



Ukrainian National Forestry University  
Lviv, 11.10.2018

## **Towards the de-materialisation of the forest economy: which potentials and challenges for teaching and job creation services?**

Daive Pettenella, Mauro Masiero and Laura Secco  
University of Padova, Italy

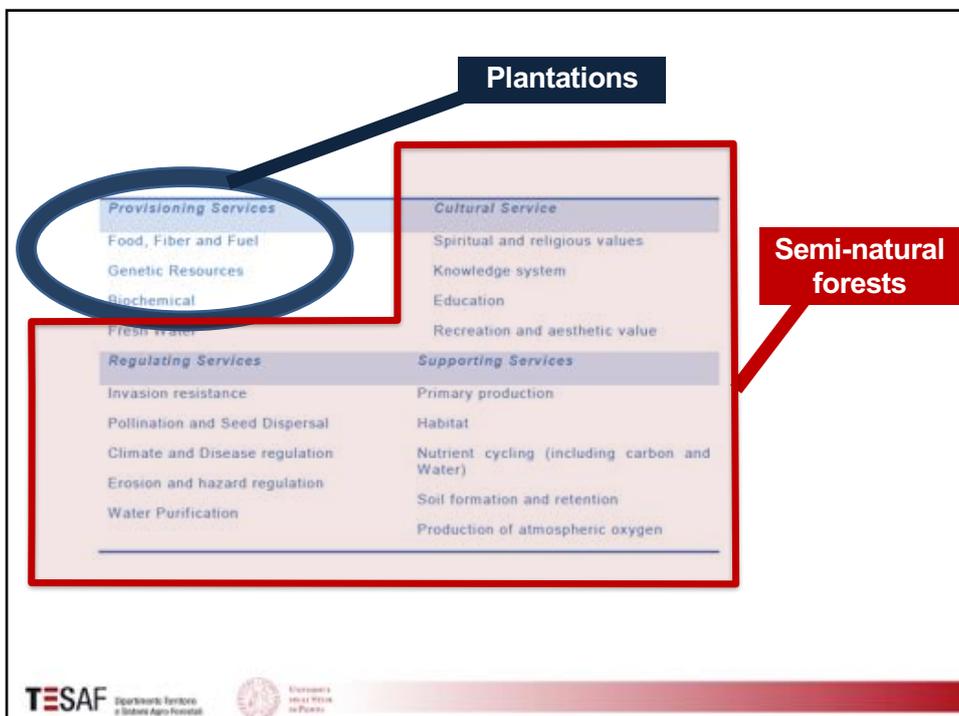
### **Outline**

1. Background: new patterns in the demand of forest products and services
2. Some examples
3. How to support nature-based entrepreneurship
4. Final remarks

Presentation available on the web. Search for "pettenella"

1. **Background: new patterns in the demand of forest products and services**
2. Some examples
3. How to support nature-based entrepreneurship
4. Final remarks

**THE NATURE-ACCELERATOR**



## Role of plantations in some European countries (Martinez de Arano et al., 2018 and Pra, 2018)

- **75%** of Portuguese and Spanish industrial roundwood production
- **42%** of the total French softwood production
- In Italy: **50-70%** of industrial roundwood production is coming from **60-80,000 ha** of poplar plantations (**50-30%** from the **11,8 million ha** of semi-natural forests)

## Forest products and services: new demand patterns in an affluent society

Provisioning services: slowly increasing final demand of wood + **recycling and substituting**

↑  
Circular economy

## An increasing role of recycling and substituting solid wood products with products made with reconstructed products

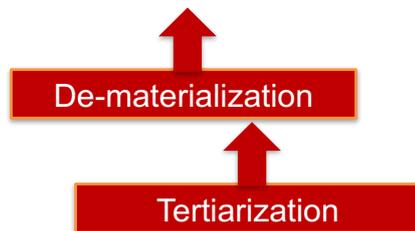
**Circular economy: already very high performances in the forestry sector!**

Production, import and export of industrial roundwood in Italy and other wood raw materials (million cm - 2016)

	production	import	export	Apparent consumption	coeff. cm. eq.	%
Industrial roundwood (cm)	2.36	2.91	0.17	5.11	1	15.4%
Chips, particles, wood waste (cm eq.)*	1.06	0.18	0.19	1.04	0.625	3.1%
Recovered fibres from pulp and paper production (cm eq.)	8.45	0.01	0	8.46	2.16	25.5%
Waste paper and paperboard (cm eq.)	24.62	1.32	7.37	18.57	3.8	56.0%
<b>Total wood raw material for industrial use</b>	<b>36.49</b>	<b>4.42</b>	<b>7.74</b>	<b>33.17</b>		<b>100%</b>

## Forest products and services: new demand patterns in an affluent society

Increasing demand for "cultural services"

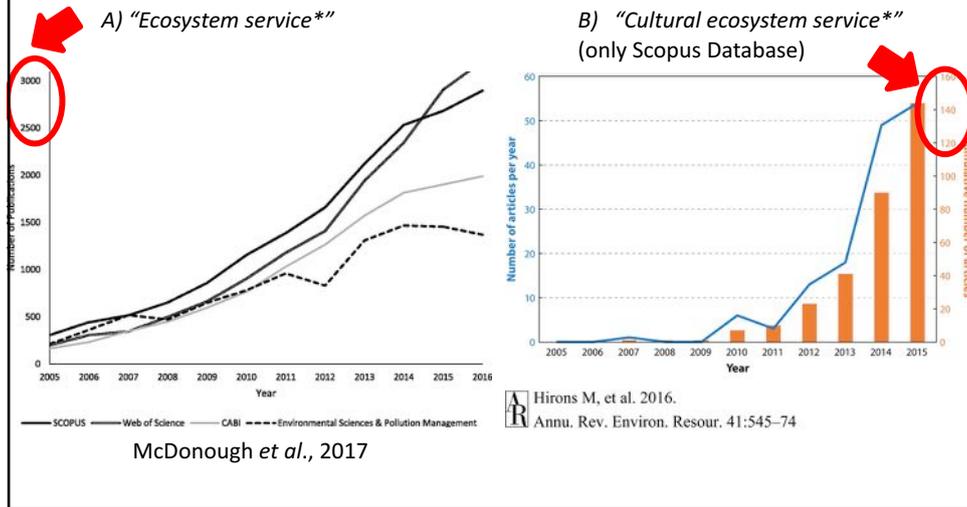


Division	Group	Class
Physical and intellectual interactions	Physical and experiential interactions <sup>a</sup>	Experiential use of plants, animals, and land-/seascapes in different environmental settings
		Physical use of land-/seascapes in different environmental settings
	Intellectual and representative interactions <sup>b</sup>	Scientific
		Educational
		Heritage, cultural
		Aesthetic
		Entertainment
Spiritual and symbolic <sup>c</sup>	Spiritual and/or emblematic	Symbolic
		Sacred and/or religious
	Other cultural outputs	Existence
		Bequest

Source: Hiron et al., 2016

## Unfortunately research and educational institutions are not pro-active

Number of scientific publications on “Ecosystem services” and “Cultural ecosystem services” (Title, abstract and key-words)



## Markets surveys for supporting/regulating services in Europe (no comprehensive survey on cultural services market yet)

**STATE OF EUROPEAN MARKETS 2017**  
Voluntary Carbon

**STATE OF EUROPEAN MARKETS 2017**  
Watershed Investments

**STATE OF EUROPEAN MARKETS 2017**  
Biodiversity Offsets and Compensation

[www.ecostarhub.com](http://www.ecostarhub.com)  
[www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com)

**A raising awareness by international organizations**



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

Ministero delle Politiche Agricole, Alimentari e Rurali



UNITED NATIONS

1. Background: new patterns in the demand of forest products and services
2. **Some examples**
3. How to support nature-based entrepreneurship
4. Final remarks

**THE NATURE-ACCELERATOR**

## Sport activities



## A model example

### Active Forest pilot program (UK), 2014-2017:

- 5 sites monitored
- >700,000 visitors
- 1/3 families with kids <16 years
- >90% new visits in the forest within 3 months
- 2<sup>nd</sup> phase (2017-2022): 20 sites monitored

www.forestry.gov.uk/fr/bee-h-a3hmk  
Report: O'Brien & Forster, 2017

## Single sport events

<http://trailsacredforests.com>

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



## Adventure parks



More 220 sites in Italy  
(April 2018)



[www.parchiavventuraitaliani.it/](http://www.parchiavventuraitaliani.it/)

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



## Adventure parks



## Forest experiences for health and happiness

BBC Sign in News Sport Weather Shop Earth Travel

earth

Home Attenborough's Story of Life Big Questions Discoveries Video Earth

Nature Nature & Outdoors Health

### How nature is good for our health and happiness

We all intrinsically think that nature must be good for our health and happiness. A recent analysis of a large-scale nature challenge scientifically shows how important feeling part of nature is to our physical and mental health

f t

www.bbc.com/earth/story/20160420-how-nature-is-good-for-our-health-and-happiness

BBC Sign in News Sport Weather Shop Earth Travel M

NEWS

Home Video World UK Business Tech Science Stories Entertainment & Arts

MAKE YOUR VOICE HEARD Tell us your thoughts about our services

Science & Environment

### Can you prescribe nature?

By Helen Briggs BBC News

8 July 2015

f t

Taking a walk in the forest reduces negative thought patterns

"Here's your prescription, walk in the forest five times a week for an hour."

www.bbc.com/news/science-environment-33368691



## Forest bathing Shinrin-yoku (森林浴)

(Park *et al.*, 2009; Akakabe, 2010 e 2012;  
Nakagawa *et al.*, 2015; Sawada *et al.*, 2016;  
Kawai e Miyachi, 2016)



### Introductory Videos on Shinrin-yoku Forest Therapy



Introduction to Shinrin-yoku, by M. Amos Clifford. Voice over a slide show of nature images photographed in Sonoma County.



Introduction to Forest Therapy, taped during a guide training session in September of 2014 in Sonoma County.



United States segment from a Korean Broadcasting System documentary looking at Forest Therapy in the U.S., Japan, and Korea.

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

## Forest therapy (Bröderbauer, 2015; Uehara, 2017)

ASSOCIATION OF  
Nature & Forest Therapy  
GUIDES & PROGRAMS

HOME ABOUT THE ASSOCIATION THE SCIENCE GET STARTED WORKSHOPS AND RETREATS BECOME A GUIDE BLOG CONTACT

The medicine of being in the forest  
We are the leading global voice for forest bathing and forest therapy

FREE FOREST THERAPY STARTER KIT

The Forest is the Therapist. The Guide Opens the Doors.  
-M. Amos Clifford, Founder of the Association of Nature and Forest Therapy Guides and Programs

www.natureandforesttherapy.org

A Little Handbook  
of Shinrin-Yoku

M. Amos Clifford  
www.shinrin-yoku.org

**Read more: order the Little Handbook of Shinrin Yoku.**

Written for leaders of Shinrin-Yoku walks, this book includes a philosophical as well as scientific basis for Shinrin-Yoku. The form of Shinrin-Yoku practice it describes draws on a wide range of nature connection and healing practices from many cultures.

The author, M. Amos Clifford, has been a wilderness guide and nature connection mentor for over 40 years. He succinctly describes core activities and how to use them safely in the field. These include sample activities to engage each of eight senses and build personal relationships with nature. The booklet is 40 pages, making it easy to read. It contains recommendations for in-depth reading.

Paperback, saddle-stitched, 40pp.  
The price includes shipping via U.S. Postal Service.  
Please allow 2-4 weeks for delivery.  
Outside the U.S. \$13 USD\*

\*Shipping not included

Buy Now

Within the "sec" Buy No

REAL MUSIC

Forest Bathing  
A COLLECTION

Benefits measured with the *Quality-Adjusted Life Years (QALYs)* indicator  
Cost/QALY = **50% of the costs** for ordinary treatments

# Social forestry



## Arbeitsort WALD



**Inclusion of unemployed, disabled, elderly people, prisoners, ...**

Menschen ohne Beschäftigung wünschen sich meist nichts sehnlicher, als endlich wieder arbeiten zu dürfen. Mit Arbeit geht nicht nur finanzieller Verdienst einher, Arbeit wirkt sinnstiftend und hilft sich als aktiver Teil der Gesellschaft zu empfinden.

Der Wald kann Ort für solche Beschäftigungen sein und Türen in neue Arbeitswelten öffnen.

### Kooperationspartner gesucht!

Wir suchen Waldbesitzerinnen und -besitzer sowie Forstbetriebe, die ein Zeichen für soziale Verantwortung setzen möchten und arbeitssuchenden Menschen beim Wiedereinstieg in den Arbeitsmarkt unter die Arme greifen wollen. Sinnvolle Beschäftigungsmöglichkeiten in der Land- und Forstwirtschaft für Menschen mit Behinderung sind ebenfalls ein wichtiger Tätigkeitsbereich von Green Care.

### Praxisbeispiele

Der Wald kann auf vielseitige Weise Ort für sinnstiftende Betätigungen sein:  
Soziale WALDarbeit  
Der Wald als Ort der Begegnung

MIT UNTERSTÜTZUNG VON BUND, LÄNDERN UND EUROPÄISCHER UNION



<https://bfw.ac.at>



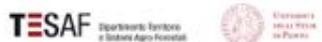
**Green care forest program** by the Austrian Research centre for Forests (BFW) with the use of EU Rural Development funds



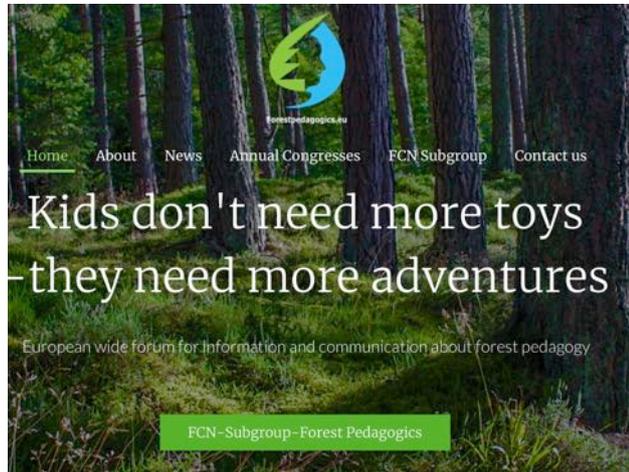
### Green Public Health - Benefits of Woodlands on Human Health and Well-being

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

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



## Educational activities Forest schools



<http://forestpedagogics.eu>



### Bundesverband der Natur- und Waldkindergärten in Deutschland e.V.



Startseite Fachtagung 2017 ÜBER UNS BNE-PROJEKT DER BvNW KONTAKT IMPRESSUM

- Rund um den Natur- und Waldkindergarten**
- Stellenangebot
  - Angebote eintragen
  - Weiterbildung
  - Wiss. Studien
  - Natur- und Waldkindergärten
  - Gründen, Verein & Co.
  - Waldtage-Waldwochen
  - Kontakt & Netzwerken
  - Bildung & Gesundheit
  - Petition & Kampagne
  - Waldbewerte
  - Fachzeitschriften
  - Fachtreff
  - Literatur
  - Film & Audio
  - Dies & Das
  - Archiv -> Aus der Praxis
  - Archiv -> Pädagogik
  - Archiv -> Medien & Umwelt

#### BvNW NEWS

Bei uns finden Sie Aktuelles aus der Welt der Natur- und Waldkindergärten. Bei uns finden Sie Aktuelles aus der Welt der Natur- und Waldkindergärten. Bei uns finden Sie Aktuelles aus der Welt der Natur- und Waldkindergärten.



#### Campfire Kids

#### Going Back to Nature with Forest Kindergartens

Radical back-to-nature forest kindergartens where children are allowed to climb trees and play with fire have spread across the country. Will the concept of the *Waldkindergarten* become Germany's next export success?

By Rupert Neate



German 'Wald kindergarten' Association  
[www.bvnw.de](http://www.bvnw.de)

[www.spiegel.de/international/zeitgeist/forest-kindergartens-could-be-the-next-big-export-from-germany-a-935165.html](http://www.spiegel.de/international/zeitgeist/forest-kindergartens-could-be-the-next-big-export-from-germany-a-935165.html)

First examples in **DK in the '50s**, now in Scandinavian countries, UK, G, ...

**German model** exported in JAP, CAN, USA,

FRILUFTSFRÄMJANDET
LÅT ÄVENTYRET BÖRJA
ENGAGERA DIG
DETTA GÖR VI

VÅR VERKSAMHET
FRILUFTSAKADEMIN
FÖRSKOLOR OCH SKOLOR
SAMHÄLLSPÄVERKAN
OM OSS



**UK** - [www.forestschoollassociation.org](http://www.forestschoollassociation.org)



**Sweden** - [www.friluftsfraamjandet.se/iurochskur](http://www.friluftsfraamjandet.se/iurochskur)



**Checz Rep.** - [www.lesnims.cz](http://www.lesnims.cz)



**Forest Kindergarten  
International  
Federation**  
@forestkindergartenintern  
ationalfederation

[www.facebook.com/forestkindergarteninternationalfederation/](http://www.facebook.com/forestkindergarteninternationalfederation/)

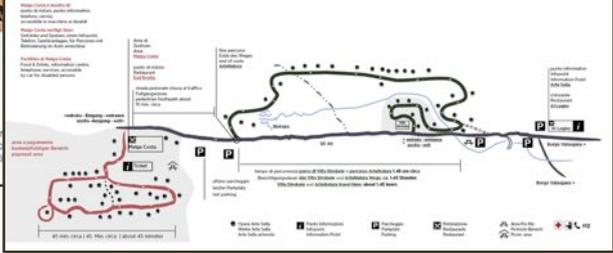
HOME CHI SIAMO COSA FARE INFO MULTIMEDIA PARTNER EN

**ARTESELLA**  
THE CONTEMPORARY MOUNTAIN



**Nature art**

Artesella: the contemporary mountain. Un processo di cammino trentennale ha visto incontrarsi linguaggi artistici accomunati dal desiderio di interessare un fecondo e contornato mondo naturale.



[www.artesella.it](http://www.artesella.it)

Started in 1986  
200,000 visitators/year

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

Università degli Studi di Padova

**Forest concerts**



**I SUONI DELLE DOLOMITI**  
Dal 30 giugno al 31 agosto 2018

[www.isuonidelledolomiti.it/](http://www.isuonidelledolomiti.it/)

**4 GIUGNO | ORE 10 | CONCERTO TREKKING**  
UNA FORESTA DI SUONI, LA MUSICA IN CAMMINO PER SASSO FRATINO

3ª EDIZIONE  
1 giugno - 22 luglio  
24 novembre - 2 dicembre

**RAVENNA FESTIVAL**

**CONCERTO TREKKING per SASSO FRATINO**  
4 giugno 2017 @ 10:00 - 17:00

[www.ravennafestival.org](http://www.ravennafestival.org)

## Burial/funeral forests

The screenshot displays the website for Boschi Vivi, which offers burial services for pets. The main navigation includes Home, Chi siamo, Servizio, Prenota, Animali, News, and Contatti. A prominent banner features a close-up of a cat's face with the text "UN GESTO D'AMORE PER IL TUO AMICO ANIMALE". Below this, a central message states: "Boschi Vivi offre la possibilità di interrimento delle ceneri del tuo animale".

The website is divided into four columns describing different types of trees:

- I NOSTRI ALBERI**: "Gli alberi che puoi scegliere sono di diverse tipologie: l'albero di comunità, l'albero personale e l'albero partner."
- 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."
- ALBERO PERSONALE**: "È la scelta ideale per chi ama un contatto personale e diretto con la natura."
- ALBERO PARTNER**: "Questo tipo di albero è l'ideale per una coppia che desidera condividere la memoria del proprio amore attraverso un tramite speciale."

The URL <http://boschivivi.it> is visible at the bottom left.

The collage consists of several photographs: a group of hikers in a forest, two children in raincoats examining a tree stump, a woman jogging on a forest path, a group of people sitting on the forest floor for an educational session, and two children on a rope bridge. At the bottom right, a green banner reads "THE NATURE-ACCELERATOR".

1. Background: new patterns in the demand of forest products and services
2. Some examples
3. **How to support nature-based entrepreneurship**
4. Final remarks

## ECOSTAR Erasmus+ KA project

### Partners



UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA



Co-funded by the  
Erasmus+ Programme  
of the European Union



52

## 1<sup>st</sup> step Training Needs Assessment in EU

Entrepreneurship gaps in **14 forestry departments**:

- Evaluation of university commitment to entrepreneurship education: **medium-low**
- **80%** of respondents consider that entrepreneurship could be a useful field of study within their university curriculum
- **27%** with specific courses made available by their university (**12%** within their faculty/school)

More info at: [www.ecostarhub.com/reports/](http://www.ecostarhub.com/reports/)



53

## 2<sup>nd</sup> step: an e-course

aimed at guiding **students and professionals** to acquire high level **entrepreneurial skills** by working **with private sector**, to convert innovative ideas into successful **business plans** for **impact investments**, in the field of **natural resources**



**E-LEARNING COURSE**  
2<sup>ND</sup> EDITION

**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

<https://www.ecostarhub.com/>



- **4 partner Universities**

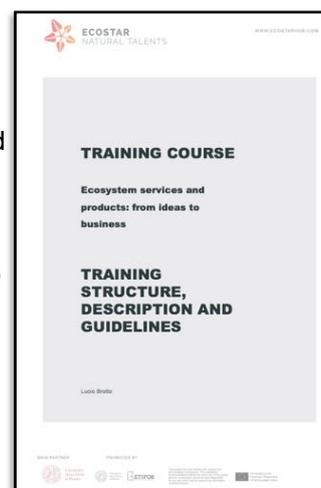
- UNIPD, Italy
- Madrid, Spain
- Brasov, Romania
- Manchester, UK

- **15 e-moderators** (1 coordinator, 1 assistant coordinator, lecturers: initially trained for consistency in the approach)

- **150 learning hours/student** (30 direct online interaction with e-moderators/lecturers)

- **6 to 7.5 ECTS**

- **5 online e-modules + assignments**



**E-learning course - Ecosystem services and products: from ideas to business. Program and timetable 2017-2018 (6-8 ECTS)**

Module title	Expected learning outcomes	E-lessons (BP = component of Business Plan)	Modality	Timetable	Developer & E-lecturer
1: Are you innovation friendly?	<ul style="list-style-type: none"> <li>Moodle platform</li> <li>understand course structure</li> <li>socialize with e-fellows</li> </ul>	1.1 Log in and answer the welcome letter 1.2 Have you ever seen innovation and entrepreneurship?	Web surfing	1 week Monday 16/10 Friday 20/10	DEVELOPER 2 Italy (Lucio & Coim) E-LECTURER 3 Spain + 3 Italy
2: Entrepreneurship ecosystem	<ul style="list-style-type: none"> <li>Understand regulatory frameworks</li> <li>Comprehend market forces</li> </ul>	2.1 How to become an entrepreneur: definition, legal, taxation, and consultancy. <a href="#">Business plan</a>	Web surfing and law studies	1 week Monday 23/10	DEVELOPER 1 Spain (Pablo)
3: Market outlooks	<ul style="list-style-type: none"> <li>learn key concepts and trends of ecosystem services markets</li> <li>overview of voluntary, regional and domestic initiatives</li> </ul>				(Enrico) n + 2 Italy
4: The business idea	<ul style="list-style-type: none"> <li>get familiar with business plan</li> <li>learn from best European business plan examples</li> </ul>	CANVAS model (BP)		Friday 17/11	E-LECTURER 2 Spain + 2 Italy
5: Let's focus	<ul style="list-style-type: none"> <li>Examine two selected topics among the 8 proposed</li> <li>Develop a business idea</li> </ul>	5.1 Sector innovations and trends 5.2 Draft business idea (BP) 5.3 SWOT analysis (BP)  Choose 2 (??) topics: 1) natural capital 2) economic evaluation 3) wild forest products 4) investments 5) payment ecosystem services 6) forest certification 7) carbon market 8) ecotourism.	Group work	2 weeks Monday 20/11 Friday 1/12	DEVELOPER & E-LECTURER 1 Italy + 1 UK + 1 Romania 1 Spain
6: Final Examination		6.1 Individual assignment: development of business plan idea using the CANVAS model (1000 words) (BP) <a href="https://docs.google.com/drawings/d/102mQZCmMwa0CalmNsPZ5KCNQwAih9rh4baYgT0VWNAU/template?prview?usp=drive_web">https://docs.google.com/drawings/d/102mQZCmMwa0CalmNsPZ5KCNQwAih9rh4baYgT0VWNAU/template?prview?usp=drive_web</a>		2 weeks, Monday 4/12, Friday 16/12	
RESULTS OF FINAL EXAMINATION		UNIPO & UPM give marks & comments on assignment to students (includes a proposal for next step)			Evaluated by E-LECTURERS 1 Italy + 1 Spain. Grades by 31/01/2018
COURSE EVALUATION BY STUDENTS		Students fill in an on-line form (anonymous)			By 16/12

**Evaluation of participants' performance:**  
**25% active online participation**  
**25% mid term evaluation**  
**50% final examination**

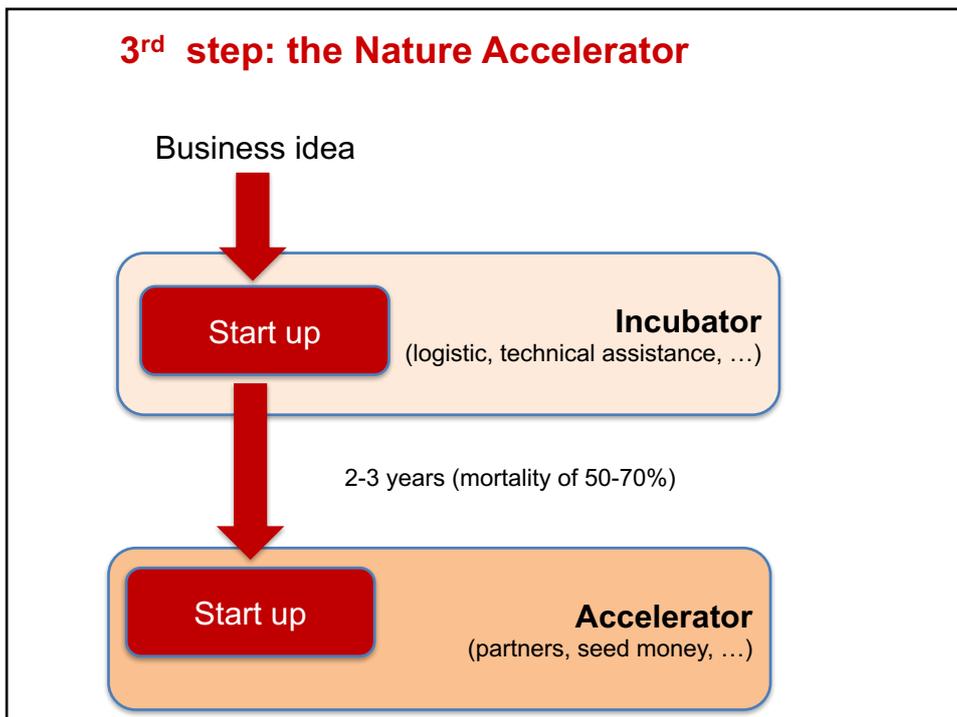



**Participants:**

- 171 involved participants & lecturers
- **156 enrolled participants**
  - 67% students formally enrolled in a University (BS, MSc and PhD)
  - 33% non students (e.g., entrepreneurs)
- 135 active participants
- **69 participants who completed the e-course (51.1 %)**
- 26 nationalities (9 EU countries)

**Level of satisfaction (anonymous evaluation form):**

- **93% of participants are satisfied**, the e-course met their expectations
- 78% of participants think there is not much duplication/repetition of contents with other courses



## University of Padova incubator

HOME
IP AND PATENTS
INNOVATION CONSULTING
COMMUNITY
NETWORKING SERVICES
CONTACTS
ENGLISH

**No organization can thrive without innovation**  
Without knowledge, there can be no innovation

Ideas and skills that make your company grow. Become a Partner of the innovation community built around the University of Padova.

**IP AND PATENT**

Unismart is the licitrasfer company of the University of Padova responsible for commercializing its technologies and inventions, protected by over 500 National and international patents.

CHECK OUT THE IP LIST

**CONTRACT RESEARCH**

Unismart exploit the skills, resources and facilities of the University's research groups to set up multidisciplinary research projects commissioned by innovation-seeking companies.

SEE HOW IT WORKS

**INNOVATION CONSULTING**

Technology scouting; strategic product and service roadmaps; Business models and go-to-market strategies including "smart" legal; innovation financing and strategy towards H2020 and EU funding instruments; hackathon and idea contest with talents and much more.

[www.unismart.it/en/](http://www.unismart.it/en/)

### 3<sup>rd</sup> step: the Nature Accelerator



Join Learn Grow About us Stories Contacts

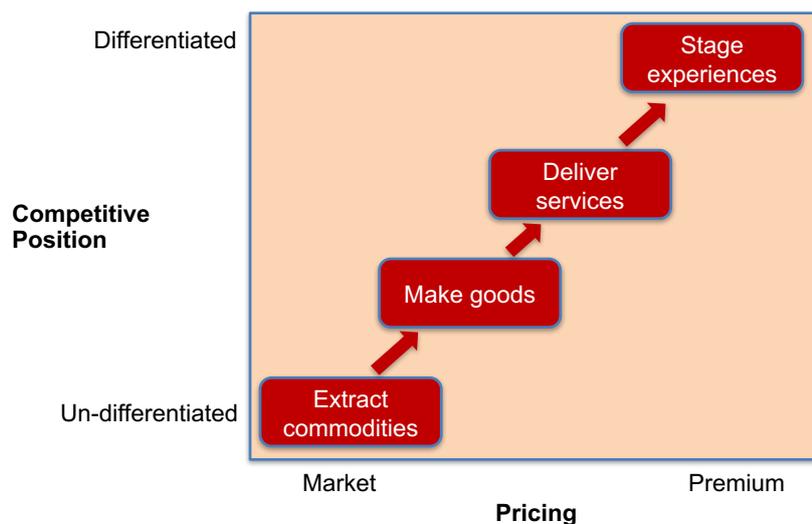


[www.ecostarhub.com](http://www.ecostarhub.com)

1. Background: new patterns in the demand of forest products and services
2. Some examples
3. How to support nature-based entrepreneurship
4. **Final remarks**

- Still **great emphasis on provisioning and regulating/supporting services** by policy makers, academia and forest institutions
- **Several examples of niche, very innovative cultural services**, rarely the outcomes of formal educational programs run by the forest schools
- To promote these services we need to **integrate our curricula** with topics related to entrepreneurship creation and in such a way discover **new links between university and the job market**
- More generally, we need to **give new values** to forest products and services...

## The progression of economic value



...giving new values with a **change** in the economic approaches

- Provisioning services ← Neo-classical economics  
Societal marketing
- Regulating services (mainly non priced P&S) ← Environmental economics
- Cultural services ← Experience economics (Pine and Gilmore, 1999 and 2011)



We still have quite a lot to discover assuming a long-term and wide perspective

