processes

- Climate regulation
- Water regulation
- Water purification
- Disease regulation
- Pollination
- Soil regulation
- ...

Cultural services

= non-material benefits obtained from ecosystems

- Tourism
- Recreation
- Landscape
- Education
- Spiritual & religious
- Art
- ...

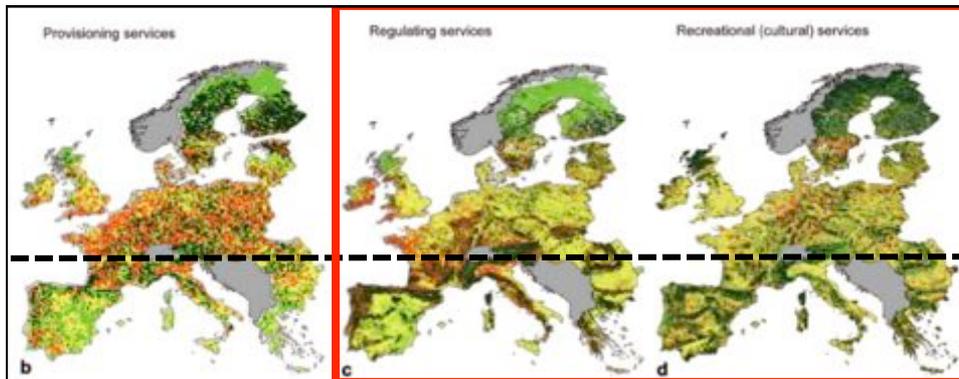
Regulating services

= services necessary for the production of all other ecosystem services

Soil formation

Nutrient cycling

Primary production



Average economic value for biodiversity and recreation services provided by European forests (*benefit transfer*)

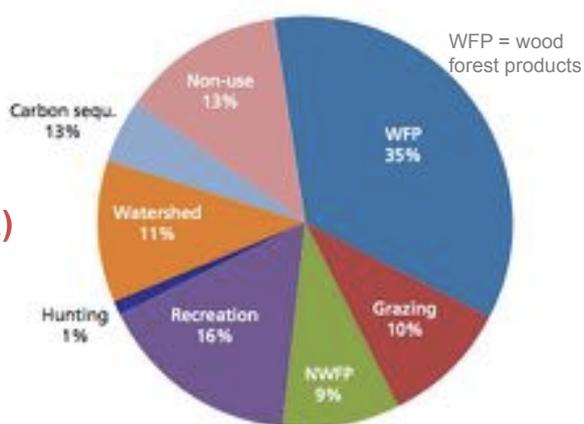
	Mediterranean EU	Northern and Central-Northern EU	Scandinavian EU
	Latitude 45-65	Latitude 65-71	Latitude 35-45
Range US\$ (2000)	356-615	123-182	123-255
Average \$ (2000)	485.5	152.5	189.0
€ (2000)	379.3	119.1	147.7
€ (2008)	467.1	146.7	181.9

Source: TEEB Report; CLIBIO project cit. in ten Brink *et al.* (2009); figures ha/year

Economic value of Mediterranean forests (Merlo and Croitoru, 2005)

Total economic value (average): **133 €/ha**
(North Med: 173 €/ha)

At least **55%** from regulating and cultural services



NWFP = non-wood forest products (e.g. mushrooms, pine-kernels, cork...)

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Market initiatives/surveys for ES in Europe and worldwide focused on regulating services



www.ecostarhub.com
www.ecosystemmarketplace.com

Southern Europe growing, but still lags a bit behind e.g. User-driven watershed investment programmes in Europe

Map 2: User-Driven Watershed Investment Programmes by Country



...nonetheless some good examples can be found

Source: Ecosystem Marketplace, 2017

Example 1

User-driven project for biodiversity and water (Portugal)

- Coca-Cola Portugal → **500.000 m³/year** of groundwater from Tagus Aquifer (T3)
- **16 000 ha** FSC-certified (APF, local forest certification group)
- Ca. **600 ha high-conservation values** (for species conservation and water recharge)
- Payment of **17 €/ha** for implementing appropriate forest management practices



Source: Bugalho *et al.*, 2014

Example 2 Groundwater recharge (Italy)

bosco limite
nature fuori porta

AGRICOLTURA: CRESCITA ECONOMICA E SOSTENIBILITÀ AMBIENTALE:
 "Se si piantano nuovi alberi? Perché no - risponde - Se oggi un ettaro medio italiano della tua azienda è del suo tipo di coltura, ottimizzi il profitto perché anche facendo."

**New lowland forest areas (conversion from maize croplands)
2.5 ha of forests:**

- 12 000 m³ H₂O saved every year
- 200 l/sec water recharged (1 Million m³/ha/year)
- 1 500 ton CO₂ sequestered in 30 years and other co-benefits

<p>Neve caduta annua</p> <p>0,00 kg</p> <p>Quantità di neve sul terreno nel periodo invernale</p>	<p>Assorbimento annuo di anidride carbonica + N₂ + O₂</p> <p>720,71 t</p> <p>Acqua trattenuta in foglia</p>	<p>Liti di esodo ipotizzabili</p> <p>1,02 kg</p> <p>Energia rinnovabile prodotta</p>
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www.boscolimite.it

Picture credits: Matteo Mocellin

Private sector donors



Public sector partners (municipalities)



Technical partners



Example 3 FSC® certification and off-site biodiversity compensations (Italy)

Private
companies →
**FSC certified
poplar
plantations**

FSC standards
(Indicator 6.5.5):

**Representative
sample areas of
native
ecosystems
shall be
identified and
protected**



Technical and financial support
200€ /ha/year for 5 years

**Oglio Sud
Regional Park**
manages 12 722
ha of natural
areas along Oglio
river

**Management,
restoration and
conservation of
natural
ecosystems (off-
site
compensations)**

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Presentation outline

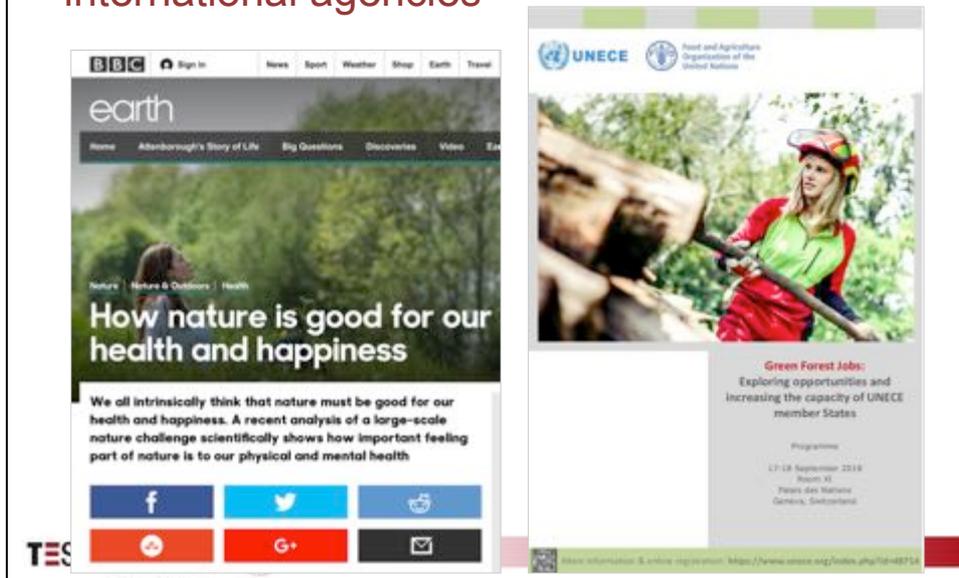
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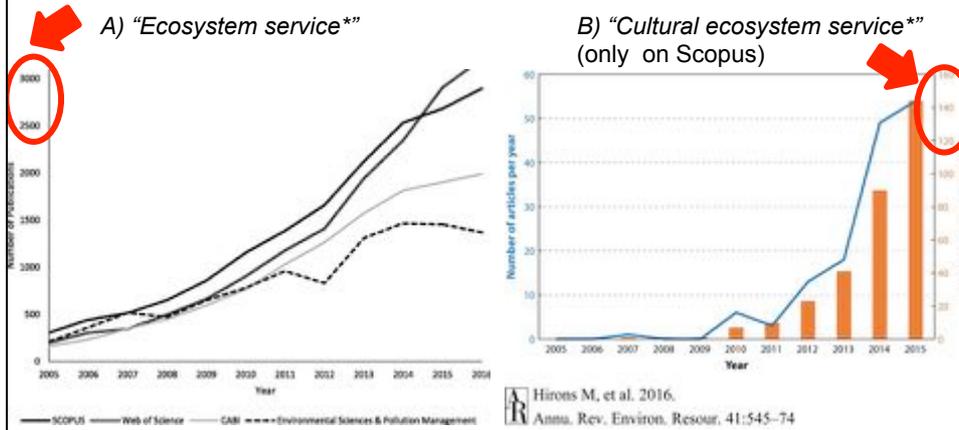
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A growing demand for cultural ES and an increasing interest by media and international agencies



"[...] Despite their importance and centrality in shaping the ecosystem services framework, cultural ecosystem services and related values are relatively marginalized in research and policy" (Hirons et al., 2016)

N. of scientific publications indexed on scientific literature databases [Title, abstract and key-words]

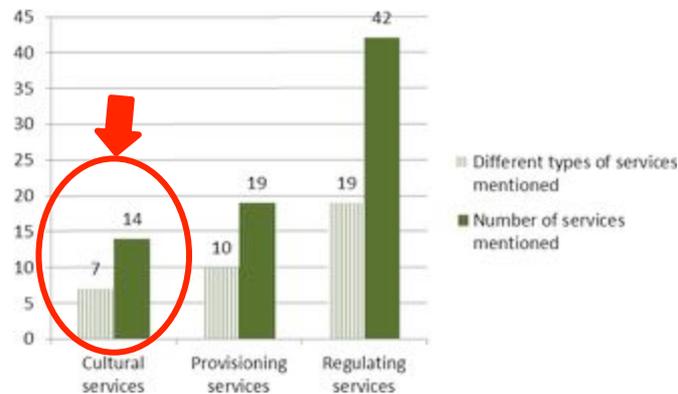


McDonough et al., 2017

Hirons M, et al. 2016.
Ann. Rev. Environ. Resour. 41:545–74

Hirons et al., 2016

Adoption of the ecosystem services concept in EU policies



Source: Bouwma *et al.*, 2018

Cultural ES

Some examples (non-exhaustive list):

- Green care initiatives
- Forest Bathing and Forest therapy
- Social Forestry
- Education and pedagogic activities
- Sport/recreational activities
- Art activities
- Burial forests
- ...

Forest bathing and therapy

Shinrin-yoku (森林浴) → Forest-contact therapy



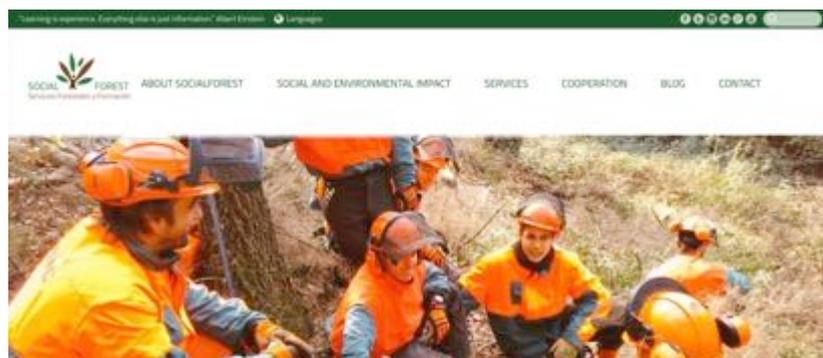
A collage of four images related to forest therapy. Top right: A website header for 'FOREST THERAPY O BAGNI DI FORESTA' with a green and white logo. Middle left: A website header for 'FOREST THERAPY THE MEDICINE OF SIMPLY BEING IN THE FOREST' with buttons for 'BOOK YOUR WALK IN SHINRYU', 'CORPORATE', and 'RETREATS'. Bottom left: A website header for 'www.samuraispain.org/shinrin-yoku.html' with the TESAF logo. Right: A logo for 'ASEUSY® Asociación Europea Shinrin-Yoku' with a green wave background and a European Union flag.

<http://shinrin-yoku.pt/en>

[www.samuraispain.org/shinrin-yoku.html](http://samuraispain.org/shinrin-yoku.html)

www.oasizegna.com

Social forestry



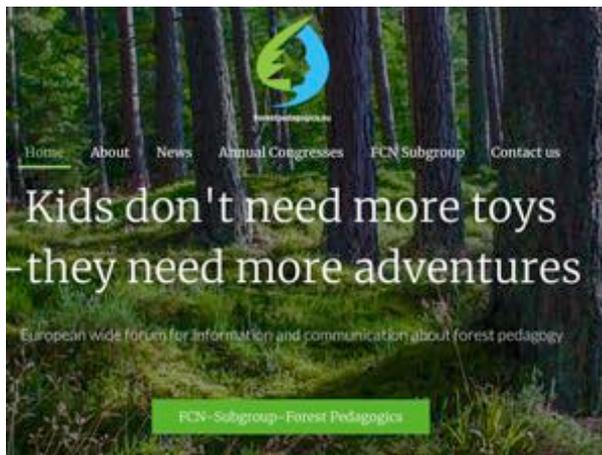
Training, projects and job-opportunities for young (15-24 years old) unemployed people at high risk of social exclusion, e.g. immigrants, people with addiction or mental disorders...

<http://socialforest.org/en/>



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Education and pedagogic activities (1/2)



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Education and pedagogic activities (2/2)

German model exported (and adapted) in many other countries, including South-European ones →



www.spiegel.de/international/zeitgeist/forest-kindergartens-could-be-the-next-big-export-from-germany-a-935165.html



www.asilonelbosco.com/

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Sport activities and events (1/2)



Sport activities and events (2/2)

2017 TRAIL WORLD CHAMPIONSHIPS
10th JUNE
AN **AWC** COMPETITION IN CONJUNCTION WITH **ITR** TRAINING

TRAIL SACRED FORESTS

ABUTRES 2019 TRAIL WORLD CHAMPIONSHIPS
BERG

2016
TPG
TRANS PUNICIA GLEN
2016 TRAIL WORLD CHAMPIONSHIPS
20th OCTOBER
IN CONJUNCTION WITH ITR TRAINING

Only National Teams
Admission
Open Race (Solo)
15km / 2000m
Open Race (Relay)
15km / 2000m
Open Race
15km / 2000m

<https://itra.run>

Art events



www.artesella.it/en/

Art exhibitions,
concerts, drama...



www.isuonidelledolomiti.it/EN/sounds-of-the-dolomites/

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Parco Nazionale
delle Dolomiti
di Sesto

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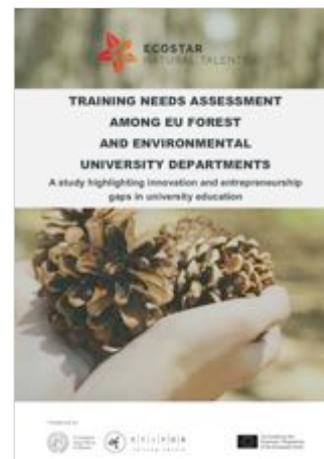
Some barriers in the development of economic opportunities based-on ES

Barrier category	Challenges
Informational	Lack of awareness among beneficiaries and providers
Technical	Scientific uncertainty, Baselines, Leakage, ES valuation, Excludability and free riding, Shortage of skills and experience
Spatial	Spatial variability of ES
Temporal	Permanence, Time lags, Different time horizons
Financial	Perceived risks, High start-up and Transaction costs
Institutional	Perverse incentives, Complex policy environment
Legal	Property rights and other issues
Cultural	Aversion to paying for ES, Lack of trust, Terminology
Equity	Perceived unfairness

Source: modified from DEFRA, 2011

Gaps in entrepreneurship-oriented university education

- **14 University Forestry/ Environment Depts. (9 EU countries)**
- **80%** respondents consider that entrepreneurship could be a useful field of study within their university curriculum
- **12%** of Depts. offering some specific courses on entrepreneurship



www.ecostarhub.com/reports/

A recent experience

More info at: www.ecostarhub.com

E-LEARNING COURSE
ECOSYSTEM SERVICES AND PRODUCTS: FROM IDEAS TO BUSINESS

The first international course that helps you value nature!

An online course providing continuous interaction with top international professors, experts and company directors specialized in the fields of forestry and ecosystem services and products.

The course guides you to create innovative business ideas in the following sectors:

- natural capital
- economic evaluation
- sustainable investments
- wild forest products
- payment for ecosystem services
- forest certification
- carbon market
- ecotourism

A. e-learning course
4 Universities (ITA, ROM, SPA, UK)
5 e-Modules + assignments
150 hours/student
156 Enrolled students

THE FIRST IMPACT HUB AND ACCELERATOR FOR NATURE-BASED BUSINESSES

OUR TOPICS

- NATURAL CAPITAL ACCOUNTING
- WILD FOREST PRODUCTS MARKETING
- FOREST AND CARBON CERTIFICATION
- ECOTOURISM (working in nature)

B. Nature accelerator
250+ applicants (50+ countries)
8 selected start-ups
8 weeks training + seed-funds

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Conclusions

- **Bioeconomy** is a **buzzword** → product- and technology-oriented views prevail = focus on (some) provisioning ES
- From a South-European perspective → **some trade-offs** and **many potential synergies** among different ES types (*win-win* solutions possible)
- New **management models** and mind-sets required (research, training, networking, public-private partnerships...)
- **New paradigms for the governance of forest resources** → public institutions as catalysts, facilitators and promoters in cooperation with private sector and civil society organizations