



AvH Kolleg 2018  
"Sustainable Development and Climate Change:  
Connecting Research, Education, Policy and Practice"

## Marketing ecosystem services: from business ideas to the real market

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

TESAF

Department of Agriculture  
and Food Sciences



Università  
di Padova

### 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

TESAF

Department of Agriculture  
and Food Sciences

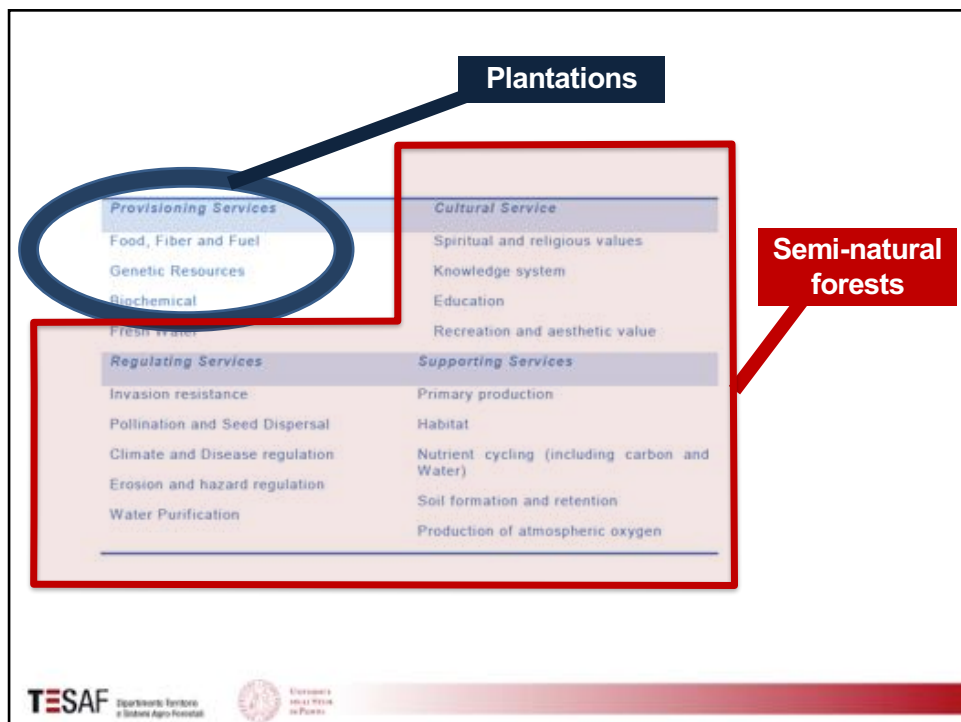


Università  
di Padova



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>

TESAF

Department of Forestry  
in Southern Agro-Forestal



University of Palermo  
Faculty of Forestry

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

Increasing demand for  
“cultural services”

De-materialization

Tertiarization

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
Spiritual and symbolic <sup>c</sup>	Spiritual and/or emblematic	Aesthetic
		Entertainment
		Symbolic
	Other cultural outputs	Sacred and/or religious
		Existence
		Bequest

Source: Hirons et al., 2016

TESAF

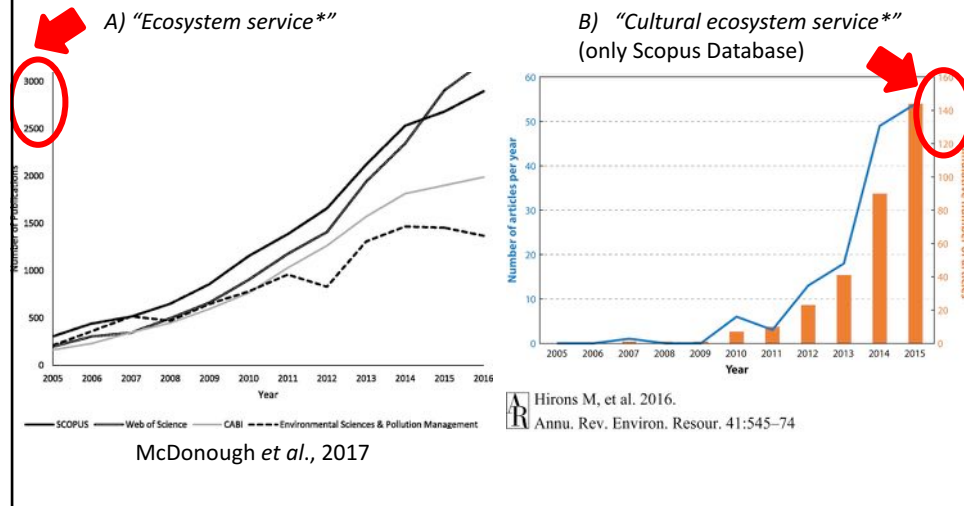
Department of Forestry  
in Southern Agro-Forestal



University of Palermo  
Faculty of Forestry

## 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)



**ECOSTAR**  
NATURAL TALENTS

**STATE OF EUROPEAN MARKETS 2017**  
Voluntary Carbon





**ECOSTAR**  
NATURAL TALENTS

**STATE OF EUROPEAN MARKETS 2017**  
Watershed Investments





**ECOSTAR**  
NATURAL TALENTS

**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



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

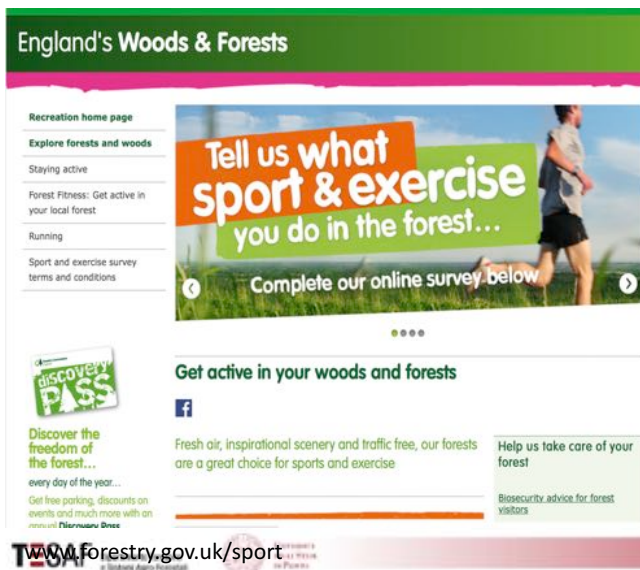




**THE NATURE-ACCELERATOR**

## 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



**2018 TRAIL SACRED FORESTS**

TI ASPETTIAMO IL 26 MAGGIO PER GIOIRE ANCORA ASSIEME

**SACRED FORESTS LONG TRAIL (OPEN)**  
50KM - 3.000D+ - 10-13 C, 12-13 Q, 2  
26 maggio 2018

**SACRED FORESTS TRAIL (OPEN)**  
34KM - 1.500D+  
26 maggio 2018

**SACRED FORESTS SHORT TRAIL (OPEN)**  
16KM - 800D+  
26 maggio 2018

**ECOCAMMINATA NORDIC WALKING (OPEN)**  
19KM - 45KM  
26 maggio 2018

**DOVE DORMIRE**

**DOVE SIAMO**

**FOTOGALLERY**

<http://trailsacredforests.com>

**TESAF**

Spazio Verde, Territorio  
e Sviluppo Agro-Forestale



Ministero  
dell'Agricoltura,  
della Pesca  
e delle Foreste

## Adventure parks



More 220 sites in Italy  
(April 2018)



**TESAF**

Spazio Verde, Territorio  
e Sviluppo Agro-Forestale



Ministero  
dell'Agricoltura,  
della Pesca  
e delle Foreste



## 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

**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

**30 DAYS WILD**

All our lives are better when they're a bit wild

**30 DAYS WILD**

This June, can you do something wild every day for 30 days?

g-da

elimpanda

## 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.



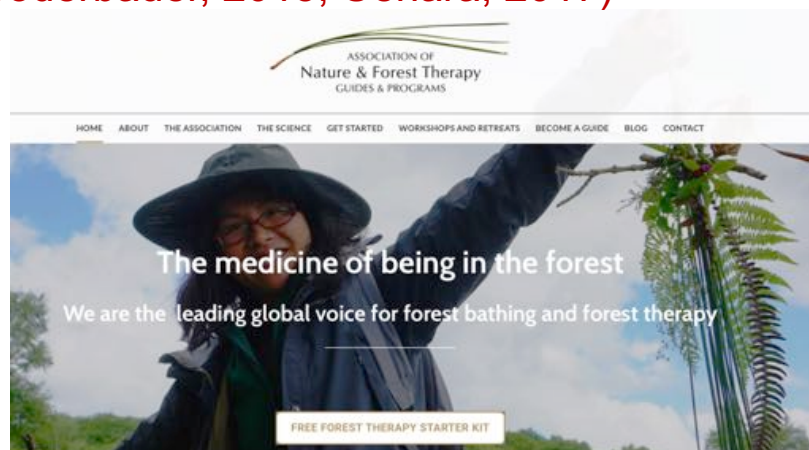
Introduction to Forest Therapy, taped during a guide training session in September of 2014 in Sonoma County.



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)

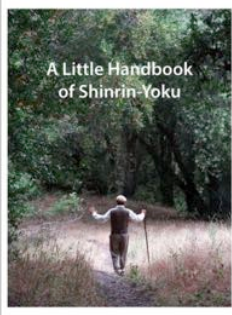
## Forest therapy (Bröderbauer, 2015; Uehara, 2017)



**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](http://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.

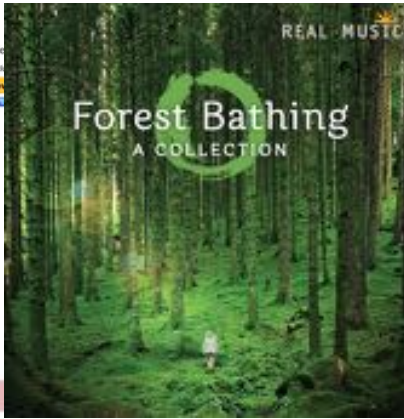
Paperback, saddle-stitched, 40pp.  
The price includes shipping via U.S. Postal Service.  
Please allow 2-4 weeks for delivery.




Outside the U.S. \$13 USD\*  
\*shipping not included

Within the U.S. \$13 USD\*  
\*shipping not included

**Buy Now**

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 arbeitsuchenden 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

BUNDEMINISTERIUM  
FÜR NACHHALTIGKEIT  
UND TOURISMUS

LE 14-20

Europäische Union  
Europäische Union

<https://bfw.ac.at>


TESAF

Österreichs  
Forstwirtschaft  
in Zukunft



Österreichs  
Forstwirtschaft  
in Zukunft







**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 ARBERGER, RENATE EDER, MARTIN EISENBERGER

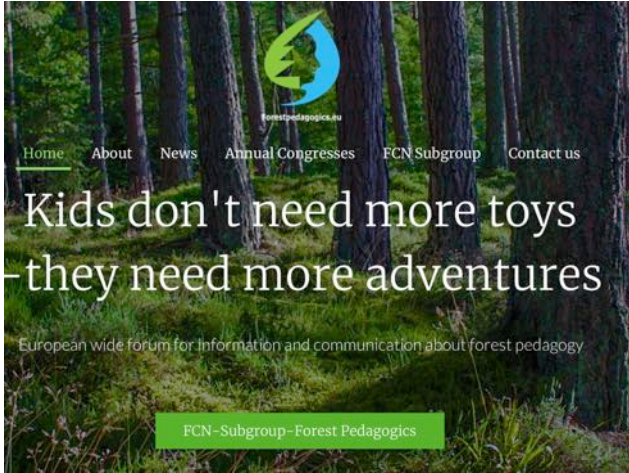
Cervinka *et al.* (2014)  
<http://bfw.ac.at/greencareforest>





**Educational activities**


**Forest schools**



**TESAF**

<http://forestpedagogics.eu>





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

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

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


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

**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




[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)

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




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



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




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



**ARTESELLA**  
THE CONTEMPORARY  
MOUNTAIN

HOME CHI SIAMO COSA FARE INFO MULTIMEDIA PARTNER EN

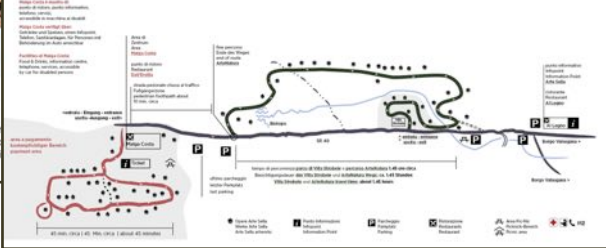


## Nature art

Artesella è un luogo di  
arte e natura, dove l'arte  
si fonde con la natura,  
creando un'opera  
irriducibile in cui arte e natura  
si fondono.

Artesella è un luogo di  
arte e natura, dove l'arte  
si fonde con la natura,  
creando un'opera  
irriducibile in cui arte e natura  
si fondono.


Artesella è un luogo di  
arte e natura, dove l'arte  
si fonde con la natura,  
creando un'opera  
irriducibile in cui arte e natura  
si fondono.




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

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

Started in 1986  
200,000 visitators/year

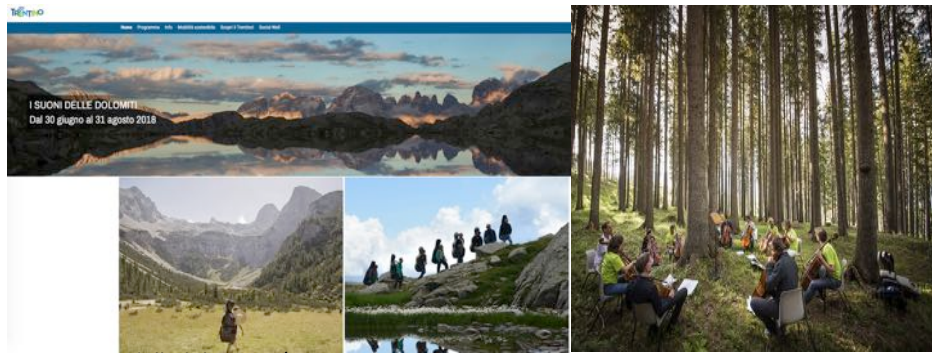


TESAF  
Società per Azioni  
di Sestri San Giovanni




Regione Trentino-South Tyrol

## Forest concerts

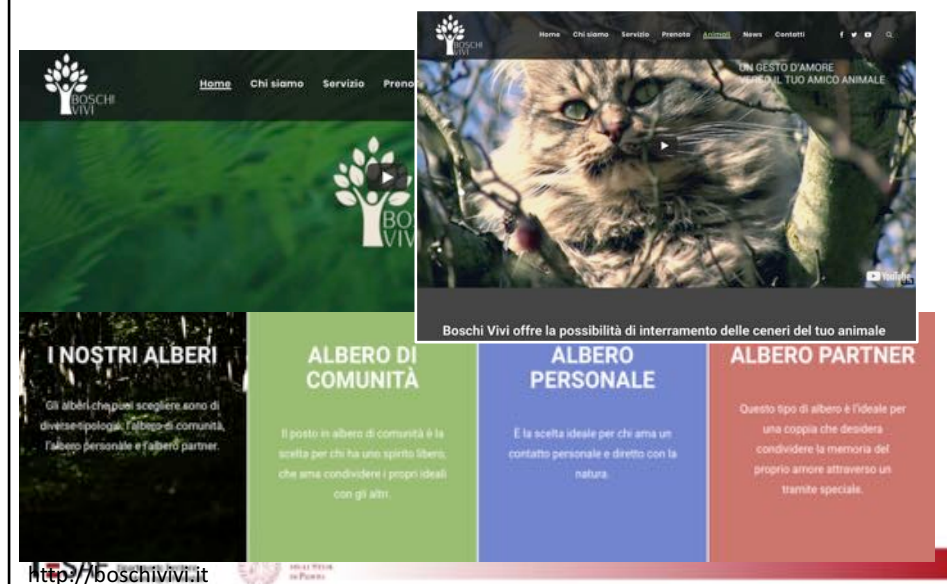


[www.isuonidelledolomiti.it/](http://www.isuonidelledolomiti.it/)



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

## Burial/funeral forests



<http://boschivivi.it>





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**

## ECOSTAR Erasmus+ KA project

### Partners



UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA



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



## 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/)

## 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**



ECOSTAR  
NATURAL TALENTS

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!

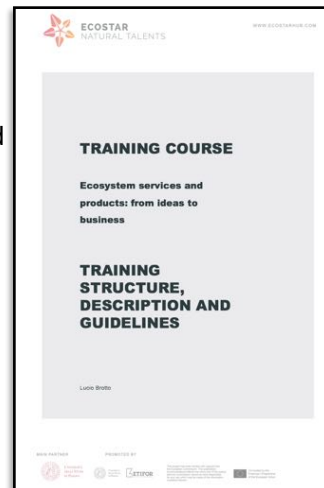
An online course providing continuous interaction with top international professors, experts and company directors specialized in the fields of forestry and ecosystem services and products.

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

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



**TESAF**

Spursione, Torino  
in Italia, Agri Forestali



Università  
di Padova

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 competition framework (BP)	Web surfing and law	1 week Monday 23/10	DEVELOPER 1 Spain (Coim)
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) 1 Spain + 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>			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/102mOZQmMux0CalmNaPZ5KCNQwA8h9u4baYgTOVWNAU/template?usp=drive_web">https://docs.google.com/drawings/d/102mOZQmMux0CalmNaPZ5KCNQwA8h9u4baYgTOVWNAU/template?usp=drive_web</a>		2 weeks, Monday 4/12, Friday 16/12	
RESULTS OF FINAL EXAMINATION		UNIPD & 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

**TESAF**

Spursione, Torino  
in Italia, Agri Forestali



Università  
di Padova

**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)

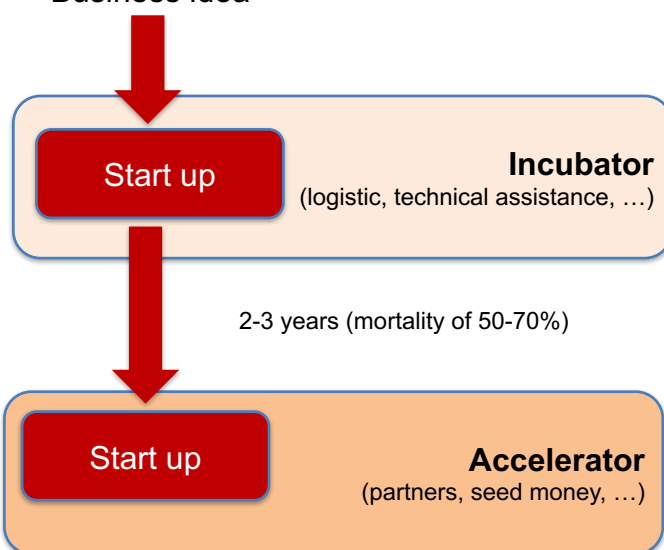
**Level of satisfaction (anonymous evaluation form):**

- **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

TESAF

Spartanburg, South Carolina  
in Italian, Spanish, French, ...Università  
di Palermo**3<sup>rd</sup> step: the Nature Accelerator**

Business idea



## University of Padova incubator

**UniSMART**

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 techtransfer company of the University of Padova responsible for commercializing its technologies and inventions, protected by over 100 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 "Unimart" legal, innovation financing and strategy towards H2020 and EU funding instruments, hackathon and idea contest with talents and much more.  
[SEE HOW IT WORKS](#)

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

**TESAF** Spartanville Terrore in Valore Agri Forestale

**Università degli Studi di Padova**

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

**ECOSTAR**  
NATURAL TALENTS

Join Learn Grow About us Stories Contacts

**THE NATURE-ACCELERATOR**

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



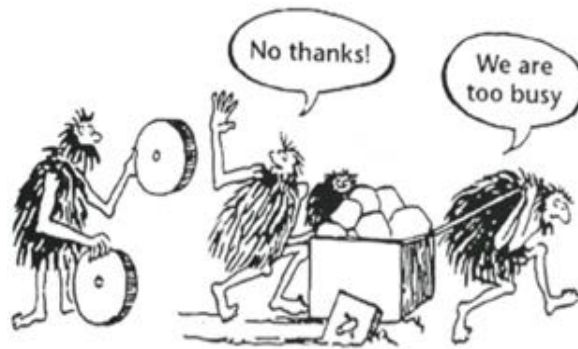


1. Background: new patterns in the demand of forest products and services
2. Some examples
3. How to support nature-based entrepreneurship
4. **Final remarks**

**THE NATURE-ACCELERATOR**

- 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 → a **new role** of **public institutions** as **partners, facilitators, promoters**, ... with a set of new tools that can create jobs and smart opportunities for the sustainable development of forest resources...

...but public  
institutions are not  
always open and  
reactive to a rapidly  
changing world



Presentation available on the web. Search for "pettenella"