

**Conference “Natural resources, green technology and sustainable development”
Zagreb, 26 November 2014**

Value added forest products: their role in rural areas development

Daide Pettenella



Multipurpose trees and non-wood forest products, a challenge and opportunity www.star-tree.eu

This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 311919



Outline

1. Bio-based economy: the 2 views
2. The vertical approach in bio-based economy
3. The horizontal approach in bio-based economy
4. Conclusions

Slide can be downloaded from the web: search “pettenella”



1. Bio-based economy: the two views

Bio-based (nature-based or green) economy: two views

Adaptive strategy (“Old wine in new bottles”) → conventional wisdom of externality correction (i.e., “getting prices right” giving the true value to resources, reducing the consumption of natural capital; weak sustainability concept; low Carbon economy)

Alternative strategy: **“Strategies for synergies”** (M.Toman, 2012): which consider not only the protection of natural capital, *“but it stresses as well the importance of addressing equity and social inclusion challenges in moving toward a green economy”*.

The social and political components of the Green economy

“Policy action requires looking across a very wide range of policies, not just explicitly „green“ (i.e. environmental) policies.” (OECD 2011, page 18)

(Green economy) “will also involve achieving smooth and just adjustment in labor markets by ensuring that workers have the means to find opportunity in change. **More generally, the success of a green growth strategy will rest on addressing political obstacles and distributional concerns about the costs of change.**” (OECD 2011, page 20)

“The key aim for a transition to a green economy is to eliminate the trade-offs between economic growth and investment and gains in environmental quality and social inclusiveness... the environmental and social goals of a green economy can also generate increases in income, growth, and enhanced well-being” (UNEP 2011, page 16)

Two views with different impacts on the rural areas: the case of the forest resources

Adaptive strategy: focus on forests producing raw materials together with agriculture, fishery, food and biotechnology being the engine of the growth

Technological innovations, large scale investments (→ high risks), diversification in outputs, ...

→Developing Nordic forestry in a value chain perspective (sectoral development – **vertical dimension of bio-economy**) = the Nordic model

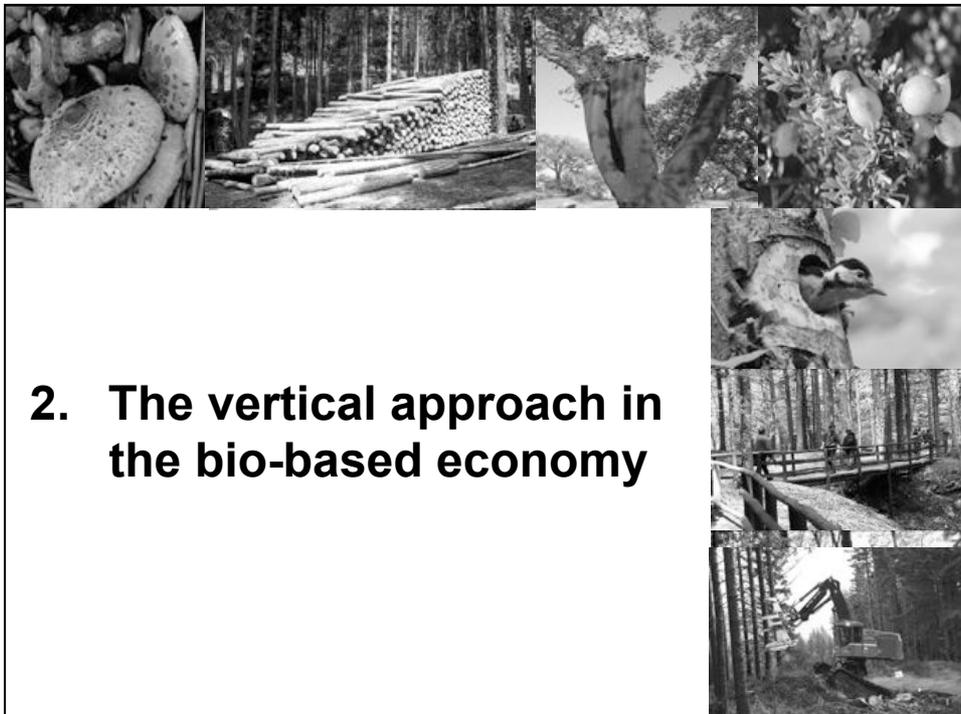
Strategies for synergies: focus the increasing importance on the social dimension of the forestry economy (from an economy based on commodities to a an economy based on services)

Social innovations, small scale, diversification in the use of inputs, networks, high added value P&S

→Forests as the green infrastructures for the rural development (intesectional development – **horizontal dimension**) = the Med model

My 2 working hypothesis

1. The real innovative and crucial aspects of the **bio-economy** are related to **equity, social inclusiveness, tenure security, employment**, i.e. to social and political issues, more than to problems connected to natural science or technology innovation
2. The **horizontal approach** is more effective in **supporting value added creation and job expansion** in managing green resources in rural areas than the vertical approach



The vertical model (value chain)

Large scale innovative industrial technology:

- pulp-chemical plants producing carbon fiber from lignin, biochemicals, nanocellulose, tall oil, dissolving pulp, bioplastic, ... for the chemical, pharmaceuticals, textile, food industries
- 2nd and 3rd generation energy plants for biofuel production
- new engineered wood products, reconstructed panel, innovative solutions for the construction sector

Some evidence

Finland: the first next-generation bio-product mill in the world

Bioproduct mill – more than a traditional pulp mill

- Wood is refined into biomaterials, bioenergy, biochemicals and fertilizers sustainably and with great resource efficiency
- Resource-efficient way of using all production sidestreams
- The mill will not use fossil fuels
- Energy efficiency will be emphasized when choosing equipment and machinery
- Helps Finland to reach its targets for the use of renewable energy



- Metsä Group is planning the biggest investment in the forest industry in Finland (EUR 1.1 billion)
- Annual pulp production: 1.3 million tonnes
- Use of wood: 6.5 million m³ annually (currently 2.4 million m³)
 - Wood mobilisation
- Over 2,500 jobs will be created throughout the value chain, new jobs in harvesting and wood transport
 - Competent workforce

Source: Riiikka Joukio, 2014

Some evidence

Norway

Tofte pulp-mill, Statkraft + Södra announced (May 2014) planning process for liquid biodiesel-production at the site
240 MW ← 1 M tons chips



Statkraft to acquire Södra Cell Tofte

Published: Fri, 2014-05-16 08:28 **LIKES** 1

Plans biofuel production

Statkraft and Södra have signed a letter of intent to create a company with the aim of establishing production of biofuel based on forest raw material in the future. The agreement means that Statkraft will acquire the company Södra Cell Tofte AS, which owns the industrial site of the former Tofte cellulose plant in Hurum, Norway.



Biofuel plays an important part in the drive to achieve national and international targets for reducing climate emissions from the transportation sector. It is predicted that authorities will provide incentives to stimulate an increased mix of sustainable biofuel in oil-based fuels.

"Statkraft views biofuel as an interesting area in renewable energy. I believe that the collaboration with Södra will be a solid basis for development of the project," says Statkraft CEO, Christian Rynning-Tanнесен.

"Södra is monitoring with great interest the technology developments and the business opportunities presented by the use of forest raw materials for industrial production of climate-neutral fuels. We have also enjoyed good collaboration with Statkraft in the past and look forward to joining the two companies' expertise and experience in this project," says Södra's CEO Lars Idermark.

Södra Cell's Tofte mill in Norway ceased production in August 2013. The mill had an annual production capacity of 400,000 tonnes of chemical pulp.

<http://www.pulpapernews.com/2014/05/statkraft-to-acquire-s-dra-cell-tofte>

Some evidence: UK



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Woodfuel

Forth Energy proposes to develop three Renewable Energy Plants at the ports of Dundee, Grangemouth and Rosyth. The projects represent a £1.1bn investment in renewable energy and would have a total energy capacity of up to 300MW electricity and 260MW heat. This represents a fundamental change in the way we generate electricity and will place Dundee, Grangemouth and Rosyth at the forefront of helping to achieve the ambitious carbon reduction targets set out in the recent Climate Change (Scotland) Act.

Wood fuel is safe and dependable and provides a source of energy which can be constantly generated. This provides a renewable energy supply which is as reliable as coal and gas but has a significantly lower environmental impact.

The choice to locate the Renewable Energy Plants at the three ports offers an opportunity to deliver large amounts of wood fuel by sea. One typical bulk ship is able to deliver up to 35,000 tonnes of fuel, the equivalent of 1000 lorry loads, allowing renewable energy to be generated whilst minimising the impact on the road network.

In addition, there are existing communities living around the ports in a number of ways;

- Additional investment from new businesses which can be located near energy plants;
- Skills development;
- Locally generated renewable energy; and
- 300-500 construction jobs and 40 operational jobs.

Environmental Impact Assessments & Consent Applications

Dundee

Grangemouth

Rosyth

1.3 billion € investment
300 MWe + 260 MWT
40 new jobs (32.5 M€/employee)
Consumption: 5.3 M ton biomass/yr
90% imported (75% from Florida)

<http://www.forthenergy.co.uk/biomass.asp>

Production of sawn wood in Europe: a process of consolidation

Companies			Sawmills		
Rank	Company	Production or Capacity [m3/yr]	Rank	Sawmill	Production or Capacity [m3/yr]
1	Stora Enso	5960000	1	Saalburg-Ebersdorf Sawmill	1200000
2	Pheffer Gruppe	2200000	2	Wismar Sawmill	1200000
3	UPM	2020000	3	Somplar sägewerk	1200000
4	Möhlven	1968000	4	Binder sägewerk	825000
5	Bettenmeier Group	1935000	5	Landsberg Am Lech	825000
6	Ante-holz GmbH	1900000	6	Offner Wolfberg	800000
7	Klausner-Group	1860000	7	Bottleberode sägewerk	700000
8	Mayr-Melnhof Holz	1830000	8	Sebes Schweighofer	700000
9	SCA	1690000	9	Badautl Schweighofer	700000
10	MetallWood	1487000	10	Koderdorf Klausner Sawmill	660000
11	Setra Group AB	1460000	11	Värdeågen	650000
12	Södra Timber	1400000	12	Leoben	650000

Source: The sawmill database
http://www.sawmilldatabase.com/productiontoplist.php?continent_id=999

Production of sawn wood in Europe (1,000 m3): concentration in few countries

Rank 2011	Rank 2010	Company	Country	Locations	Output per location	2008	2009	2010	2011	Difference in %	Trend
1	1	Stora Enso Wood Products	FI	23	243	3.900	4.800	5.027	5.100	1	=
2	6	SCA Timber	SE					2300	2.200	5	=
3	4	Möhlven	NO					1.817	1.977	9	=
4	3	Mayr-Melnhof Holz	AT					2.300	1.900	-10	--
5	6	Setra-Gruppe	SE					1.562	1.825	18	==
6	8	Holzindustrie Pilsch	AT	3	360	1.750	1.300	1.300	1.800	6	=
7	9	UPM-Kymmene	FI	3	247	2.132	1.497	1.729	1.729*	0	=
8	5	Södra Timber	SE	10	170	1.800	1.800	1.700	1.700	0	=
9	10	Kettmann-Holding	DE	3	340	1.700	1.180	1.450	1.700	17	==
10	11	Monsiata-Faustinet Holzindustrie	FI	9*	178	1.700	1.300	1.500	1.800	7	=
11	13	Schweighofer	AT	3	750	800	1.300	1.400	1.300	7	=
11	-	Tim Timber Industry	RU	2*	750	-	-	925	1.500	60	+++
13	12	Klein Holz AG	DE	3	450	1.800	1.200	1.250	1.325	8	=
14	17	ante-holz	DE	2	800	1.170	826	926	1.200	30	==
15	14	Vida	SE	7	157	1.300	1.200	1.000	1.100	30	==
15	15	Holzindustrie Binder	AT	2	350	1.000	950	1.000	1.100	10	==
15	19	BSW Timber	UK	8	138	700	350	990	1.100	11	==
18	15	Ziegler Holzindustrie	DE	1	1000	830	1.000	1.000	1000	0	=
19	20	Kärrvik Timber	SE	7	136	832	347	414	93	129	+++
20	2	Klausner-Gruppe	DE	2	440	4.100	2.695	2.173	880*	-80	---
		Average value/Sum		134	248	34939	29319	31803	33225	4	==

Source: Holzkurier survey <http://www.timber-online.net>

Some evidence

Scandinavian countries: 3 billion \$ of investments in 2014 in the forest resources based green economy: energy + bio-chemicals



Imetiti di seguire Håkan

The revival of the softwood fiber-based forest industry in the Nordic countries has been especially noticeable in 2014; investment plans of three billion dollars in pulp, bio energy and bio materials

Håkan Ekström

Wood Prices, Paper & Wood Product Consulting, Forest Resource & Timber Reporting, Owner at Wood Resources International

Forest companies in Northern Europe have announced plans to invest three billion dollars in 2014 in attempt to move beyond mostly producing newsprint and commodity packaging grades. The idea is to diversify their product lines to include new bio-products from wood fiber and to generate bioenergy to reduce the region's dependence on fossil fuels, reports the Wood Resource Quarterly.

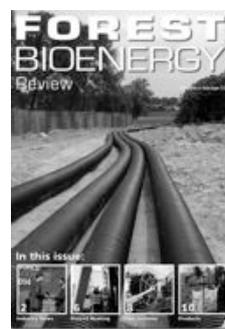
https://www.linkedin.com/groupItem?view=&gid=2554933&type=member&item=5929358887110070274&trk=groups_items_see_more-0-b-til

- The new bio-factories have in common that they need **huge investments**, they are **labour extensive**, they are based on a very **efficient logistics** (import of raw material), they will mainly use **low quality wood**
- This development **will reduce the market power** of non-industrial forest owners, they will be **fully dependent from the industries** and more **exposed to risk** and instability.

In a market of not differentiated products
European producers are much exposed to
international competition

GERMAN PELLETS TO BUILD SECOND US PELLET PLANT

Source: www.forestbioenergyreview.com/pellets



German Pellets is further expanding its production capacity in Louisiana, Germany Pellets will soon begin construction work on a new pellet production facility. The **new plant will be about 1 million tonnes of wood pellets per year**. This facility will be the German Pellets Group's second North American site. In April a plant will open for production in Louisiana.

"Once again, we have chosen a site with well-established wood supplies and logistics," said Peter Leibold, manager of the German Pellets Group. Until a few years ago, Louisiana had been an important location for the wood-based panel industry. The US company Georgia Pacific had produced particleboard and other products at this site. Supply infrastructure and other infrastructure, including a railway siding, are already in place. Construction on the new plant will begin soon.

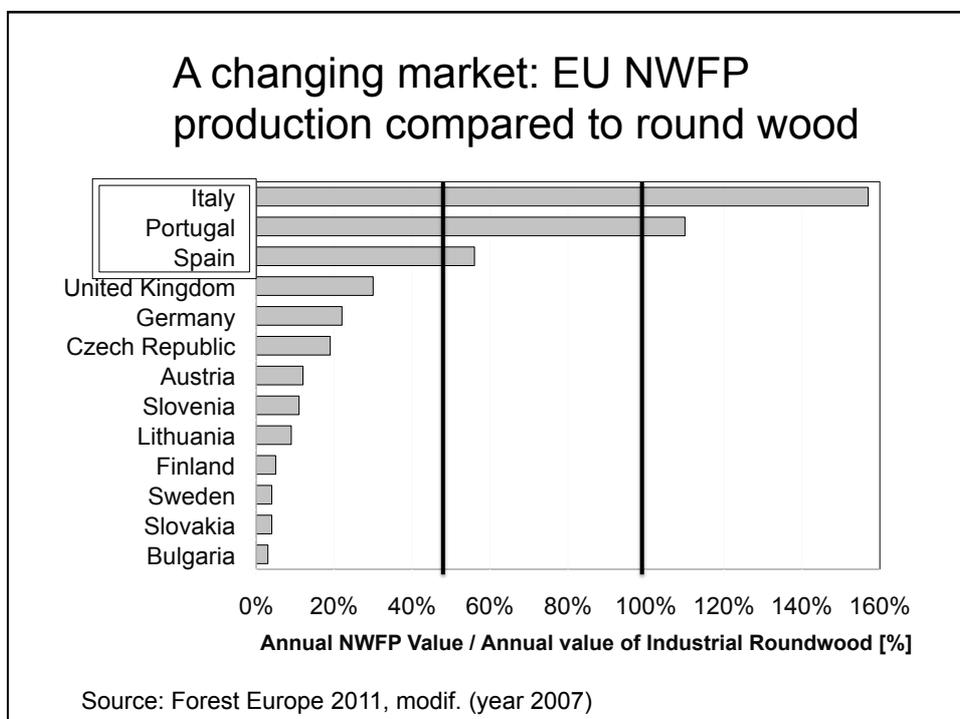
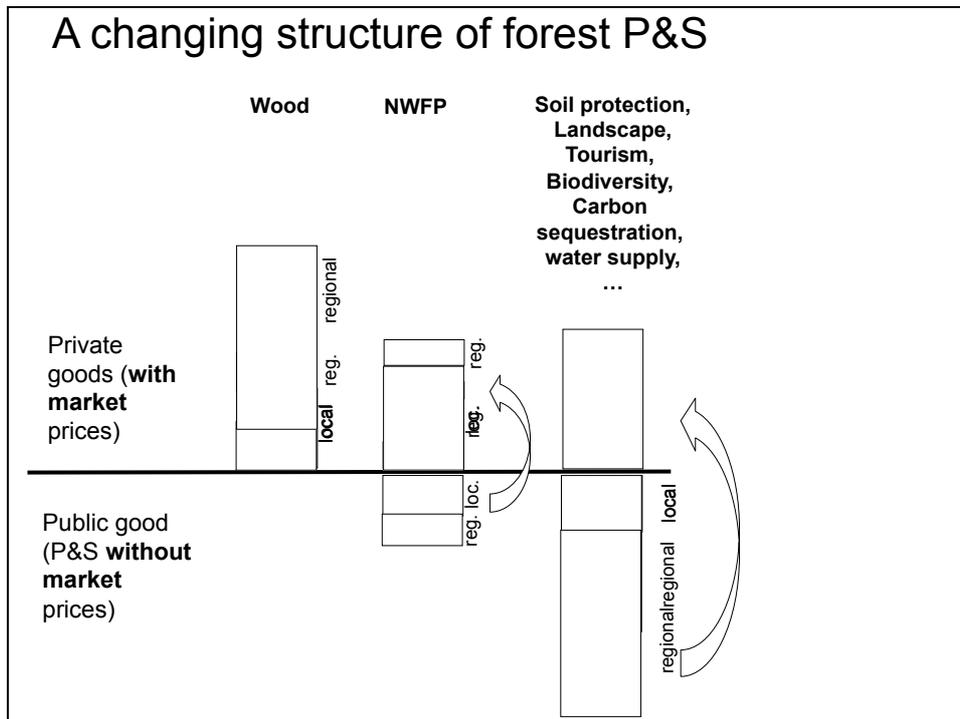
The decisive factor for the choice of location was the availability of raw materials in this densely forested region, where the annual timber increment is significantly higher than in Germany owing to the subtropical climate.

The forestry industry is the second largest employer in the state of Louisiana. The forests are managed sustainably. The new German Pellets production facility in Louisiana will create some **500 jobs in the region, both directly and indirectly**.

German Pellets will produce one million tonnes of wood pellets per year in Louisiana, twice as much as in its first US plant in Woodville, Texas. "Pellet consumption worldwide is on the rise, especially in Europe. This means that the construction of large production capacities is necessary," said German Pellets CEO Peter Leibold. The demand from the European power plant market for the production of heat and electricity from wood pellets has risen sharply. There is also an increasing demand for wood pellets among private consumers and large-scale users, for example for supplying heat to hospitals, schools, commercial buildings and industrial facilities.

For the transport of wood pellets from the Louisiana and Woodville sites to Europe, German Pellets will be using the harbour of Port Arthur on the Gulf of Mexico. At the deep-water port, German Pellets operates storage and loading systems.

3. The horizontal approach in bio-based economy



Value of the production of some NWFP in the EU

Pine nuts



Data source
FAO FRA 2010
Alternative Min
Alternative Max

Production (tons)	Value (M €)
16,545	48.7
5,295	83.8
18,992	307.7

Perez et al., 2004; NFC, 2005 and 2012; Mutke et al., 2012 and 2013; Sfeir, 2011; Daly et al., 2012; GDF, 2009.

Cork



Production (tons)	Value (M €)
101,428	163.3
142,300	142.3
142,300	327.3

APCOR, 2010; Daly et al., 2012.

Pine resin



Production (tons)	Value (M €)
1,705	0.9
8,343	2.6
9,821	3.2

IGN, 2013; Spanos et al., 2010; NFC, 2007; Cesefor, 2009; Magrama, 2011; GDF, 2009; Satil et al., 2011.

New (old) products:

- Pine resin
- Tannin
- Aromatic and medicinal herbs
- Foraging
- ...

Mushrooms

<http://www.dallavalle.fi>

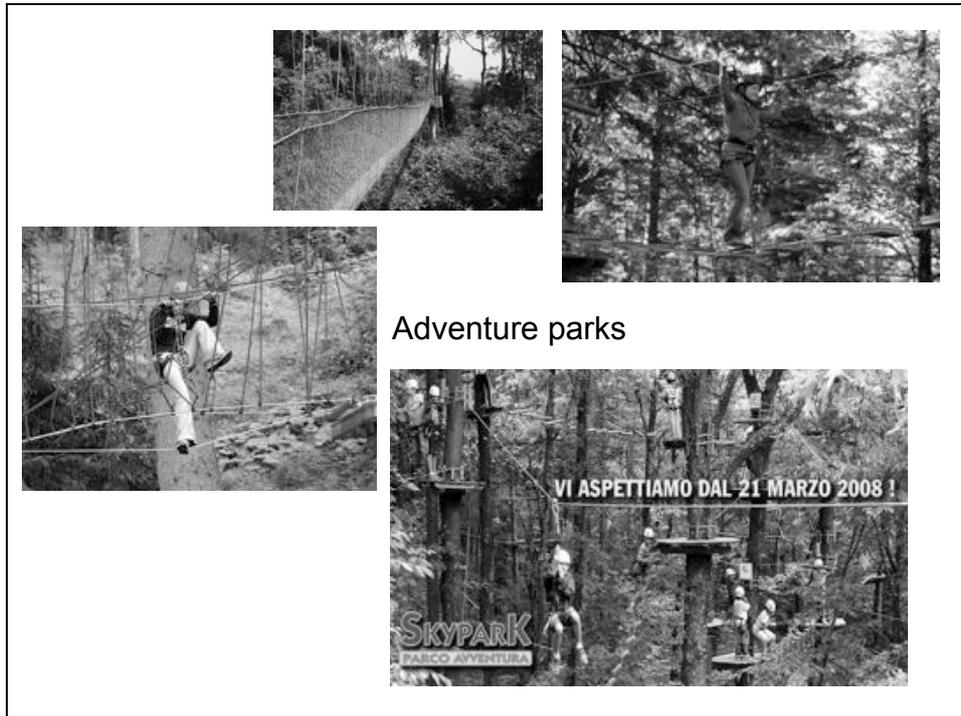
Enterprises: 62 (in 2008)

- 15 Agritourisms/ Farm businesses
- 12 Hotels/Guest quarters
- 8 Bed&Breakfasts/Inns/Hostels
- 9 Cheese, sausage and wine growing and producing factories
- 2 Didactic farms
- 3 Museums/Private collections
- 30 Restaurants/Porterhouses
- 26 Typical products sellers

Roads, trails, paths, ... the tools for connecting different economic actors



Google search		hits
Strada della castagna	<i>Chestnut road</i>	35,200
Strada del tartufo	<i>Truffle road</i>	361,000
Strada del fungo	<i>Mushroom road</i>	265,000
Strada del porcino	<i>Porcino road</i>	58,900
Strada del marrone	<i>Marron road</i>	78,400



Adventure parks

Forest sports:

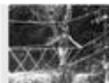
- Mountain biking
- Horse and mule riding
- Orienteering
- Survival camps
- Archery
- Trial
- Skyrunning
- Tree climbing

Prestazioni

- Briefing iniziale
- Corso di sopravvivenza di due giorni nel bosco
- Esercizi lungo il percorso
- Kit lunch di emergenza
- Pernottamento in bivacco

Corso di sopravvivenza
Norcia

Descrizione



Vivete due giorni di avventura all'aria aperta e scoprirete le vostre capacità di sopravvivenza in un bosco.

Guide esperte vi accoglieranno a Norcia per illustrarvi le regole essenziali di sopravvivenza: come riuscire ad orientarsi, costruirsi un rifugio di emergenza, accendere un fuoco, cacciare e scappare in caso di pericolo. Insieme alle guide vivrete 2 giorni indimenticabili riscoprendo come si comportavano i nostri lontani antenati per procurarsi il cibo e sfuggire ai pericoli.

Durante questi due giorni imparerete a vivere lontano da ogni comodità quotidiana e mettendo alla prova voi stessi, superando magari alcune paure, affrontando diverse prove che vi faranno riscoprire la natura e godere a pieno quello che offre.

Le guide vi accompagneranno lungo un percorso, durante il quale vi proporranno una serie di esercizi per imparare a sopravvivere in un bosco. Ovviamente non sarà previsto nessun pranzo al sacco, sarete voi a procurarvi il cibo! Per una notte non dormirete al caldo nel vostro letto, ma al caldo in un bivacco e potrete addormentarvi e svegliarvi con il fruscio degli alberi e tutti i suoni del bosco.



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Forest services and tracks for disables people

Sentiero natura Zannes



Il sentiero natura di Zannes si trova alla fine della Val di Funes, una delle più belle valli dolomitiche ai piedi della maestosa catena delle Odle. Il sentiero è stato realizzato dall'Azienda Provinciale Foreste e Demanio, ed è il primo sentiero naturalistico dell'Alto Adige attrezzato per persone disabili.

Primo sentiero naturalistico percorribile su sedia a rotelle

Il sentiero comincia dal parcheggio di malga Zannes, dove sono disponibili parcheggi riservati ai disabili, toilette attrezzate per disabili e un tabellone informativo. Il sentiero attraversa il prato Plus e un ponte di legno di nuova costruzione, costeggia Kalkhofen e la casa forestale fino al recinto degli animali, in cui si trovano caprioli, cervi e daini e ritorna nuovamente al parcheggio di Zannes.

Stazioni in scrittura Braille

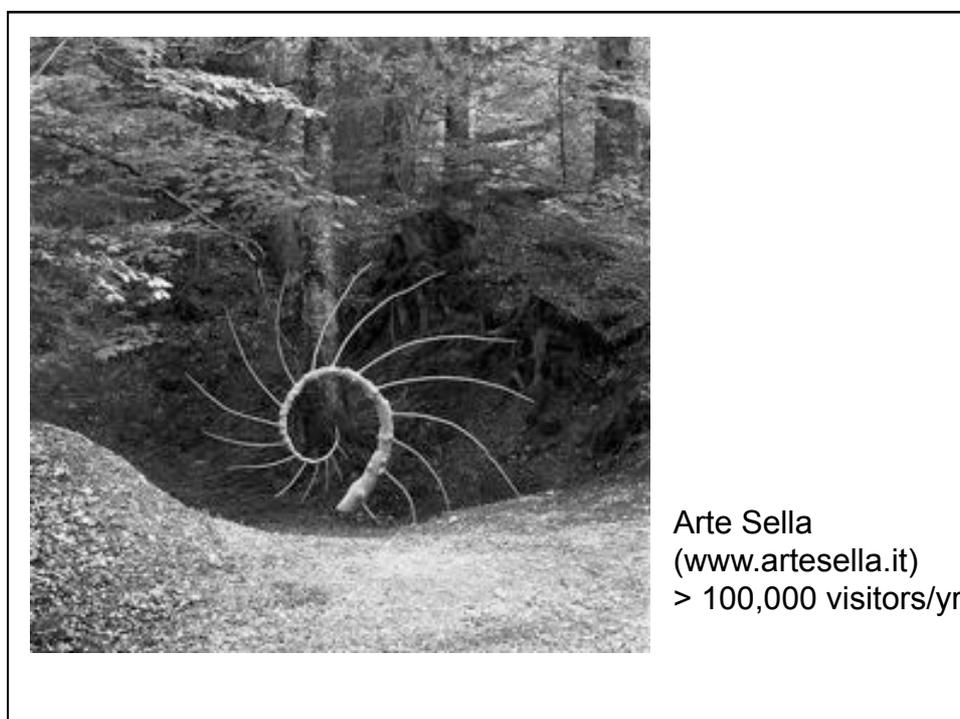
Nell'itinerario di tre chilometri rientrano prati coltivati dagli agricoltori, boschi intatti, pascoli fioriti ai piedi delle imponenti crede dolomitiche. I 14 punti di sosta sono dotati di tabelle che informano sulla genesi e sulle peculiarità naturalistiche della zona, in parte modificata dall'uomo; in alcune "stazioni" le notizie sono anche in scrittura Braille per non vedenti. I nomi delle piazzole lasciano immaginare che cosa vi è da scoprire: "Montagne da toccare" e "Auditorio della natura" sono solo due degli esempi. Le stazioni forniscono però anche informazioni, dati e cifre sulla flora, fauna e cultura paesaggistica di Funes.

<http://www.provincia.bz.it/foreste/azienda-provinciale/funes.asp>

Concerts in forest



www.isuonidelledolomiti.it



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Selviturismo: definizione da Wikipedia

Il selviturismo (derivante dai termini "selva" e "turismo"), è una forma di turismo collegato all'ambiente boschivo e a tutte quelle attività (Didattiche, Sportive, Terapeutiche, Amatoriali) in esso realizzabili.

Spesso si pratica trascorrendo un determinato periodo di tempo in rifugi, foresterie, o anche in aziende silvicole situate in località d'interesse forestale.

Il selviturismo rappresenta l'ultima evoluzione del turismo naturalistico, poiché, ricostituendo i boschi e salvaguardando la biodiversità, si potrà favorire la sostenibilità ambientale naturale.

È naturalmente impegnata per promuovere la presenza della Selvicoltura è l'A.S.I. (Associazione Selviturismo Italia) la quale non avendo mezzi di implementare il selviturismo a

cerca nel sito



Create your free world visitor maps

Fai un link al nostro sito!

Segnala selviturismo.com!

I nostri link!

Gli alberi e l'arte

Previsioni Meteo

Video: Tgr Montagne

Groscopo celtico

Boschi e Foreste in Italia

<http://www.selviturismo.com>

Forest therapy

Thematic parks: Bruno's Bogenparcours (Austria)







Source: Wiesinger, 2009

Wildpark Buchenberg (Austria)



Source: Wiesinger, 2009

Hotels and restaurants

Baumkronenweg e Baumhotel (A)



Source:
Wiesinger, 2009

Tree houses and tree-hotels



La Suite sulla Quercia (Bolsena Lake).

Home Impressum
WALDKINDERGARTEN ILMENAU
EINE INITIATIVE DER VETERANS WALDKINDER-ILMENAU E.V.

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Forest schools and kindergarten

Since the '50 in DK (Ms Flautau' first "Wood Kindergarten")

15 in CH

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- Organisation and Conditions
- School Details
- Photo Gallery

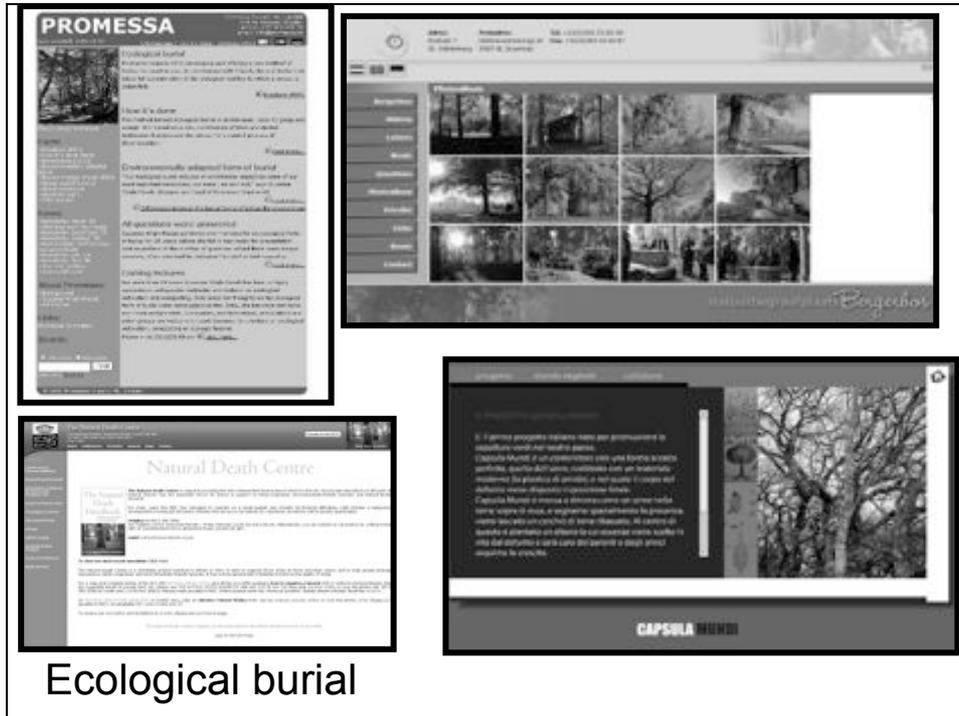
Lakeside School
Zweisprachige Tageschule Zürichsee
Lakeside Bilingual Dayschool Zurich
Saestrasse 3
Postfach
CH-8705 Kloten

What is an outdoor Pre-School?

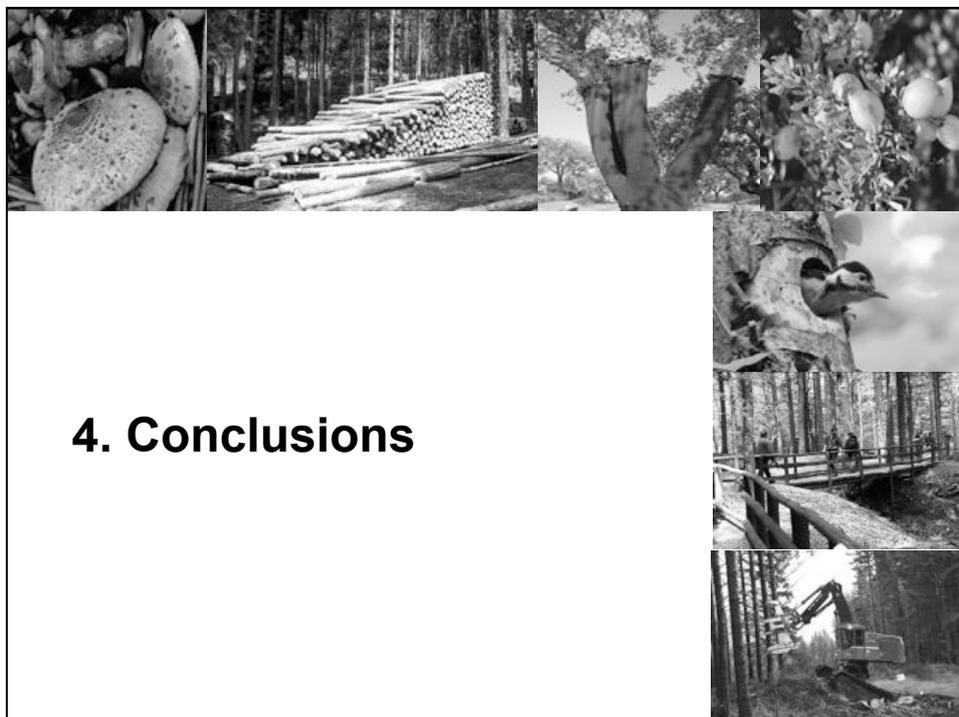
A Pre-School without doors and walls, taking place in the woods all year round. The children meet at the same place and walk from there with their teachers into the woods. There they have a niche where they can discover and experiment, make new experiences, play, sing, eat, paint and celebrate festivities. A ranger hut or an on-site trailer is available for extreme weather conditions. This type of schooling has been successfully implemented in Denmark for over 20 years and is becoming increasingly popular in Switzerland.

Lakeside School

Forest from the beginning to the end of the life ...



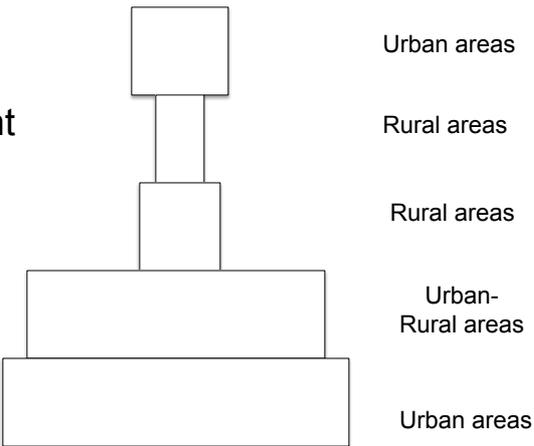
Ecological burial



Setting the problem: where value added is created?

- Wood and related goods have a **total value of 500 billion €**, which makes up about **8% of the EU manufacturing GDP**
- EU forest and forest based industry employ around **4 million people**

Where added value is located?

- R&D
 - Forest management
 - Harvesting
 - Processing
 - Distribution
- 
- | |
|-------------------|
| Urban areas |
| Rural areas |
| Rural areas |
| Urban-Rural areas |
| Urban areas |

UE Forest-based sector in economic data (2011)

Subsector/ Parameter	Forest Management and Harvesting/ Logging	Wood working	Furniture	Pulp&Paper	Printing	Total
Nr of firms	?	183.000	125.000	19.800	124.020	451.820
Nr of jobs	480.500	1.020.000	1.000.000	651.200	814.300	3.966.000
Production value (M€)	?	117.822	90.000	168.000	90.200	466.022
Turnover (M€)	?	123.000	90.000	178.000	92.000	483.000
Added value (M€)	?	31.500	29.000	42.267	34.000	136.767

Rural areas

Urban-rural areas (88% empl.)

Data on horizontal approach

Source: Harald Mauser (2014) with Eurostat data

The horizontal approach to bio-economy: a summary

- Few statistical data: **limited political visibility**
- A constellation of **niche markets**: diversification as the key-element; **more complex market organization**, cross-sectoral and interlinked
- **Social innovation (social capital)** much more important than financial and technological capitals
- Products and services with **more value added and employment at local (rural) level**

Unfortunately the industrial interests are much more politically relevant than the interests and political strength of the forest managers!



Multipurpose trees and non-wood forest products, a challenge and opportunity www.star-tree.eu

This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 311919

