

NEXT GENERATION MOUNTAINS

8 - 10 giugno 2023
Malborghetto - Valbruna (UD)
IX° Alpine Network
International Conference

Section 4

*Young generations' new opportunities:
education and green jobs
09th June 2023*

**Green jobs and education within the framework of
forest-based ecosystem services: an overview and
some considerations**

Outline

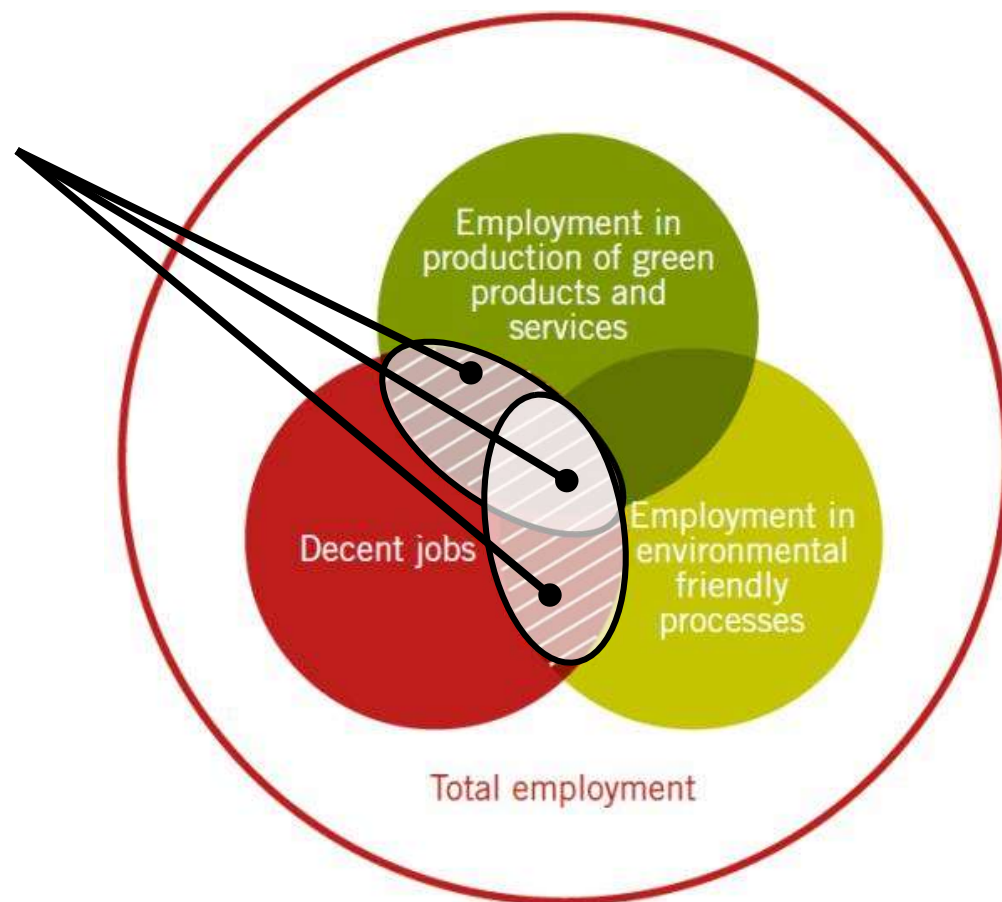
- Green jobs and green jobs in the forest sector: an introduction
- Framing forest sector green jobs within ecosystem services
- Final considerations

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Green jobs: a definition

Green jobs are **decent** jobs that contribute to **preserve or restore the environment**, be they in **traditional sectors** such as manufacturing and construction, **or in new, emerging green sectors** such as renewable energy and energy efficiency (ILO, 2016)



“(...) in the mid-term job destruction [due to Covid-19 and the economic crisis] will most likely be offset by job growth in the ‘jobs of tomorrow’

(...)

*The surging demand for workers who can fill green economy jobs [...however...] requires reskilling and upskilling opportunities since by 2025, **44% of the skills** that employees will need to perform their roles effectively **will change** and **about 40% of workers** need to **learn new skills** to accommodate the changes in skill demand”*

WORLD
ECONOMIC
FORUM

The Future of Jobs Report 2020

OCTOBER 2020

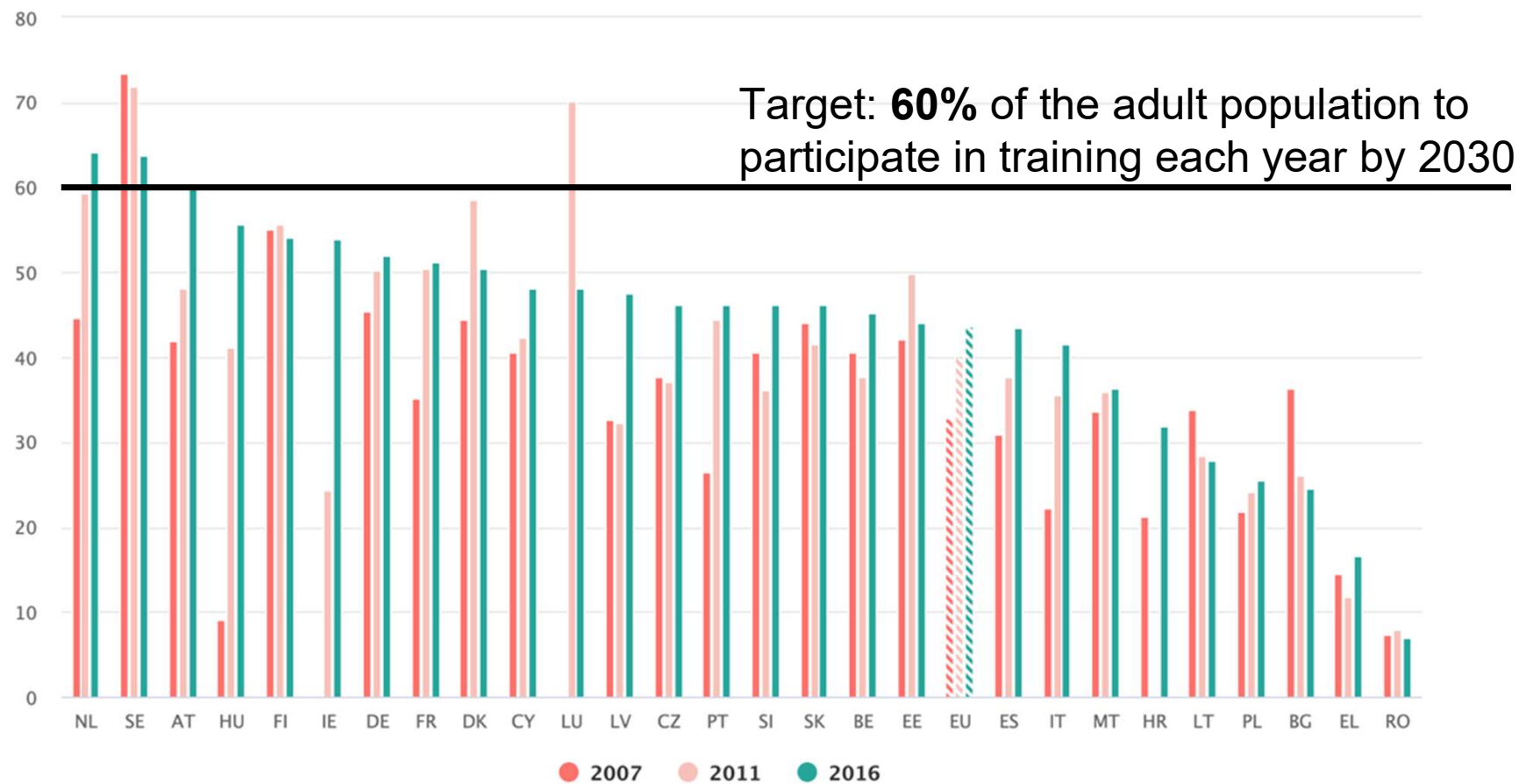
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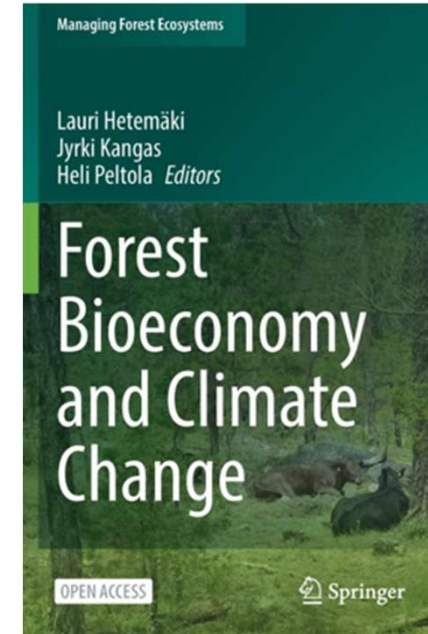
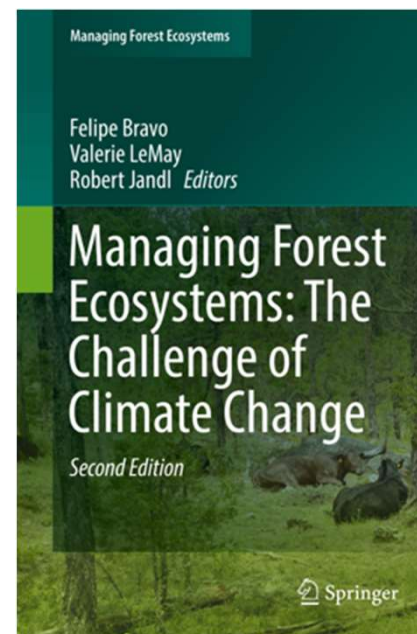
Vocational education and training

Adults (aged 25-64) participation in training (EC Education and Training Monitor, 2021)





Forest resources gained center-stage within green economy as they are affected by climate change and other challenges, but are also key to address them (different perspectives, roles, emphasis, voices...)



Green jobs in the forest sector



Green Forest Jobs provide **forest-related goods and services** while meeting the requirements of sustainable forest management and decent work

(Forest Europe, 2022)

Key messages

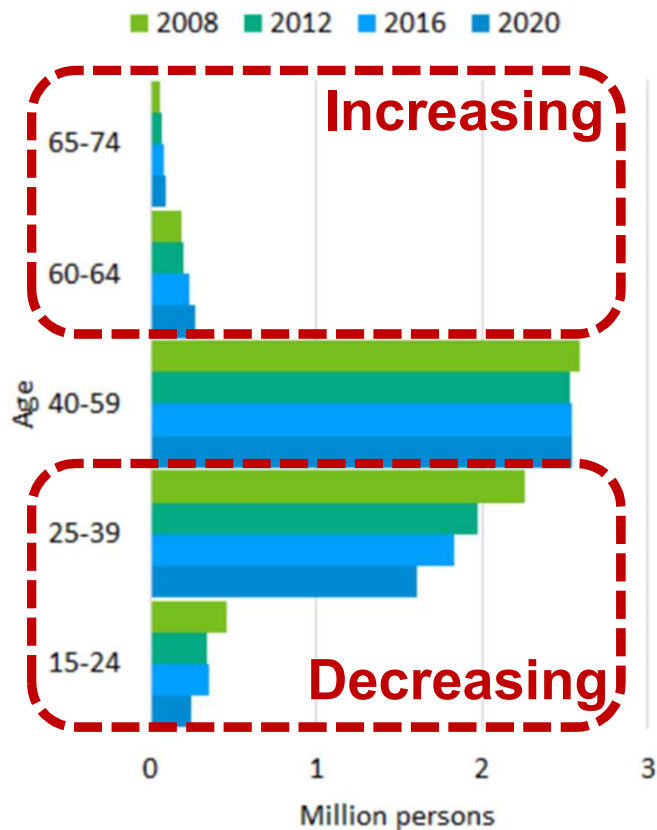
- The number of persons employed in the pan European forest sector is decreasing
- The workforce in the European forest sector is aging
- Only 21% of the workforce in the traditional European forest sector is female
- Earnings in the European forest sector are often not competitive

Recommendations

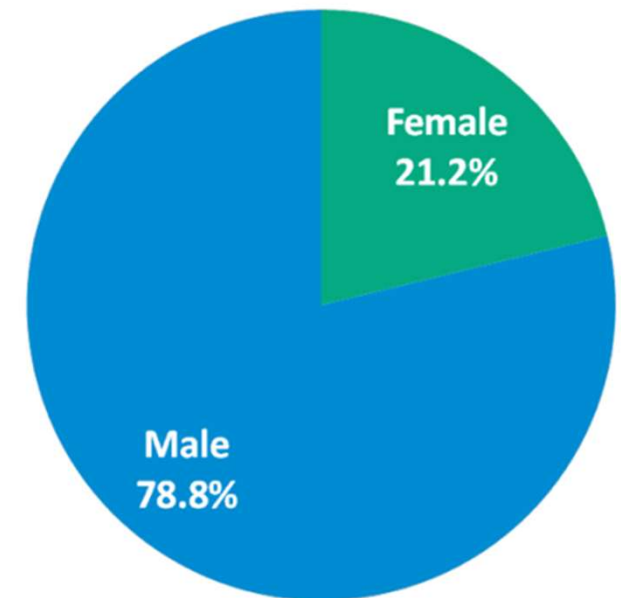
- Working conditions need to be improved and adapted to retain the workforce and to attract youth and female workers.
- The forest sector has the opportunity to be a frontrunner in ensuring decent work as well as competitive and equal pay for all.
- Green Jobs related to forest education and training, provision of ecosystem services, human health and recreation, urban forest, green chemistry as well as new wood based products are an opportunity to attract youth.
- Joint action between government, private sector and unions must be taken to reverse the decline of workforce by improving retention and skills upgrading of existing workers.
- An overhaul of forest education and training to meet changing skills requirements is a major drive to attract new recruits and promote Green Jobs in the forest sector.
- Numerous examples of successful and promising initiatives have been identified to ensure the forest sector will have the workforce it needs and makes full use of its potential to create Green Jobs. Without a concerted effort to make these good practices part of mainstream forest policies and strategies, they are unlikely to have the scale and pace required.

Forest-related jobs and young generations? (Forest Europe, 2022)

Traditional* forest sector workforce per age class in Europe (Mio persons, 2008-2020)



Traditional* forest sector workforce gender balance in Europe (ILO, 2021)

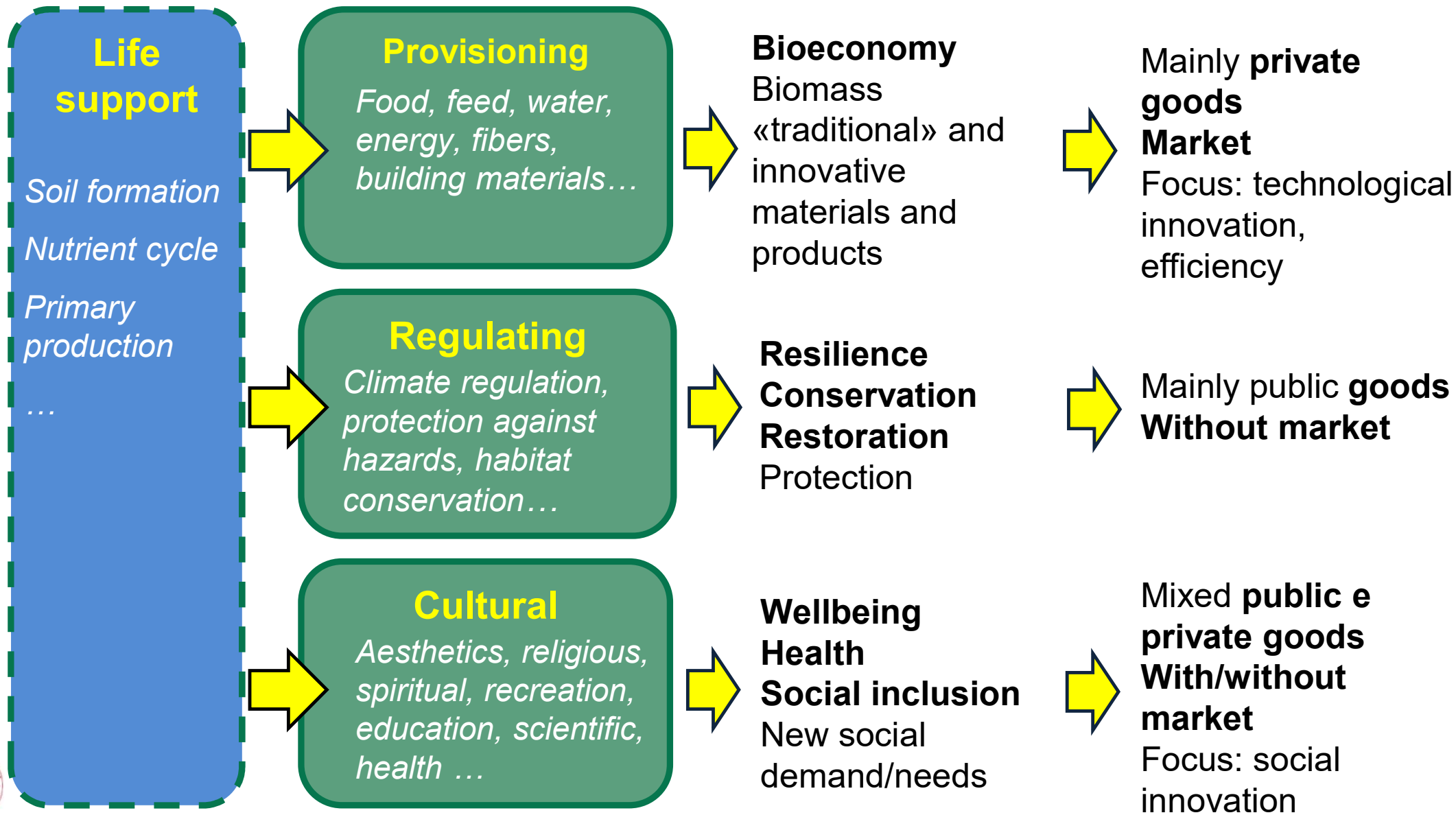


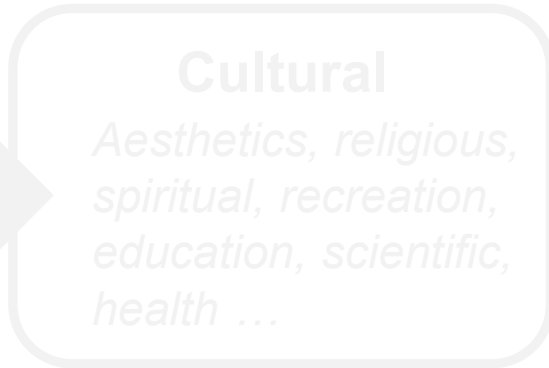
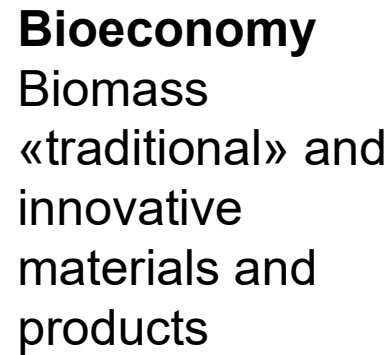
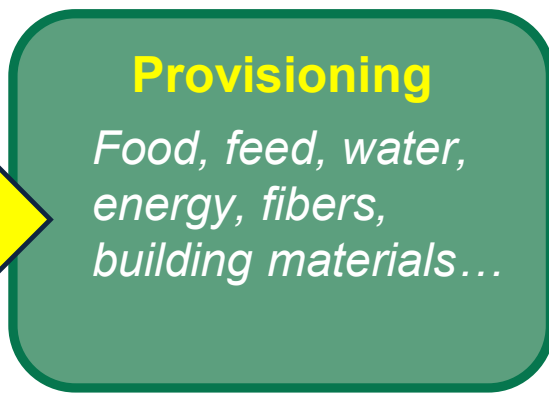
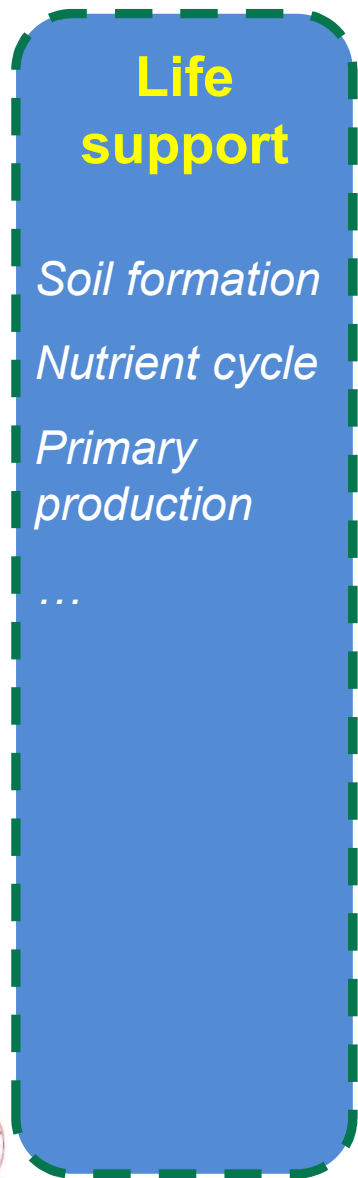
**Total workforce 2010-2020
variation: -7%**
(ILO, 2021)

**Forestry and logging (A02), manufacture of wood products (C16), manufacture of paper products (C17), printing (C18) and the manufacture of furniture (C31)*

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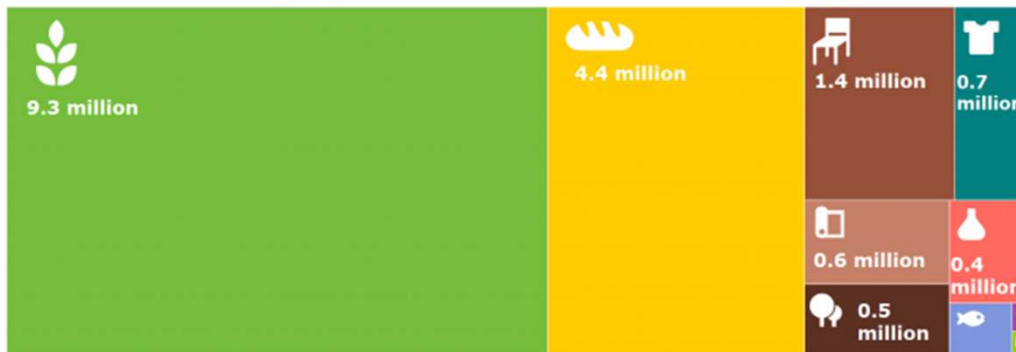
Value added - EUR 614 billion



Turnover - EUR 2.2 trillion



Jobs - 17.5 million people



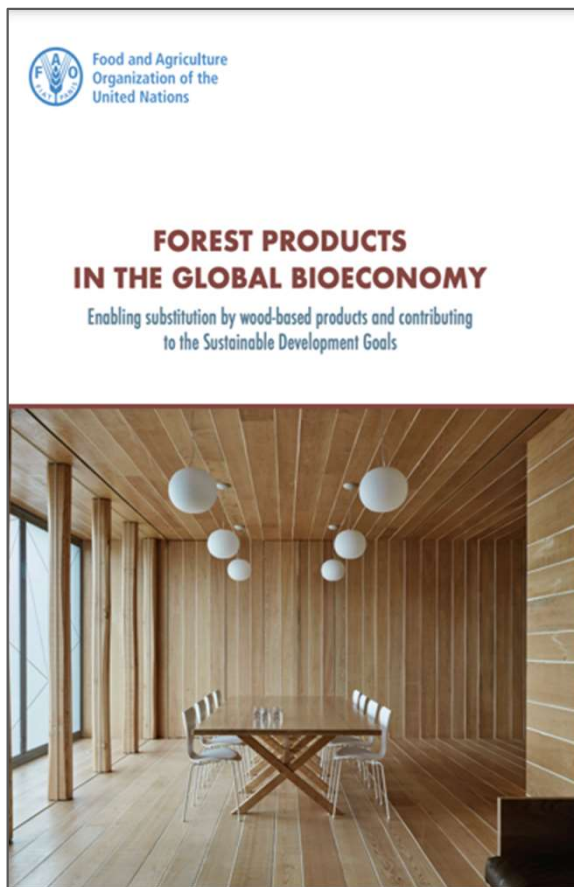
Bioeconomy in Europe: a few figures

- Agriculture
- Forestry
- Fishing and aquaculture
- Manufacture of food and beverages and other agro-manufacturing
- Manufacture of bio-based textiles
- Manufacture of wood products and furniture
- Manufacture of paper
- Manufacture of bio-based chemicals, pharmaceuticals, plastics and rubber (excluding biofuels)
- Manufacture of liquid biofuels
- Production of bioelectricity

Source: JRC, 2020

Bioeconomy

Innovative forest-based products and their main uses and applications (FAO, 2021) (1/2)



Product	Main uses and applications
Engineered wood products (CLT, LVL)	Building elements



Cross-laminated timber (CLT) or X-LAM
+37% annual growth (2014-20)



Laminated Veneer Lumber (LVL)
+6% annual growth (2014-2020)

EU Forest Strategy to 2030

2.1 Promoting sustainable forest bioeconomy for long-lived wood products → New Bauhaus initiative

(...) the most important role of wood products is to help **turn the construction sector from a source of greenhouse gas emissions into a carbon sink** (...) There is considerable room for improvement. With less than 3% of market share, wood products are still only a tiny fraction of building materials in Europe



Bioeconomy

Innovative forest-based products and their main uses and applications (FAO, 2021) (2/2)

Product	Main uses and applications
Wood foam	Insulation (thermal and acoustic), packaging
Bioplastics	Packaging
Wood-based composites	Packaging, disposable products
Wood-based textile fibres	Textiles



Wood foam



Bioplastics



Wood-based composites



Wood-based textile fibres

Bioeconomy

Innovative forest-based products and their main uses and applications (FAO, 2021) (2/2)

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- Low quality wood assortments inputs → a “cascading approach”
- Encouraging **intensive production-oriented** management (coppice, industrial plantations...) rather promoting **multifunctional forestry**?
- Competition with increasing demand for **bioenergy products**

EU Forest Strategy to 2030

2.2 Ensuring sustainable use of wood-based resources for bioenergy

Wood based bioenergy is currently the **main source of renewable energy, supplying 60% of EU's renewable energy use**. To meet the at least **55% emission reduction target by 2030 (...)** **Bioenergy will continue to have a notable role to play in [the energy] mix**



EU Forest Strategy to 2030

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A strong emphasis on biorefineries within the bioeconomy framework

- Biotechnology and the biorefinery concept are **essential components** of the bioeconomy (McCormick and Kautto, 2013)
- The bioeconomy is integrating traditional agricultural, forest and marine biomass feedstock production systems with a **range of biorefinery options and applications** (SCAR, 2014)
- A **key factor** in the transition to a bio-based economy will be the **development of biorefinery systems** (Scarlat *et al.*, 2015)
- Biorefineries are increasingly **at the core** of the bioeconomy vision at the EU level and worldwide (World Bioeconomy Summit, 2015)

An iconic example



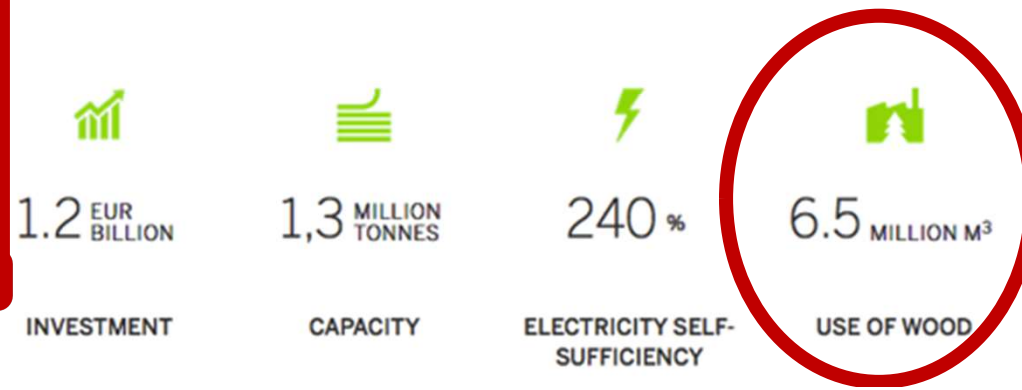
<http://bioproductmill.com>



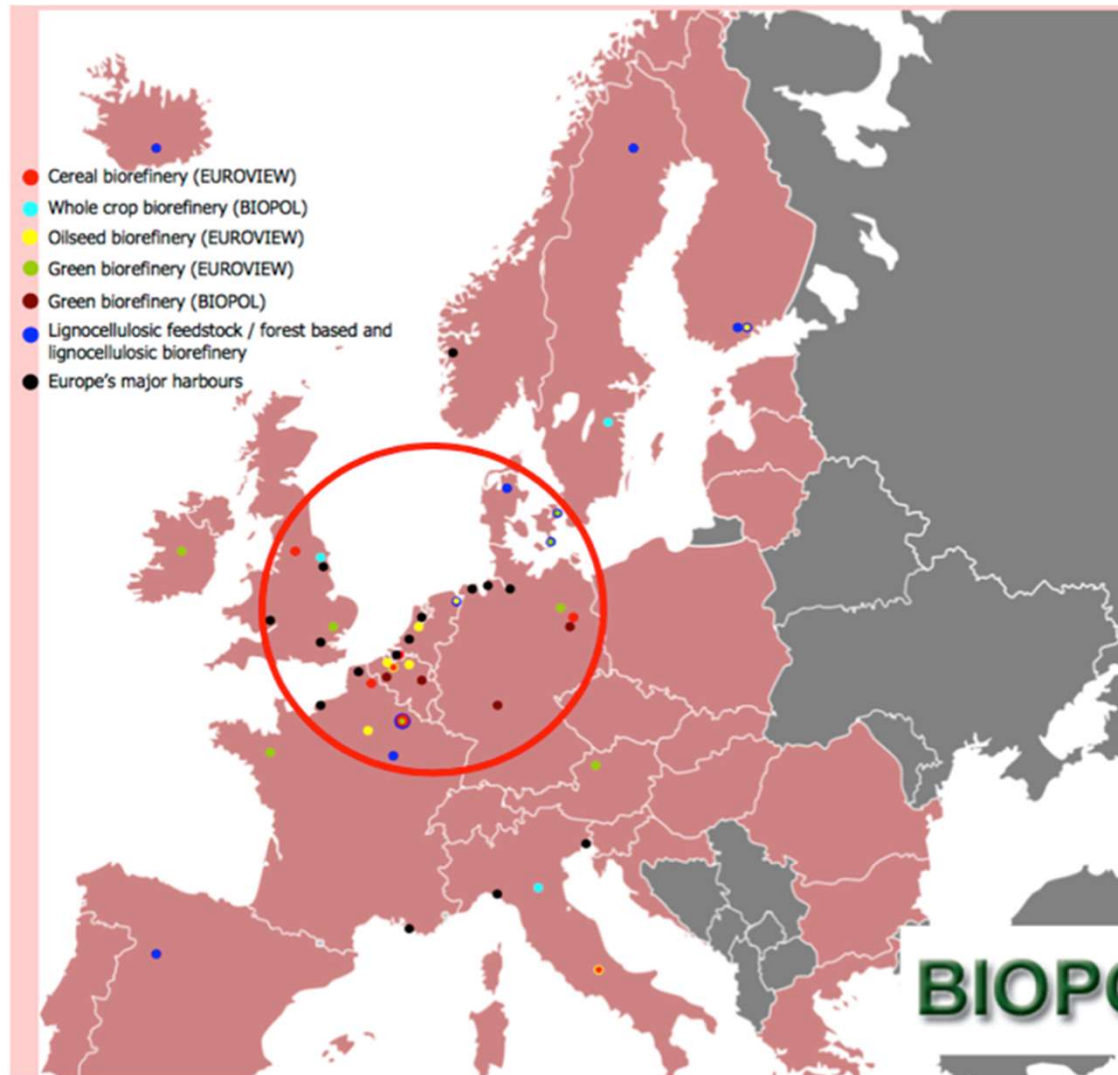
300 000 EUR/job created

- Largest investment in the history of Finnish forest industry
- **100%** of wood raw material used
- **1.3 million tonnes** of pulp/year + bioproducts (e.g. textile fibres, biocomposites, lignin products, fertilisers...) and bioenergy
- **+4.000 jobs** created (including value chain and consumption) → **61.000 jobs** expected in 30 years

Äänekoski bioproduct mill



Porti



75% of the biorefinery sites and 70% of the largest sea harbours are located within a circle consisting of France, Germany, Denmark, Belgium, the Netherlands, and the UK

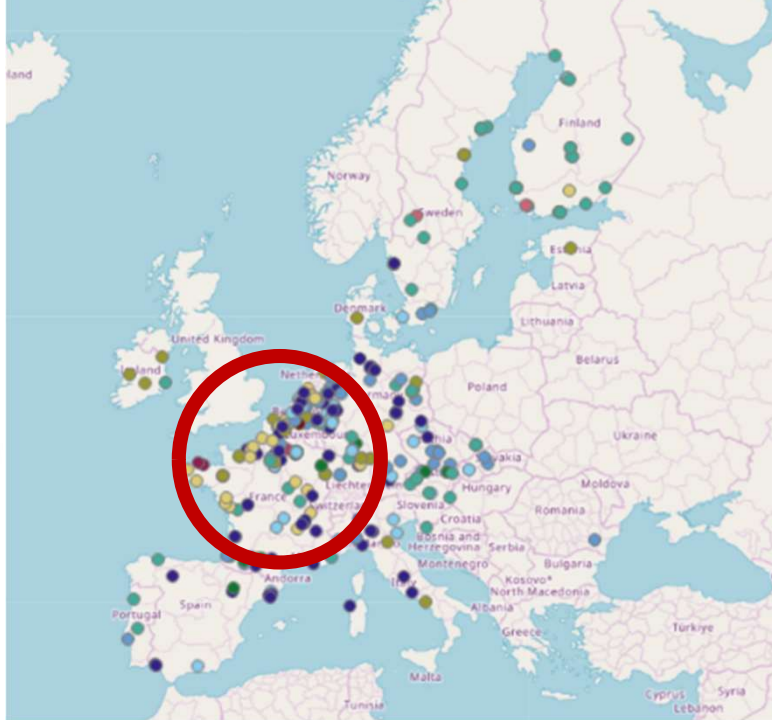
BIOPOL

Biorefinery
Euroview

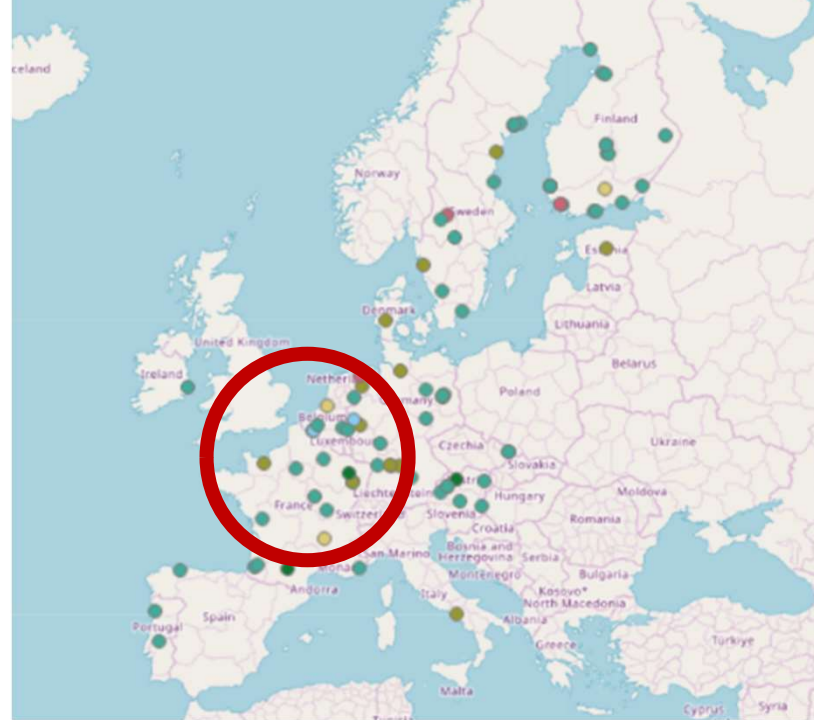
Source: Reith and Steinmetz (2009); Fava (2015)

Biorefineries: mountain areas or coastline?

Biorefineries in Europe Any feedstock (N = 298)



Biorefineries in Europe Forestry feedstock (N = 83)



- One platform (C6 sugars)
- One platform (starch)
- One platform (crops, wastes and residues)
- Two-platform (wood: pulp and spent liquor)
- Three platform (C5 sugars, C6 sugars and lignin)
- Two-platform (green biomass: organic fibres and organic juice)
- Two-platform (aquatic biomass: oil and biogas)
- Two-platform (organic fibres and oil)
- One platform (syngas lignocellulosic biomass and municipal solid waste)
- Two platform (pyrolytic liquid and biochar)
- One platform (bio-crude: lignocellulosic, aquatic biomass, organic residues)

75% of the biorefineries and 70% of the largest sea harbors are located within France, Germany, Denmark, Belgium, the Netherlands (and the UK)

Source: Baldoni *et al.*, 2021

Education



About us EBU Scientific Forum Research Education Engagement News Search

Member Login



The European Bioeconomy University – driven by demand, accomplished by intellectual leadership



<https://european-bioeconomy-university.eu/>

Education and training for fostering entrepreneurship in bioeconomy

FOEBE Erasmus+ project aims at equipping bioeconomy students at Master's and PhD levels with tailor-made sustainable entrepreneurship skills

FOEBE - Fostering Entrepreneurship for the Bioeconomy

March 23 2022

The FOEBE (Fostering Entrepreneurship for the Bioeconomy) project, jointly funded by the Erasmus+ program, aims to foster entrepreneurial skills in students in bioeconomics to accelerate the expansion of this sector within the European Union.



<https://eubionet.eu/foebe-project/>



Bioeconomy Education

[EUBIONET ON TWITTER](#)


ABBEE project

The overall objective of this Strategic Partnership is to inspire and train a new generation of (bio-based economy) students and

[... read more](#)



AgriMax project

Objective Approximately one third of all food produced globally is wasted every year throughout the whole value chain-from farmers to

[... read more](#)



Allthings.bioPRO project

The context Europe's economy depends on oil and gas for energy and chemistry for all kinds of daily life products,

[... read more](#)



BeUBio project

BeUBio - targeting youth in the Baltic Sea Region for the SDG's and Bioeconomy This platform was designed to collect

[... read more](#)



Bioapp project

Overall Objective of the Project: The main objective of the project was to establish a new technology platform by strengthening

[... read more](#)



BIOBEC project

Preparing the creation of Bio-Based Education Centres to meet industry needs and boost the contribution of the bioeconomy to societal

[... read more](#)



BIOCIRCULARCITIES project

Exploring the circular bioeconomy potential in cities. Proactive instruments for implementation by policy makers and stakeholders The BIOCIRCULARCITIES project is

[... read more](#)



BioEcon project

The overall objective of BioEcon is to develop, extend and fully unlock the research potential of IUNG in accordance with

[... read more](#)



BIOSWITCH project

With a turnover value of €2.3 trillion and accounting for 8.2% of the European Union's workforce, the bioeconomy is a

[... read more](#)



BIOVOICES project

CONNECTING BIO-BASED FORCES FOR A SUSTAINABLE WORLD

BIOVOICES is a 40 months project aiming at engaging all relevant stakeholder groups "voices" (policy makers, researchers, the business community

[... read more](#)



BIOWAYS project

Despite significant economic investment and dedicated research in the bio-based domain, public awareness of the potential benefits of bio-based products

[... read more](#)



BLOOM project

The main objective of this project was to establish open and informed dialogues, co-created by European citizens, the civil society,

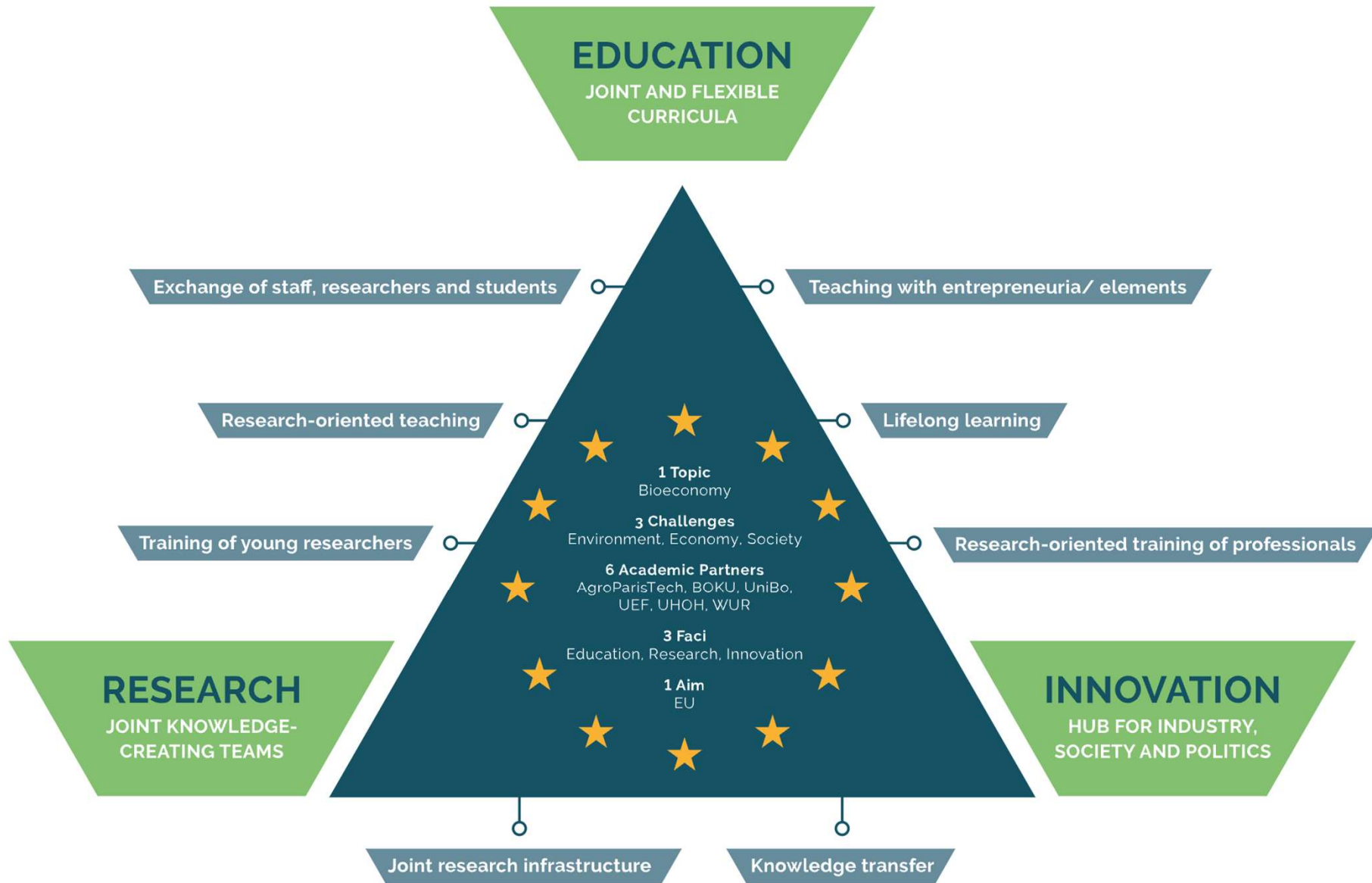
[... read more](#)

1

2

Next »

<https://eubionet.eu/bioeconomy-education/>



EBU offers a wide range of study programmes on master's level as well as individual modules covering all thematic areas of the bioeconomy, including:

- Agriculture, animal and primary production
- Food
- Forestry
- Biology and biotechnology
- Marine
- Ecology, environmental sciences and engineering, climate
- Chemical and biochemical engineering
- Bioenergy
- Circular economy
- Digitalization, big data and ICT applied to Bioeconomy
- Management of natural capital and sustainable resources
- Economics, management, social and political sciences, sustainability transformation

Training on forest-based bioeconomy (an example)



Subjects ▾ Courses ▾ FutureLearn for business

Search online courses

Online Courses / Nature & Environment



UNIVERSITÀ DEGLI STUDI DI PADOVA

Introduction to Sustainable Bioeconomy

Discover what the bioeconomy is and how recent innovations in Europe's forest-based sectors affect the drive for sustainability.

★★★★☆ 4.5 (13 reviews) 1,287 enrolled on this course



Introduction to Sustainable Bioeconomy

★★★★☆ 4.5 (13 reviews)

1,287 enrolled on this course

🕒 3 weeks

🕒 3 hours per week

📄 Digital certificate when eligible

🔓 Open level

Join course

[Find out more](#) about how to join this course

Forest-bioeconomy massive open online course (MOOC) developed within the PerForm project cofinanced by the EFI Network Fund

Partner universities and research bodies:



Training for operators

FOR.italy
FORMAZIONE FORESTALE PER L'ITALIA

**Piedmont (leading), Basilicata, Calabria,
Liguria, Lombardy, Sardinia, Sicily,
Tuscany and Veneto**

7 courses

6 demonstration sites

ca. 90 trainers qualified (training of trainers)

Theoretical and technical aspects, machinery,
health and safety...(90% practice)

www.reterurale.it/FOR_ITALY



Tree climbing



Naturalistic engineering



Forest Management



MATERIAL ECONOMICS

EU BIOMASS USE IN A NET-ZERO ECONOMY

A course correction for EU biomass

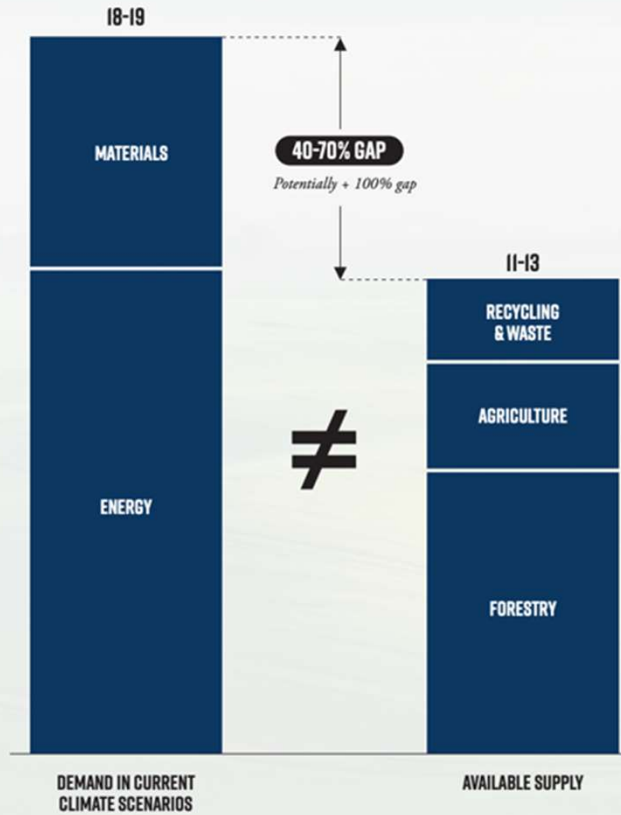


SITRA

VINNOVA



BIOMASS SUPPLY AND DEMAND FOR MATERIALS AND ENERGY IN THE EU PRIMARY ENERGY EQUIVALENTS IN EJ PER YEAR



Existing climate scenarios require 18-19 EJ. Scenarios for individual sectors add up to more than 25 EJ

Supply beyond 11-13 EJ risks major trade-offs with key environmental objectives

Bioeconomy and zero deforestation



Brussels, 17.11.2021
COM(2021) 706 final
2021/0366 (COD)

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on the making available on the Union market as well as export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010

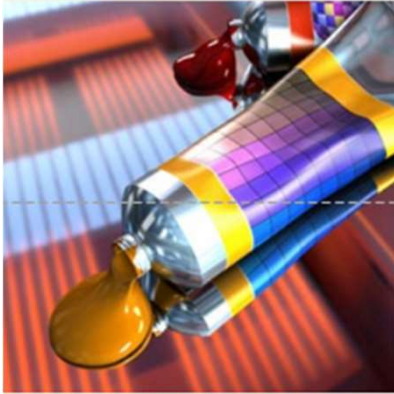
- Targeting import of commodities linked to deforestation: **soy, beef, palm oil, wood, cocoa, coffee, rubber**
- Mandatory **due diligence** rules for importers (information collection, risk assessment and risk mitigation)
- EMMA4EU: a starting-soon Erasmus+ project providing training opportunities to students and practitioners

Beyond wood: wild forest products

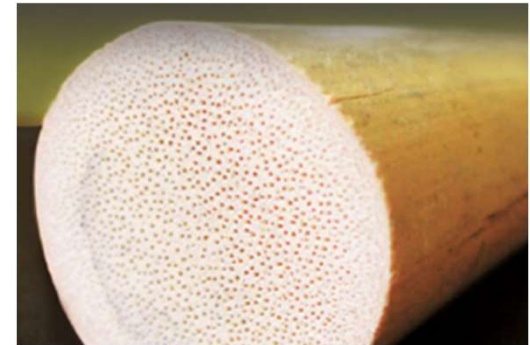
(Non-wood forest products, NWFP)

Value of NWFP collected in Europe (2015):
€23 Bln/year
€3.4 Bln/year marketed (formally & informally)
= same magnitude as revenues from roundwood





Many traditional products... and new products (e.g. rattan-based bones for surgery)



<https://greenbone.it/>

An example of training, networking and business development initiative



Developing Innovation Networks (iNets) around five different groups of NWFPs

Knowledge, best practices, success cases

Training

Replication and innovation

Acceleration of 5 selected business ideas

<https://incredibleforest.net/>

Examples of selected products and business ideas



<https://aromasdelencinar.com/>

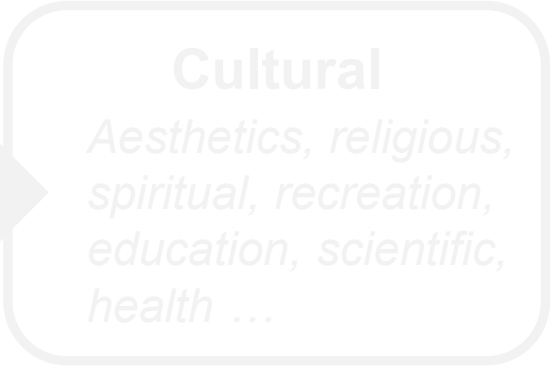
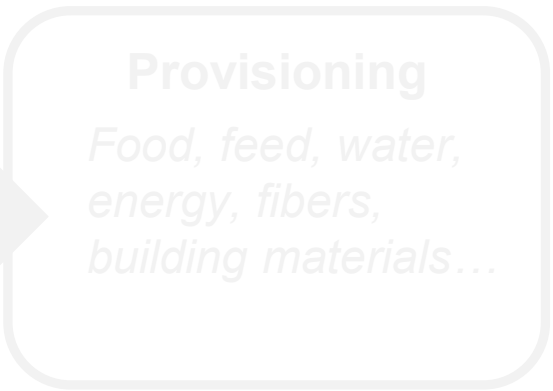
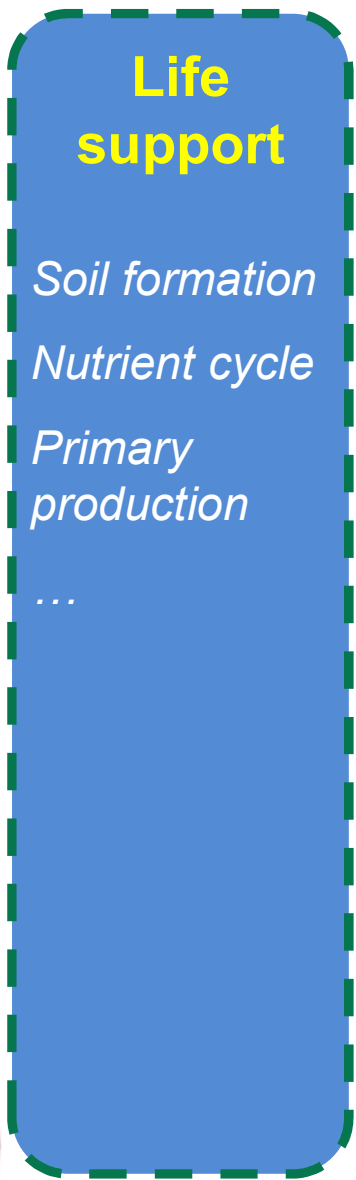
Aromatic & Medicinal Plants (Spain)



www.nectariss.com

Truffle oils prepared through innovative and patented fermentation process based on traditional practices

Truffle oils (Switzerland)



Kunming-Montreal Global Biodiversity Framework (COP15 – Dec. 2022)



4 goals and 27 targets

e.g. By 2030:

Protect 30% of Earth's lands, oceans, coastal areas, inland waters

Restore 30% of degraded ecosystems

Mobilizing at least \$200 billion per year in domestic and international biodiversity-related funding...

www.cbd.int/article/cop15-cbd-press-release-final-19dec2022

EU multiple binding targets and obligations: some examples

Climate Regulation

- **-55%** emissions by **2030** and **Null Net Emissions** (Neutrality) by **2050**
- LULUCF Reg. 2018/841 (revision: 554/2021) Net fixation by 2030: - **310 Mt CO₂eq**

Biodiversity Strategy to 2030

- Legally protect at least **30%** of the EU's land and sea areas (+4% for land and +19% for sea areas)
- **10%** of EU land and sea under **strictly Protected Areas**

Forest Strategy to 2030

- All **primary and old growth forests** strictly protected
- **3 Billion trees** pledge

Nature Restoration Law (proposal)

- Restoration measures covering at least **20%** of the EU's land and sea areas by **2030** and **all ecosystems in need of restoration** by **2050**
- Planning and monitoring

Standards and guidelines under development by the EU



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Though not binding they should become the leading benchmark and reference tools on the market

Guidelines

- Guidelines for **Defining, Mapping, Monitoring and Strictly Protecting EU Primary and Old-Growth Forests**
- Guidelines on **Biodiversity-Friendly Afforestation, Reforestation and Tree Planting** → 3 Bln trees pledge
- **Guidelines on closer-to-nature forestry**

Standards

- **Carbon Removals Certification (CRC)** → Carbon Farming initiative (no credits from land-use activities on ETS market until 2030, then a parallel market system)
- Voluntary **closer-to-nature** forest management certification scheme

Emerging job opportunities and training needs



Identifying resilient tree species
Collecting and studying forest phenological data
Developing forest nurseries
Testing forest genetic materials
Afforestation/Reforestation...



The Challenge

Faced with the challenges posed by climate change, new European policies call for new forest management aiming at increasing resilience of European forests and intensified efforts to restore forest ecosystems through massive tree plantations by 2030, in full respect of ecological principles. This can only be achieved if forest genetic resources (FGR) are better known, protected, and managed sustainably, and forest reproductive material (FRM), such as fruits, seeds, cones and plant parts, is used adequately, supported by a well-developed nursery sector and widespread social acceptance.

www.optforests.eu/

Emerging job opportunities and training needs



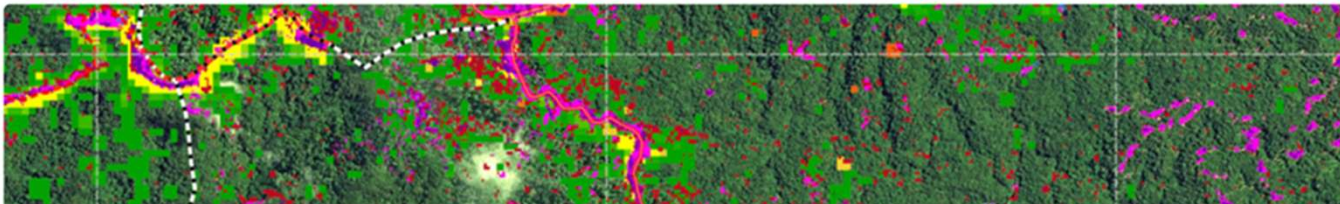
Services Company Project Portfolio Blog



Consulting

Remote Sensing for Carbon Forestry

Measure carbon stock. All required remote sensing work for developing carbon forestry projects according to Verra, Gold standard, and Plan Vivo.



Remote sensing measurement

Satellite imagery

Remote monitoring and real-time warning (e.g., wildfires)

Forest information system design...

<https://openforests.com/>

Emerging job opportunities and training needs



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A white quadcopter drone is shown in flight against a blurred background of green trees. The drone is positioned on the right side of the image, with its camera pointing downwards.

STARTUP INNOVATIVA
Technological services for the enhancement and sustainable and shared management of forests, rural areas and tree heritage.

[See more ↓](#)

Airborne vehicles (drones) for monitoring, data collection, planning

...

Experts forecast flood of biodiversity credit demand but urge regulation

Published 16:17 on May 22, 2023 / Last updated at 01:07 on May 23, 2023 / [Biodiversity](#) / [No Comments](#)

A strong wave of demand for biodiversity credits is expected within the next couple of years, experts speaking at an event in London on Monday predicted while urging standard-setting bodies to ensure rules exist to allow the market to scale with integrity.

Panellists at the Biodiversity and Nature Markets Summit 2023 [became the latest to point to surging momentum](#) behind the nascent biodiversity market in the wake of the historic agreement of the Global Biodiversity Framework (GBF) at COP15 talks in Montreal, which includes [several calls to action](#) for the financial sector to channel greater investment flows towards nature positive outcomes.

One means of doing this will be via crediting restoration and protection activities, with multiple companies and standards [now working on methodologies and initiatives](#) to enable the issuance of resulting units.

“Whether you like it or not, biodiversity credits are here,” Helen Crowley, managing director at advisory firm Pollination, told the event in London organised by City & Financial Global.

She added that while there remained “huge challenges”, stakeholders had now learned “a great deal” about how to properly build the market, namely in the wake of [lessons learned from carbon markets](#) which have been around for decades.

Source: <https://carbon-pulse.com>

Guidance

Understanding biodiversity net gain

Guidance on what biodiversity net gain is and how it affects land managers, developers, and local planning authorities.

What biodiversity net gain is

Biodiversity net gain (BNG) is a way to contribute to the recovery of nature while developing land. It is making sure the habitat for wildlife is in a better state than it was before development.

This will apply from November 2023 for developments in the Town and Country Planning Act 1990, unless exempt. It will apply to small sites from April 2024.

Who it will affect

BNG will apply to you if you're a:

- land manager
- developer
- local planning authority (LPA)

If you're a land manager

You can get paid by selling biodiversity units.

You must be a land manager with:

- land in England
- consent to register land if you're not the landowner
- a legal agreement for the land you're registering

www.gov.uk/guidance/understanding-biodiversity-net-gain



CBD/COP/15/L.25
Page 7

Formal and informal education

22. Implementation of the framework requires transformative, innovative and transdisciplinary education, formal and informal, at all levels, including science-policy interface studies and lifelong learning processes, recognizing diverse world views, values and knowledge systems of indigenous peoples and local communities.

Source: Kunming-Montreal Global Biodiversity Framework (GBF)

An example



Creating the European Nature Academy for applied Blended LEarning



The project and all actions are made possible with support from the LIFE financial instrument of the European Community

Home Courses Contact Us About Us

Sign in

Competence-based blended learning for Europe's Natura 2000 and Protected Area Managers

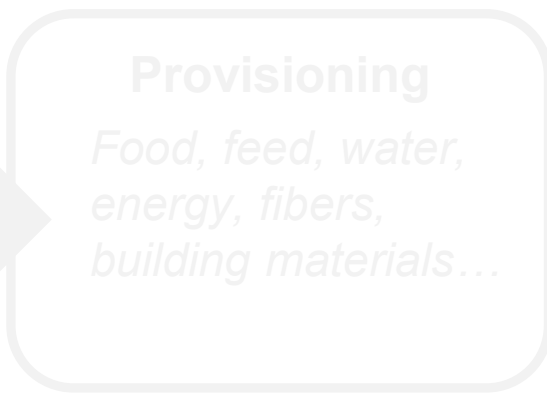
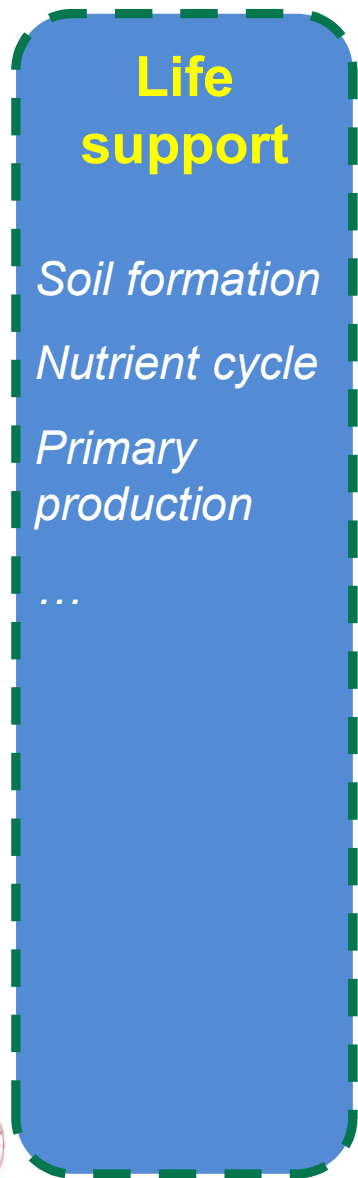
The European Nature Academy, is an innovative tailor-made training hub designed to help Natura 2000 and Protected Area managers achieve their priorities for nature.

Strengthen your professional skills and network with you peers!

Start the courses now



<https://europeannatureacademy.com/>



Examples of forest-based cultural ecosystem services



Culture
(museums, exhibitions, concerts, events...)



Tourism and recreation
(hiking, wild product collection, camping, forest/tree hotels...)



Sport activities
(Nordic walking, mountain bike, orienteering, ...)



Pedagogy and education
(forest kindergarten and school, environmental education, forest training...)



Spiritual and religious
(meditation in forest areas, burial forests, ...)

Green care



Social inclusion
(Inclusive activities for (potentially) marginalized groups e.g., elders, immigrants, people with disabilities ...)



Human health and wellbeing
(forest bathing-Shinrin-Yoku, forest therapy, pet therapy, ...)



More than 220
adventure parks in Italy



www.parchiavventuraitaliani.it/

Education and school in forests and natural areas



>60 identified in Italy:

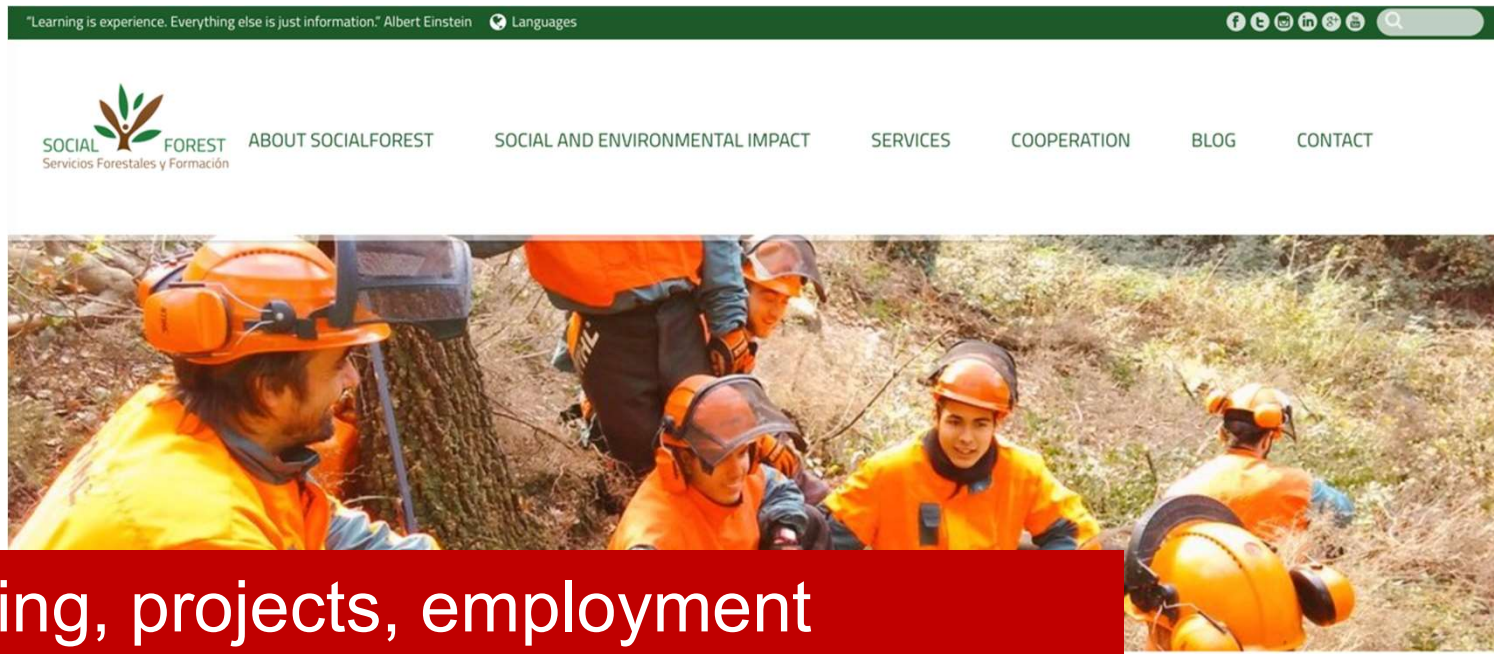
- **45** kindergarden and primary schools
- **+ other education activities** (e.g. environmental education)

Many other initiatives not mapped

>100 in total (estimated)

www.asilonelbosco.com/wp/la-mappa-delle-esperienze-in-natura/

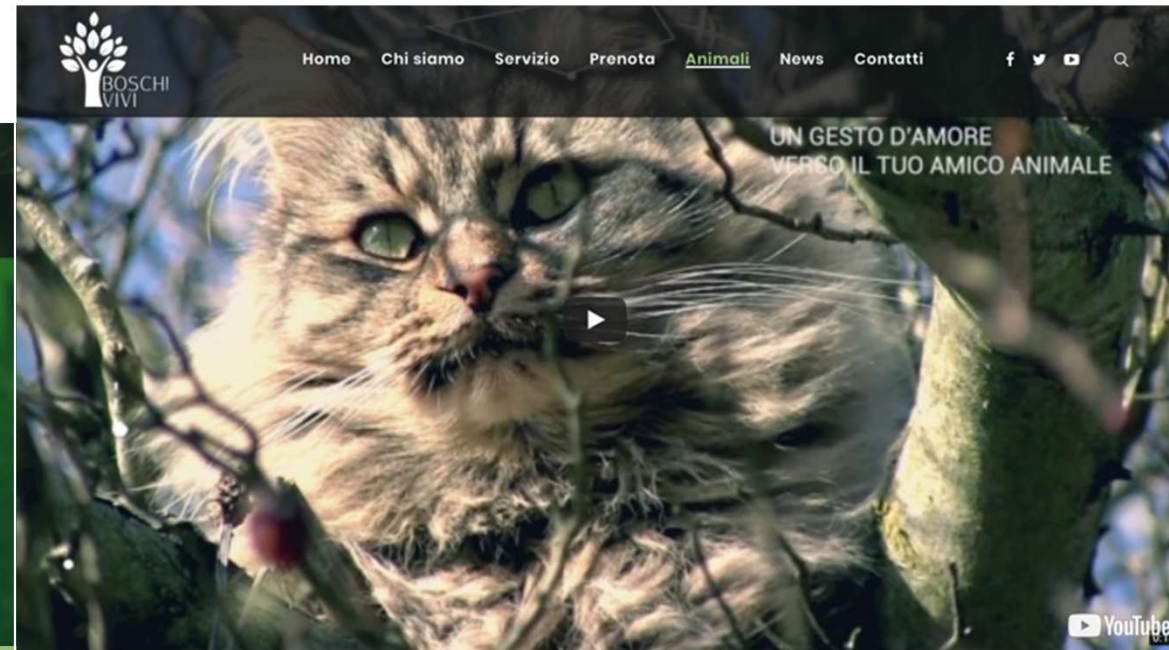
Social forestry



Training, projects, employment opportunities for unemployed young people (15-24 years) under social exclusion risk, e.g. immigrants, people with different forms of addiction...

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

Burial forests



ALBERO DI COMUNITÀ

Il posto in albero di comunità è la scelta per chi ha uno spirito libero, che ama condividere i propri ideali con gli altri.

Boschi Vivi offre la possibilità di interrimento delle ceneri del tuo animale PERSONALE

È la scelta ideale per chi ama un contatto personale e diretto con la natura.

Questo tipo di albero è l'ideale per una coppia che desidera condividere la memoria del proprio amore attraverso un tramite speciale.

<http://boschivivi.it>

Green care

“... range of activities that promotes physical and mental health and well-being through contact with nature”

(Sempik *et al.*, 2010, p.121).

Forest-care = focus on green care activities within/linked to forest ecosystems



« Back

Forest Therapy

How to Enjoy Forest Therapy

History of Forest Therapy

Forest Therapy Resources

About Registered Trademarks

HOME

Japan: 62 forest therapy formally endorsed initiatives

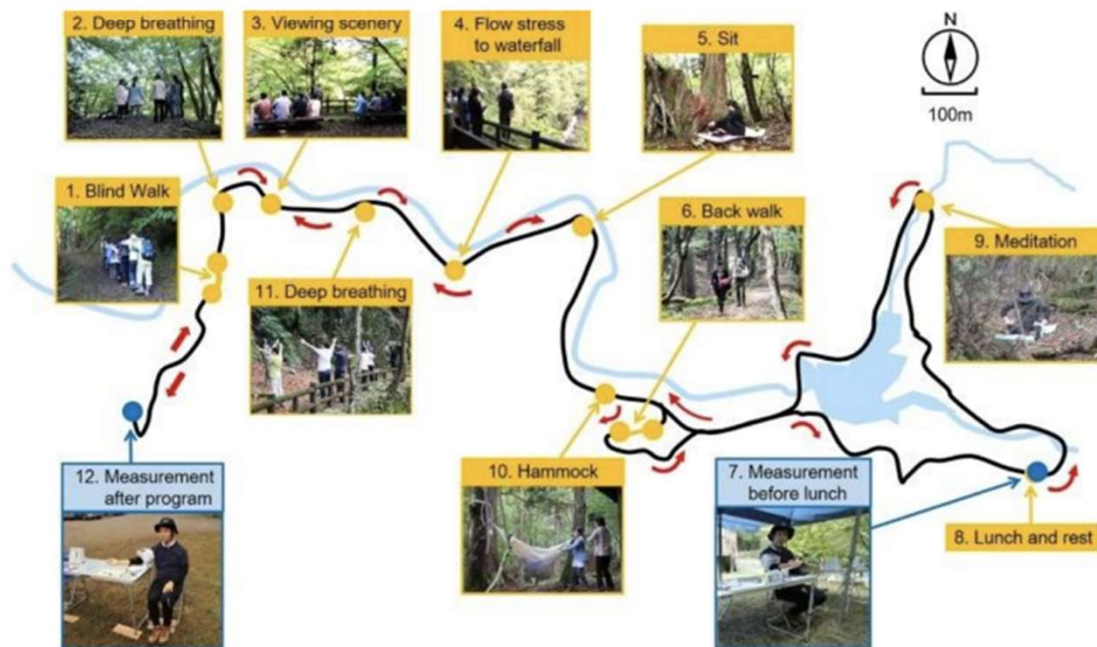
Sites

Forest Therapy Areas
Therapy Roads (single paths)

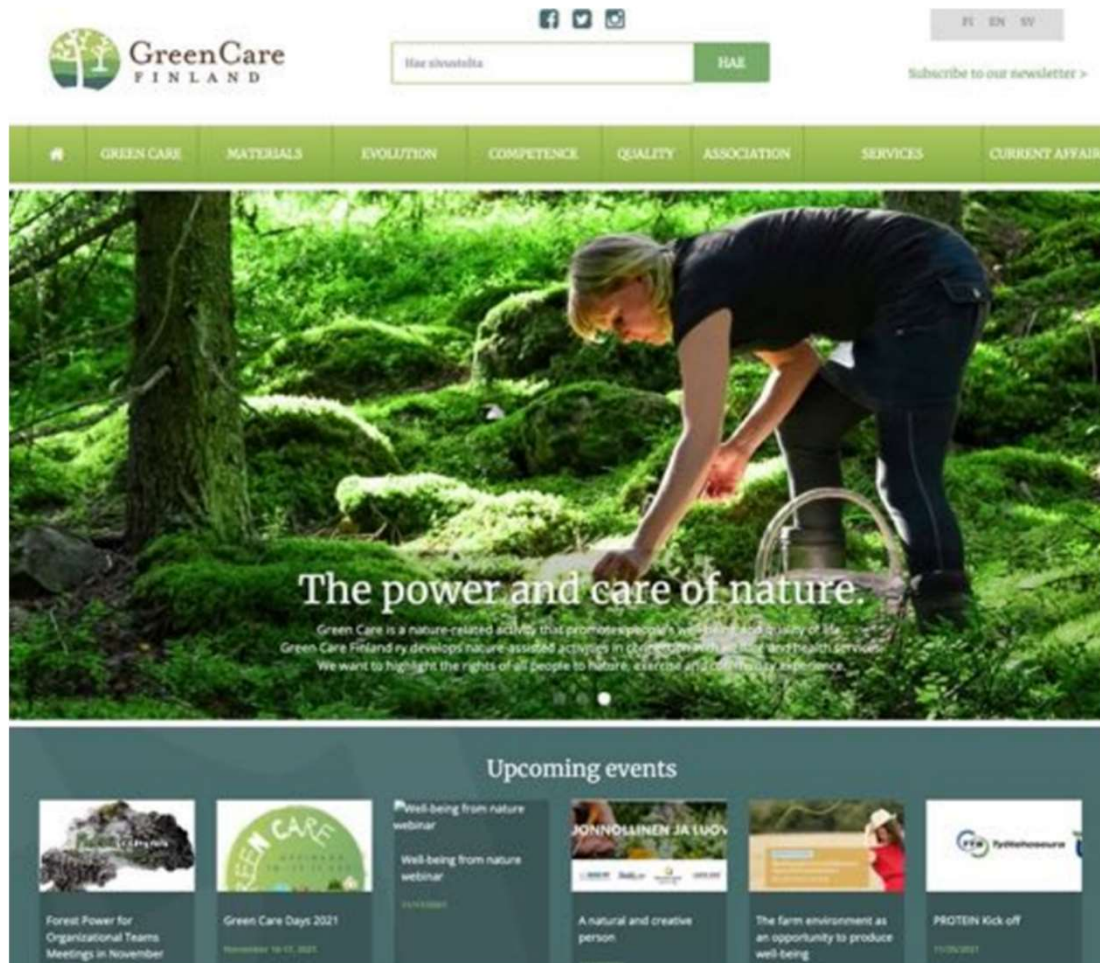
Emerging professional profiles

Forest Therapy Guide
Forest Therapist ...

www.fo-society.jp/therapy/cn45/index_en.html



Training and promotion



www.gcfinland.fi/

Cansiglio InVita

15-18 giugno 2023 • Foresta del Cansiglio (Prealpi venete e friulane)

Un festival dedicato alle esperienze di connessione con la natura: un'occasione per sperimentare e conoscere nuovi punti di vista sulle foreste. Quattro giorni di eventi e attività fra gli alberi, tra scienza, arte, spiritualità, cammini, saperi, tradizioni, cura del Pianeta.

giovedì 15 giugno	venerdì 16 giugno	sabato 17 giugno	domenica 18 giugno
Forest Bathing per gruppi specifici <i>terza età, adolescenti, pazienti oncologici e inoltre: workshop di scrittura creativa.</i>	Convegno scientifico: foreste e benessere <i>e inoltre: tavola rotonda, coaching, musica, attività nel bosco in notturna...</i>	Esperienze tra gli alberi <i>pillole di scienza, bagni di foresta, scultura del legno e inoltre: concerto dal vivo...</i>	Attività fra gli alberi <i>camminata speleologica, yoga, lettura in silenzio nel bosco e inoltre: spettacolo teatrale...</i>

Da venerdì 16 a domenica 18 sarà aperto a Spert (Alpago, BL) uno spazio espositivo per conoscere meglio le organizzazioni coinvolte nel festival, i produttori e altre realtà del territorio. Saranno aperti anche il Museo dell'Uomo in Cansiglio e il Giardino Botanico Alpino.

Info e iscrizioni
www.cansiglioinvita.it

Organizzato da: TESAF, Veneto Agricoltura, Comune di Alpago, Comune di Cansiglio, Comune di Tardisio

Patrocinato da: Comune di Alpago, Comune di Cansiglio, Comune di Tardisio

Con il supporto di Etifor | Valuing Nature, LAST Lab & MA in Environmental Humanities - Università Ca' Foscari Venezia, AUSF, Ivy Tour, Fondazione G. Angelini, Alpago Cansiglio APS e altri

Green for Care (Green4C) Erasmus+ KA (2020-2023)

- Development of **entrepreneurial skills and models for *green care*** (4 thematic sub-sectors)
- EU-wide assessment (4 **report/outlook studies**)
- 16 international **case studies**
- **Training needs assessment**
- **Training and support to business ideas/start-ups**

FOREST-BASED CARE

Have you ever tried forest bathing or forest therapy?
Feeling good with yourself is easier in nature; woods and forests have a healing power, almost magical.



SOCIAL AGRICULTURE

A form of aggregation that allows the social and labor inclusion of more disadvantaged people through work and sociality in agricultural practices.



Enhancing and creating tourist products and destinations that focus on the health and well-being of users and providers, while keeping an eye on the sustainability of the territory.

GREEN CARE TOURISM

HOW MUCH DO YOU KNOW ABOUT GREEN4C?



Green spaces and urban spaces must coexist, in harmony: community food-growing and gardening, green exercise and horticulture therapy can contribute to recovery from stress caused by living in the city.

URBAN GREEN CARE

<https://www.greenforcare.eu/>

Training

green4c

The project ▾ Join ▾ Learn ▾ Practice ▾ News

home / learn / green care: from academic theory to entrepreneurial practice

Green Care: from academic theory to entrepreneurial practice



<https://www.greenforcare.eu/e-learning-course/>

- October 2021 – January 2022
- 8 online modules
- *Target:* students and practitioners
- Business plan development
- Intensive acceleration course for selected business plan proposals (Padova, Summer 2022)

Course unit
GREEN CARE: FROM THEORY TO ENTREPRENEURIAL PRACTICE
AVQ1096078, A.A. 2021/22

Information concerning the students who enrolled in A.Y. 2021/22

Information on the course unit

Degree course	Second cycle degree in FOREST SCIENCE - SCIENZE FORESTALI AV2091, Degree course structure A.Y. 2017/18, A.Y. 2021/22
Degree course track	FOREST AND LAND MANAGEMENT (001LE)
Number of ECTS credits allocated	6.0
Type of assessment	Mark
Course unit English denomination	GREEN CARE: FROM THEORY TO ENTREPRENEURIAL PRACTICE
Website of the academic structure	http://www.agrariamedicinaveterinaria.unipd.it/
Department of reference	Department of Land, Environment, Agriculture and Forestry
E-Learning website	http://elearning.unipd.it/scuolaamv/
Mandatory attendance	No
Language of instruction	English
Branch	LEGNARO (PD)
Single Course unit	The Course unit can be attended under the option Single Course unit attendance
Optional Course unit	The Course unit can be chosen as Optional Course unit
Course unit for Erasmus students	The course unit can be attended by Erasmus+ and other exchange students

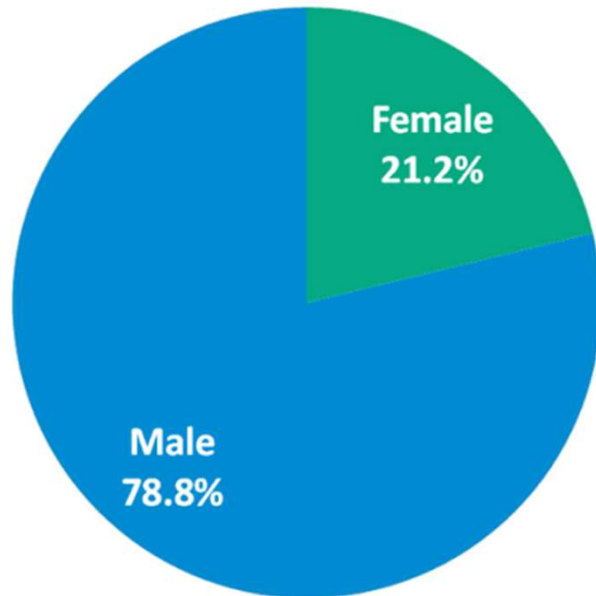


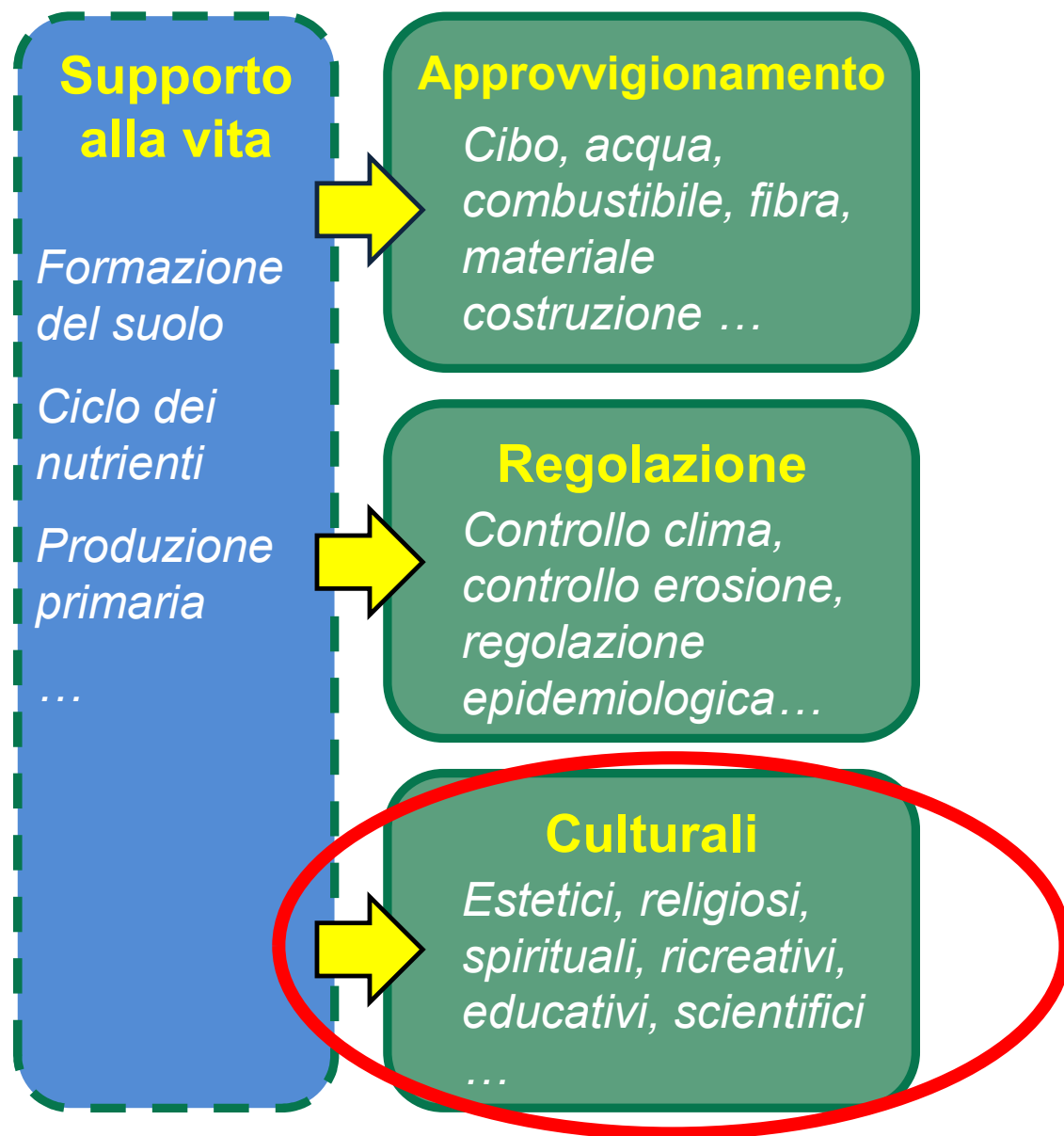
bring this page
with you

Green care from academic theory to entrepreneurial practice (Green4C training – Summer 2022)



Traditional* forest sector workforce gender balance in Europe (ILO, 2021)





Tendenzialmente maggiori problemi di definizione, percezione soggettiva, intangibilità, difficoltà di valutazione e misurazione, organizzazione...
ma anche una **crescente rilevanza nelle politiche e linee strategiche di settore**

Example 1 – Forest supply and value chain agreements

Decree 31st May 2021 n.77, then Law 29 July 2021 n.108
Forest supply chain and value agreement (*Accordo di Foresta*)

A network contract aimed at “*valuing public and private agrosilvo-pastoral areas, as well as conserve and supply ecosystem services provided by forests*”
by creating **networks of actors (for profit and not-for profit, private and public) operating within the forest sector**

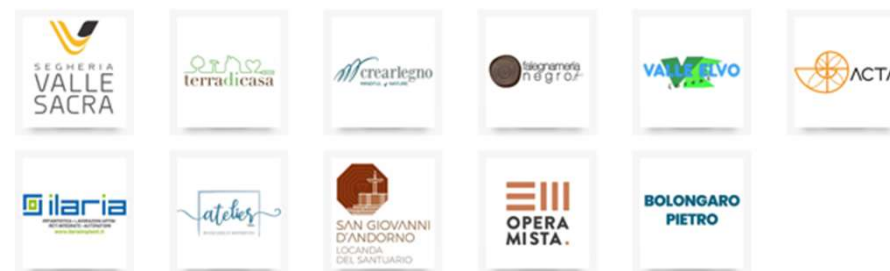


Example 1 – An interesting experience in Piedmont



<https://sipartedalbosco.it/>

Companies within the network



Broader network of supporting actors



Supported by



Example 2 – Public-private partnership for supporting forest management and biodiversity

Chiamata alle aziende per salvare 12 ecosistemi e 70 specie faunistiche in Lombardia

BioClima  natura che vale
BIOVERSITA', SICUREZZA
NELLA LOMBARDIA

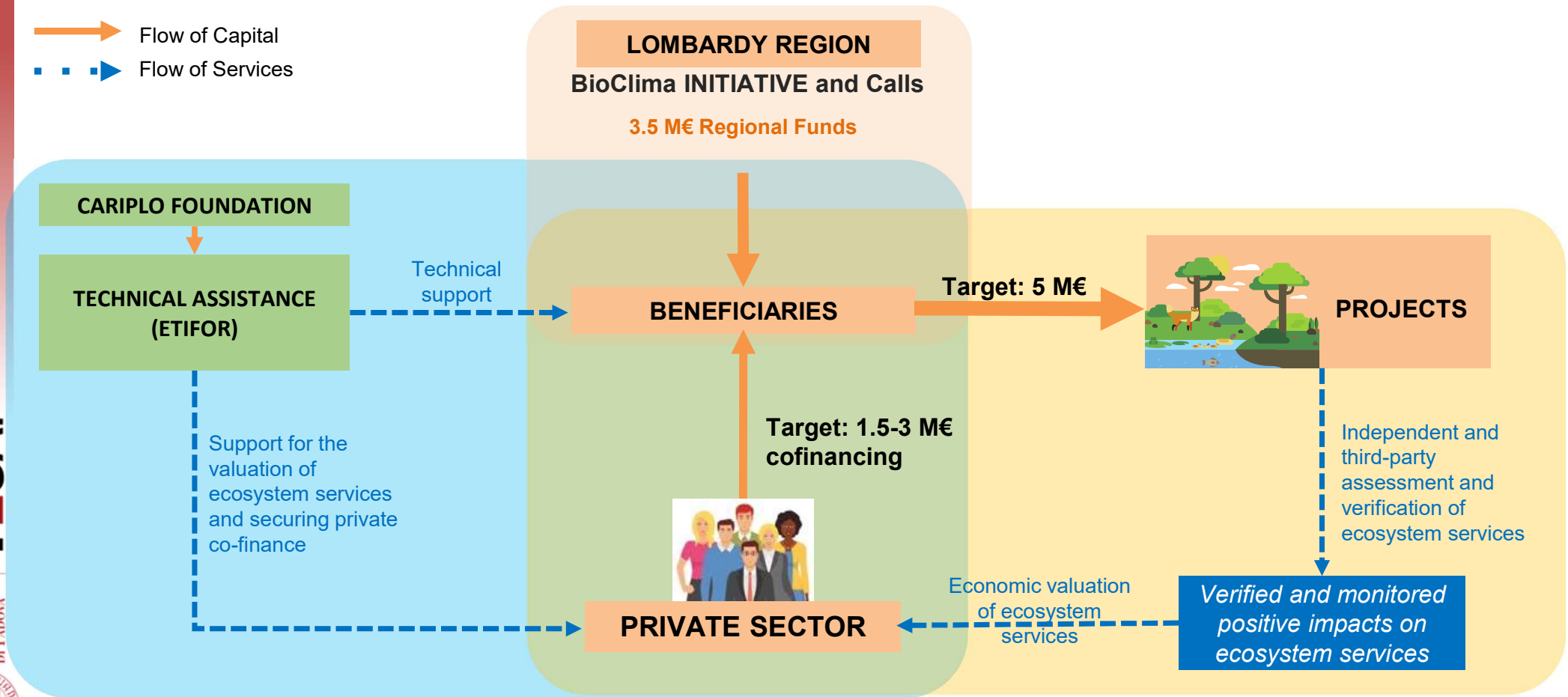
L'iniziativa "Biodiversità e Clima (BioClima)" rappresenta una vera innovazione nel mondo della gestione forestale responsabile. È un modello pubblico-privato per la conservazione della biodiversità e contrasto alla crisi climatica in Lombardia.

Tutti i progetti sono co-finanziati da Regione Lombardia

IL PIANO LOMBARDBIA  Regione Lombardia

Public-Private Blended Finance Model

- Flow of Capital
- • • → Flow of Services



Source: Etifor, 2023



Forest Stewardship Council®



**Ecosystem Services Procedure:
Impact Demonstration
and Market Tools**

FSC-PRO-30-006 V1-0 EN



All Rights Reserved FSC® International 2018 FSC®/COC100

Procedure



Biodiversity



Carbon



Water



Soil



Recreation

Independent and science-based verification of ecosystem services: a reference standard

2018 FSC procedure for the independent verification and demonstration of forest management's positive impacts on the generation/delivery of ecosystem services

<https://ic.fsc.org/en/document-center/id/328>

Selected projects so far (2022 edition)

Riverine areas and forests



Parco Lombardo della valle del Ticino

PONTE VECCHIO (MI)



Parco Adda Sud

LODI (LO)



Parco Oglio Sud

CALVATONE (CR)



Parco Regionale Oglio Nord

ORZINUOVI (BS)



Isola Maria Luigia

MARTIGNANA DI PO (CR)



Parco del Serio

RIPALTA ARPINA (CR)

Lowland areas and forests



Riserva Naturale delle Torbiere del Sebino

PROVAGLIO D'ISEO (BS)



Comune di Canneto sull'Oglio

CANNETO SULL'OGLIO (MN)

Mountain areas and forests



Parco Orobie Valtellinesi

ALBOSAGGIA (SO)



Parco Campo dei Fiori

BRINZIO (VA)



Parco Spina Verde

COMO



Riserva Naturale Val di Mello

VAL MASINO (SO)

12 projects

5.6 Million Euro, of which

3.5 Million Euro from regional funds

1.5 Million Euro from private sponsorship

0.6 Million Euro from other public funds

Targeted area 288 ha, of which

270 ha improved existing forests

18 ha new forest areas (A/R)

8 priority habitats, 70 species (birds, mammals, reptiles, amphibians, arthropods, insects and flora)

The largest PP for forest biodiversity in Europe

Outline

- Green jobs and green jobs in the forest sector: an introduction
- Framing forest sector green jobs within ecosystem services
- Final considerations

- Emerging green jobs opportunities and associated training needs within the forest sector
- Different trends and profiles depending on the group/class of ecosystem services (ES)
- A (preliminary) tentative qualitative summary matrix:

ES	Green jobs potential	Investment intensity	Innovation	Gender balance potential	Training needs
Provisioning	Medium-high	High	Mainly technological	? (likely as traditional forestry)	Moderate gaps
Regulating	Medium-Low	Medium-high	(Technological)	? (likely a bit higher than traditional forestry)	Moderate gaps
Cultural	Medium-high	Low	Mainly social	High	High gaps (emerging initiatives, existing gaps)

Some risks and criticisms (among others)

- Tradeoffs

e.g. provisioning (= biomass production) vs. regulating (= conservation, restoration, rewilding...)

- Need of standards, training, qualified people (also to avoid greenwashing and cheating)

- Naive and simplistic narratives

e.g. plant trees vs. forest management
Back to nature as a romantic perspective

- Nature and mountains as a source

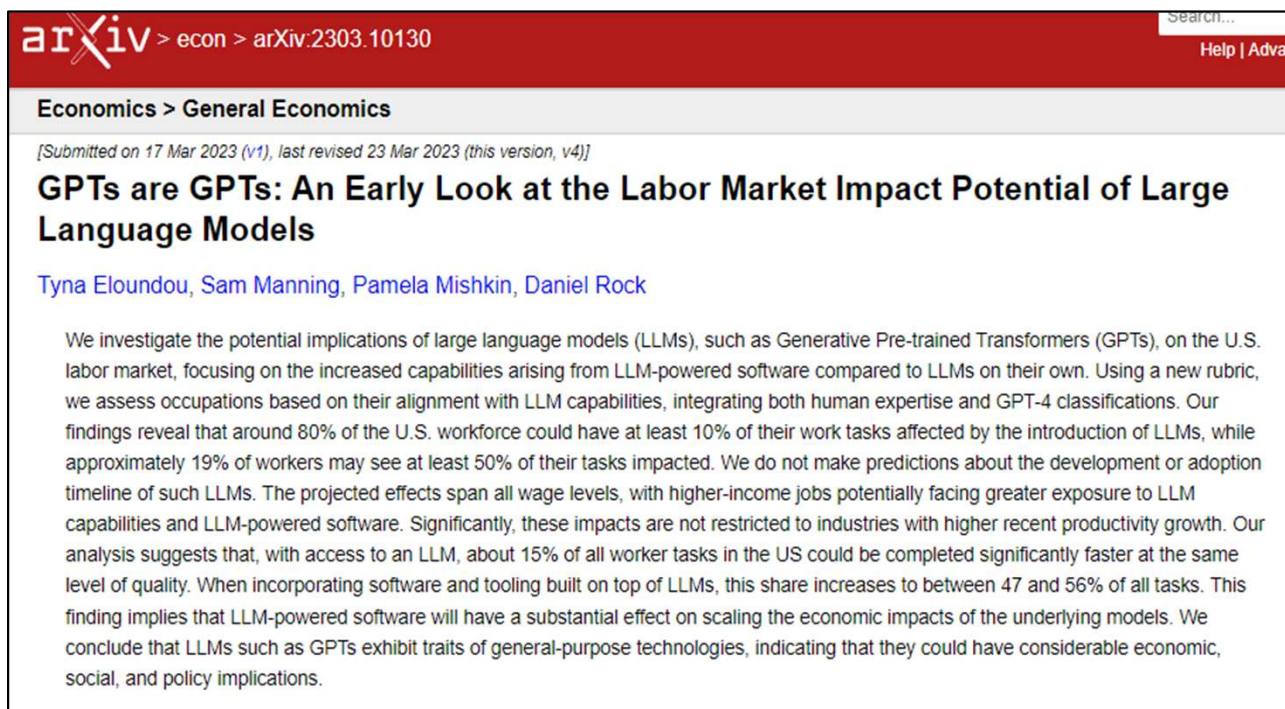
- Financialization of nature

Emerging technologies

Exposure as a measure of whether access to a GPT or GPT-powered system would reduce the time required for a human to perform a specific Detailed Work Activity (DWA) or complete a task by at least 50 percent

19,265 tasks
2,087 DWAs

U.S. workforce impact:
80% at least 10%
19% at least 50%



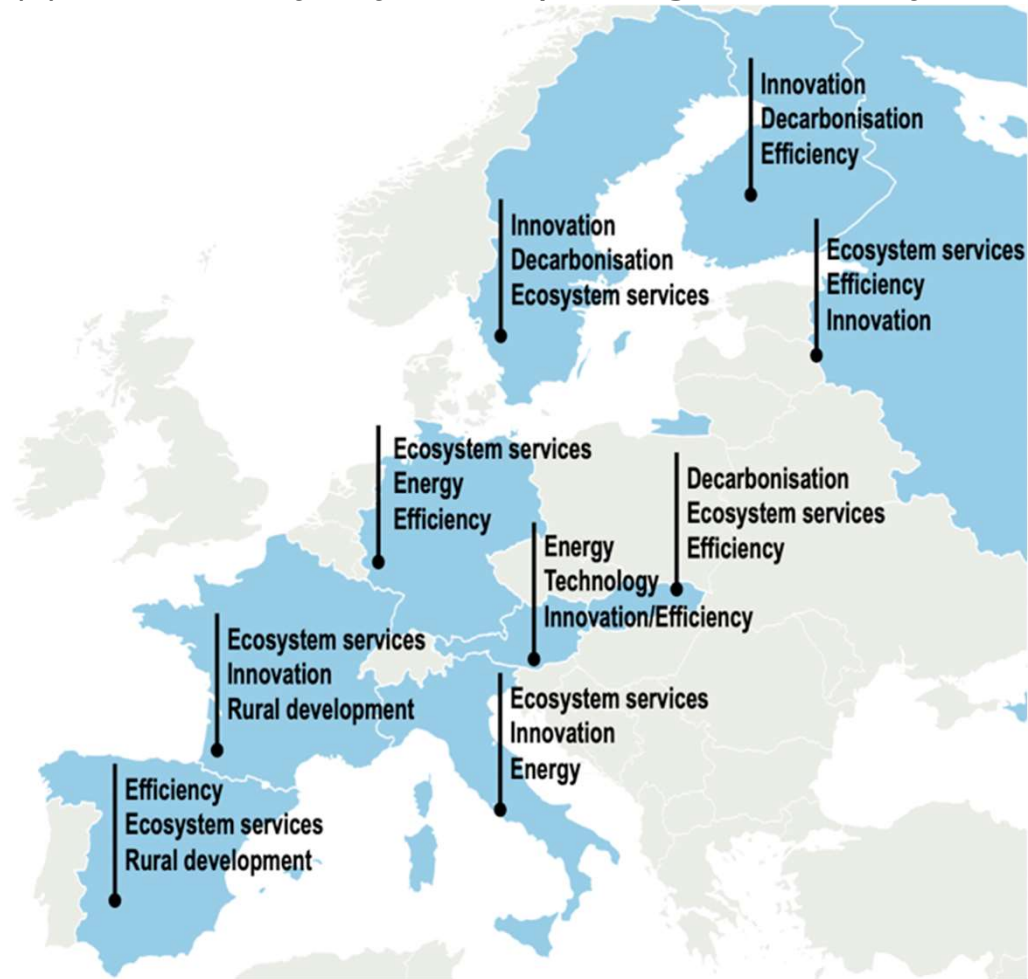
The screenshot shows the arXiv interface for the paper 'GPTs are GPTs: An Early Look at the Labor Market Impact Potential of Large Language Models'. The authors listed are Tyna Eloundou, Sam Manning, Pamela Mishkin, and Daniel Rock. The abstract text discusses the potential implications of large language models (LLMs) on the U.S. labor market, noting that around 80% of the workforce could have at least 10% of their work tasks affected, and approximately 19% of workers may see at least 50% of their tasks impacted. It also mentions that LLM-powered software will have a substantial effect on scaling the economic impacts of the underlying models.

Information processing industries exhibit high exposure, while manufacturing, **agriculture**, and mining demonstrate lower exposure

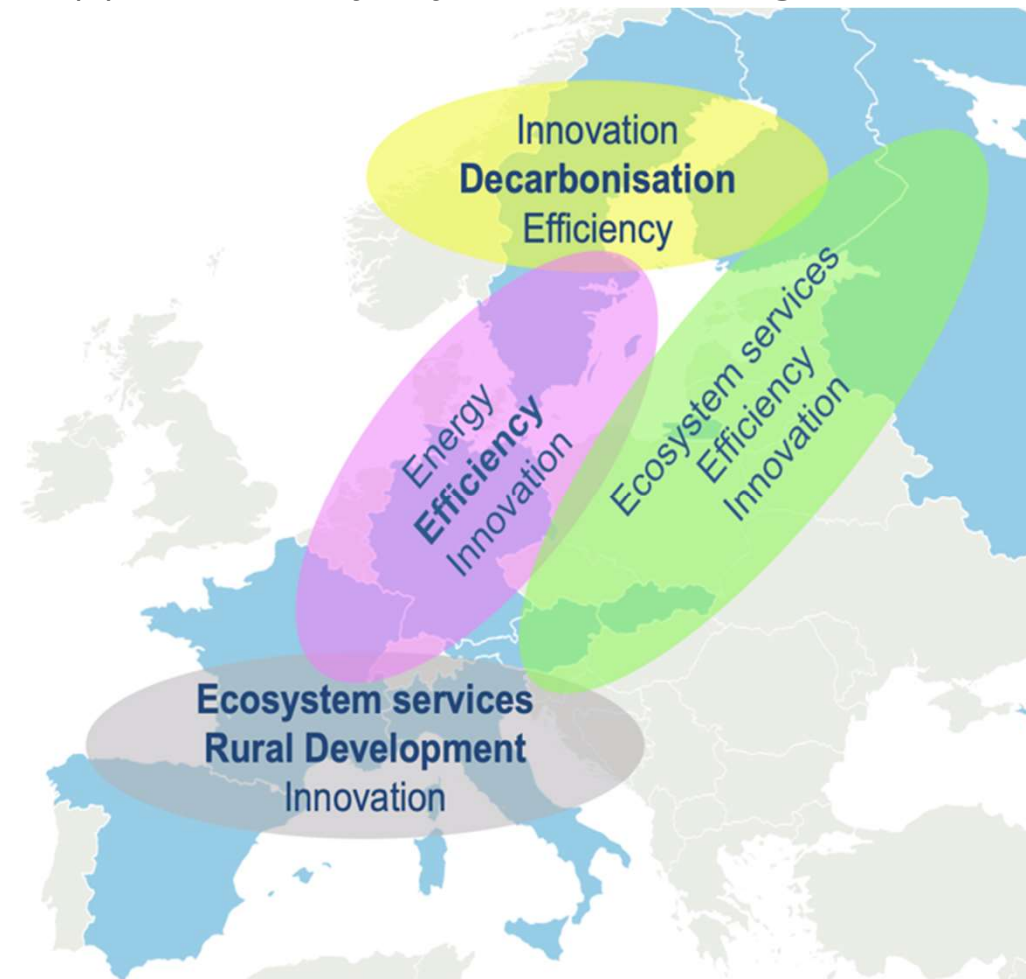
Different perceptions by young generations

(Bioeconomy perception by future stakeholders - Masiero *et al.*, 2020)

(a) Bioeconomy key-words per targeted-country



(b) Bioeconomy key-words: clustering



Promising developments and trends
Keep moving towards ambitious goals
Support ongoing “green” processes by developing appropriate/innovative tools/initiatives
...still be realistic



Strategia dell'UE per la biodiversità al 2030 (p. 1)

*La natura è importante per il **nostro benessere mentale e fisico** nonché per assicurare alla società la capacità di fare fronte ai cambiamenti globali, le minacce per **la salute** e gli eventi estremi. Abbiamo bisogno della natura nelle nostre vite*

Strategia forestale dell'UE per il 2030 (p. 3)

*Le foreste e il settore forestale assicurano **molteplici funzioni e benefici socio-economici**, ivi comprese opportunità occupazionali e di sviluppo nelle aree rurali, nonché opportunità culturali e ricreative, **contribuendo così alla salute fisica e mentale dei cittadini***

RaF 2019 e Strategia Forestale Nazionale

*Le foreste nazionali inoltre offrono importanti **servizi culturali e ricreativi, estetici, educativi, sportivi, spirituali e turistici sempre più richiesti dalla società [...] un importante volano di sviluppo locale che genera una filiera produttiva con un diffuso indotto occupazionale e imprenditoriale***

Un crescente interesse anche da parte del mondo della ricerca (un esempio)

Austrian Research centre for Forests (BFW) (2014):
analisi della letteratura scientifica e “grigia” (1993-2013):

149 articoli scientifici con revisori indipendenti (*peer-review*)
+ 31 altre pubblicazioni

In prevalenza: Europa, USA e Asia (Giappone e Corea)



Green Public Health - Benefits of Woodlands on Human Health and Well-being

RENATE CERVINKA, JAN HÖLTGE, LAURA PIRGIE,
MARKUS SCHWAB, JENNIFER SUDKAMP, DANIELA HALUZA,
ARNE ARNBERGER, RENATE EDER, MARTIN EBENBERGER

Cervinka *et al.* (2014)
<http://bfw.ac.at/greencareforest>

Foreste e benefici per la salute e il benessere umani

Psychological effects



- ✓ Depression, mood and anxiety
- ✓ Mental relaxation, attention restoration
- ✓ Vitality and sense of well-being

Physiological effects



- ✓ Immune System (NKCells, Inflammation)
- ✓ Nervous System (cortisol, heart rate ratio)
- ✓ Cardiovascular system (blood pressure)
- ✓ Respiratory system
- ✓ General Health promotion

Social effects



- ✓ Social skills
- ✓ Emotional skills
- ✓ Self-esteem
- ✓ Creativity and Spirituality
- ✓ Positive behaviour towards nature and health

SENSORIAL DIMENSIONS



Visual dimension:
looking at different landscapes



Olfactile dimension:
inhaling essential oils



Auditive dimension:
sounds of the forest



Tactile dimension:
touching woods, soil and plants

Doimo, 2021

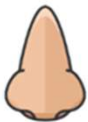
Dimensioni e aspetti forestali rilevanti in letteratura



Species and Management (thinned vs unthinned; wild vs managed/urban; different landscapes composition)

--> no particular differences

***Lee et al. (2018)** wild forest higher positive effects on cortisol and metabolism



Positive effects of **inhaling** phytoncides (essential oils) --> increase in NK Cells number and activity



Positive effects of touching wood or wood panels on relaxation

Positive effects of indoor vision of images; positive effects of viewing a forest landscape vs a different one



- Mainly in reviews
- Listening of sea sounds vs forest sounds according to the personal preferences --> both positive effects (Tsutsumi et al., 2017)

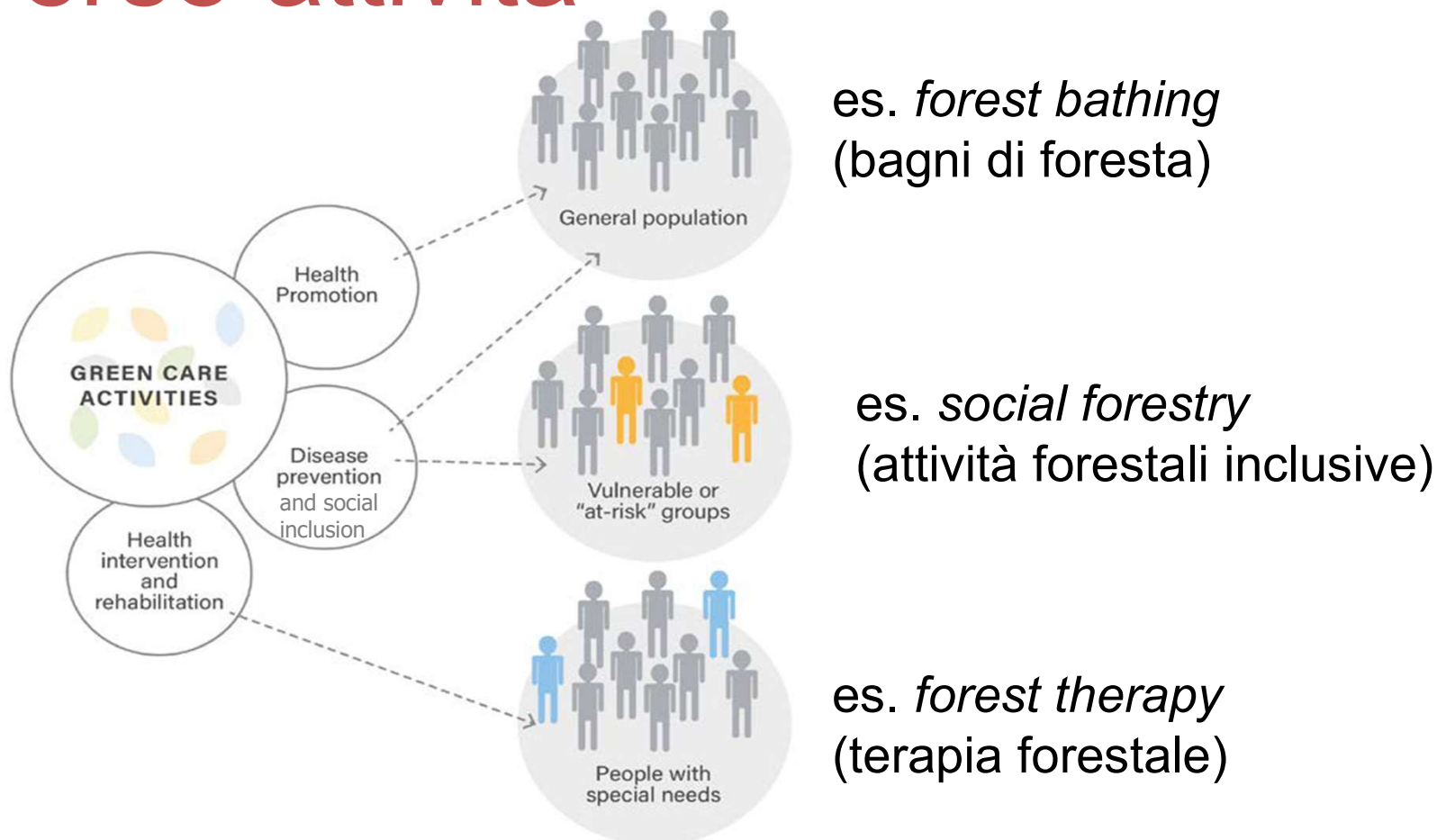


Different individual traits or health conditions may influence the effects
Preference counts



Doimo, 2021

Diverse finalità, diversi *target*, diverse attività



Modificato da Mammadova *et al.*, 2021 (Green4C project)

Esempio 1

Forest bathing e forest therapy

In senso ampio: entrare a contatto e in relazione con la foresta (Park *et al.*, 2009; Akakabe, 2010 e 2012; Nakagawa *et al.*, 2015; Sawada *et al.*, 2016; Kawai e Miyachi, 2016)

In senso stretto: contatto con le risorse forestali per trarne beneficio in termini di salute fisica/mentale

Forest therapy: Trattamento terapeutico che attinge ai benefici derivanti dal contatto con la foresta, definito sulla base dei bisogni di un determinato (tipo di) utente (Bröderbauer, 2015; Uehara, 2017)

Esempio 2

Social forestry

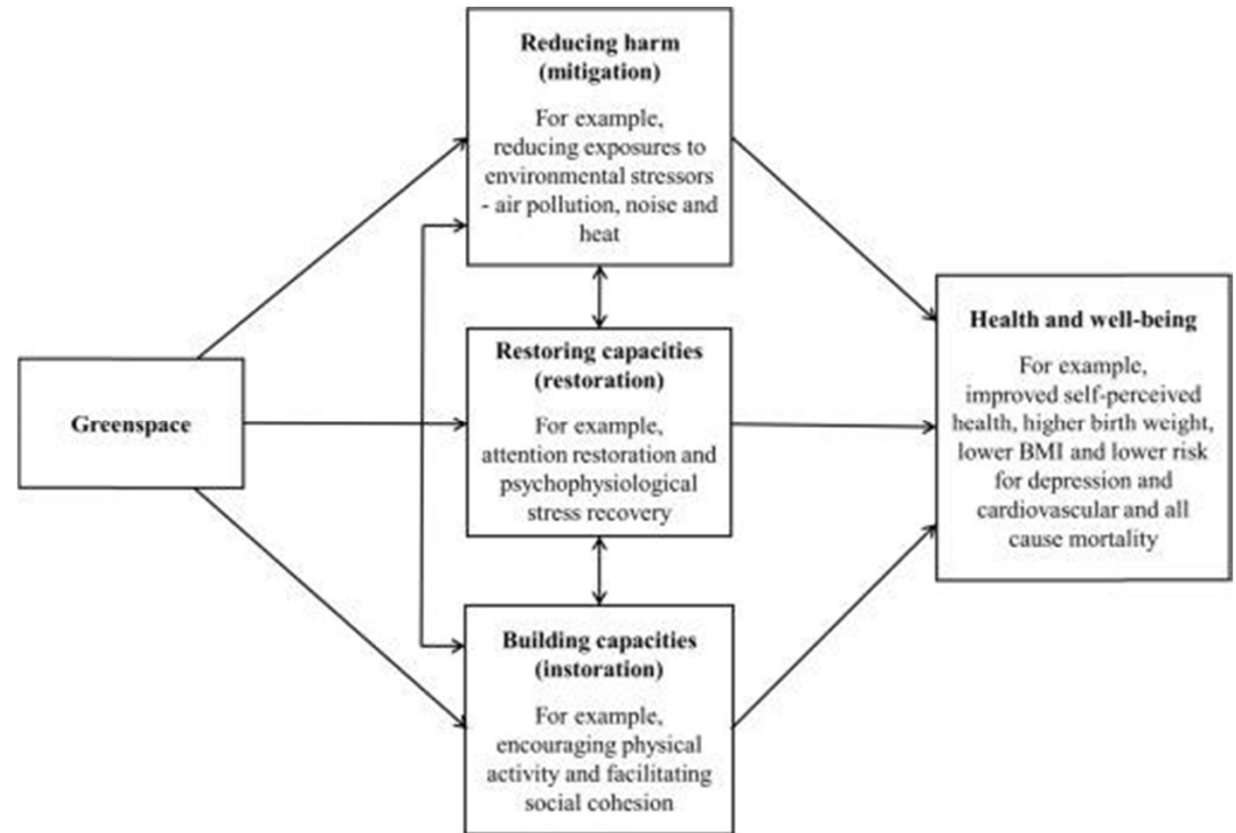


Formazione, progetti e opportunità di impiego per giovani disoccupati (15-24 anni in particolare) a rischio di esclusione sociale, es. immigrati, persone con problemi di dipendenze...

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

Nature and Health

- Biophilia (Wilson, 1984)
- Stress reduction Theory (Ulrich, 1991)
- Attention restoration Theory (Kaplan, 1995)
- Nature Deficit Disorder (Louve, 2006)
- Nature Therapy (Song, 2016; Oh et al., 2020) and evidence-based medicine spreading from Japan



Markievich et al., 2017

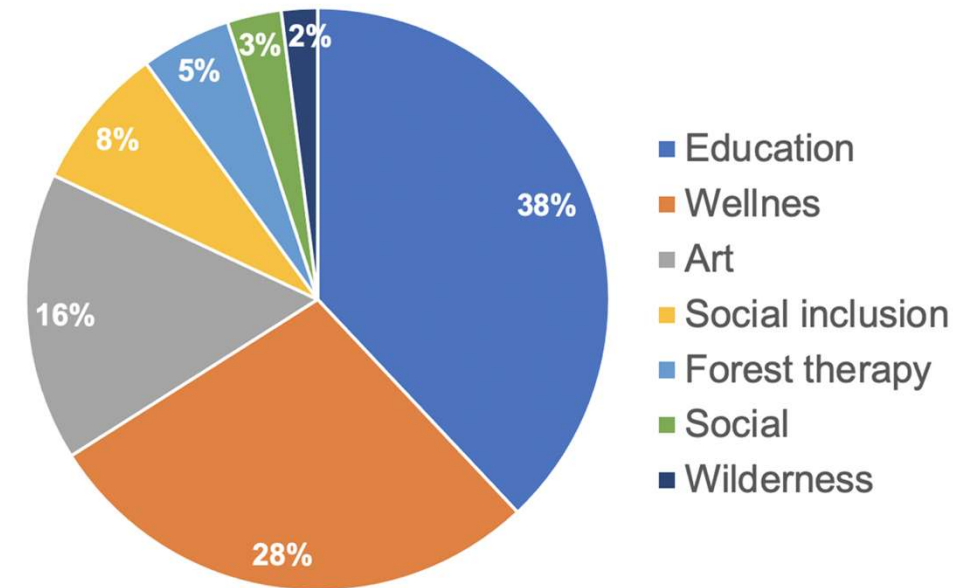
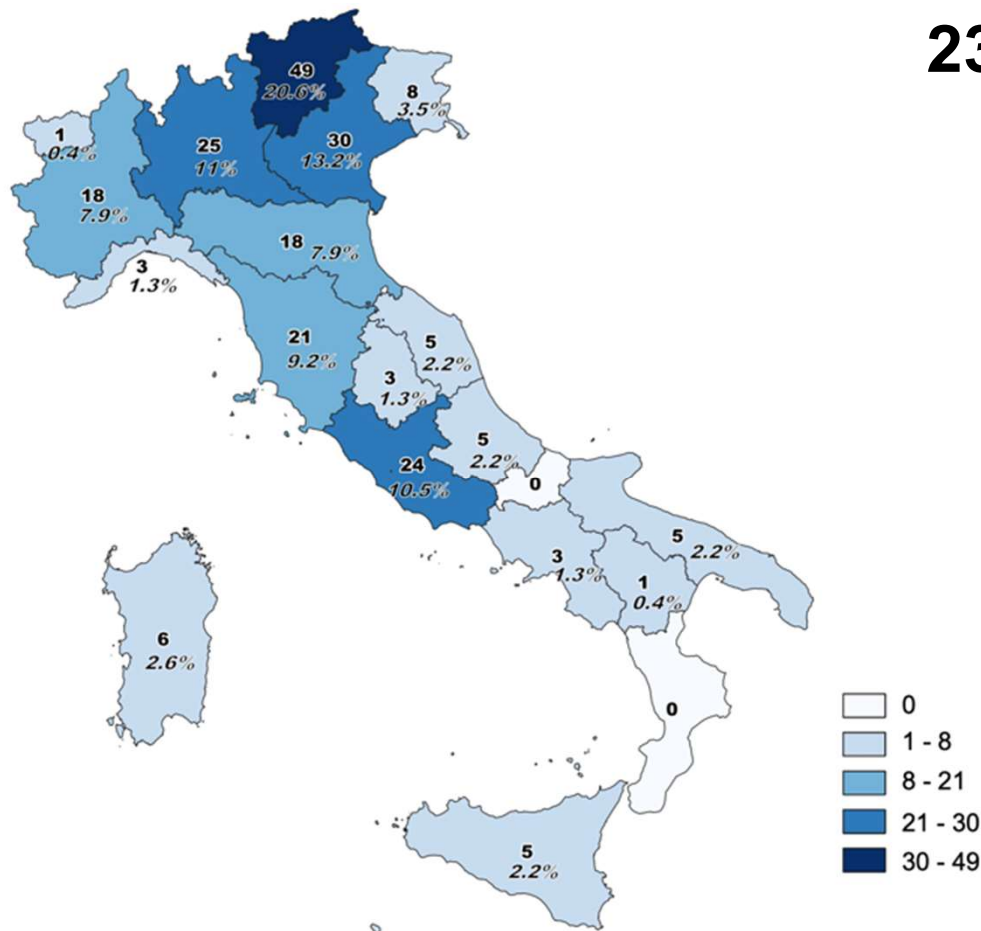
Attività di ricerca del Dipartimento TESAF

Alcuni esempi

- *Forest and wellbeing: success factors and challenges of emerging Forest Care Initiatives (FCIs) – Dottorato di ricerca LERH XXXIII ciclo*
- *Green for Care (Green4C) - Erasmus+*
- *Tesi di laurea*
- *Altre proposte progettuali in corso (H2020)*

Iniziative di forest-care e socio-culturali in Italia (Doimo *et al.*, 2021)

232 iniziative individuate e analizzate



55% privati no-profit + **32%** privati for-profit
77% società civile + **18%** *partnership* miste

Terza missione

Supporto alla gestione forestale orientata a nuovi usi del bosco, verifica impatti della gestione, *green care* nell'offerta di destinazioni turistiche, sensibilizzazione e divulgazione...



Cresci un albero Compensa la CO2 Aree WOW Forestasi Racconti WOW   

Home / WOWnature, BE Happy!

WOWnature, BE Happy!

Una lezione di yoga per sostenere la nascita e la crescita del nuovo Bosco Fontaniva, parte delle attività del Parco Fiume Brenta: la più grande iniziativa di valorizzazione ambientale del medio Brenta, da Bassano del Grappa a Padova.



Sabato 4 settembre 2021 - dalle ore 15.30 | Campo dei Girasoli (Parco del Basso Isonzo, Padova).

Un pomeriggio immersi nel verde per pensare al proprio benessere e a quello della natura!



Martedì 24 agosto 2021, ore 17.30 - Faro di Bibione
Scopri di più su bit.ly/giratagliamento-21



Conclusioni

- Un **interesse crescente** verso i servizi ecosistemici culturali, le funzioni sociali delle foreste e il *green care*
- Necessità di **conciliare** bisogni diversi e politiche articolate (bioeconomia vs. altre funzioni)
- **Opportunità** di ricerca, es.
 - *pratiche gestionali/selvicolturali*
 - *modelli di business e organizzativi*
 - *impatti socio-economici (misurazione, verifica e certificazione)*
 - *applicazioni in aree rurali e urbane/perirubane (ruolo NBS) ...*
- Settore privato e società civile “apripista” e innovatori: possibilità di **partnership pubblico-privato**: un (nuovo) ruolo attivo per la Pubblica Amministrazione)
- Un possibile ruolo di «**cerniera**» per il mondo della ricerca