

# Beyond timber production: the international trade of Non-Wood Forest Products

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# Outlines

1. NWFP: **definition**
2. Trade or production: problem of **data source**
3. Int. **trade overview** for some key NWFP
4. The role of NWFP **international** trade in the **local** economy
5. Mass VS speciality products: case studies.

# Outlines

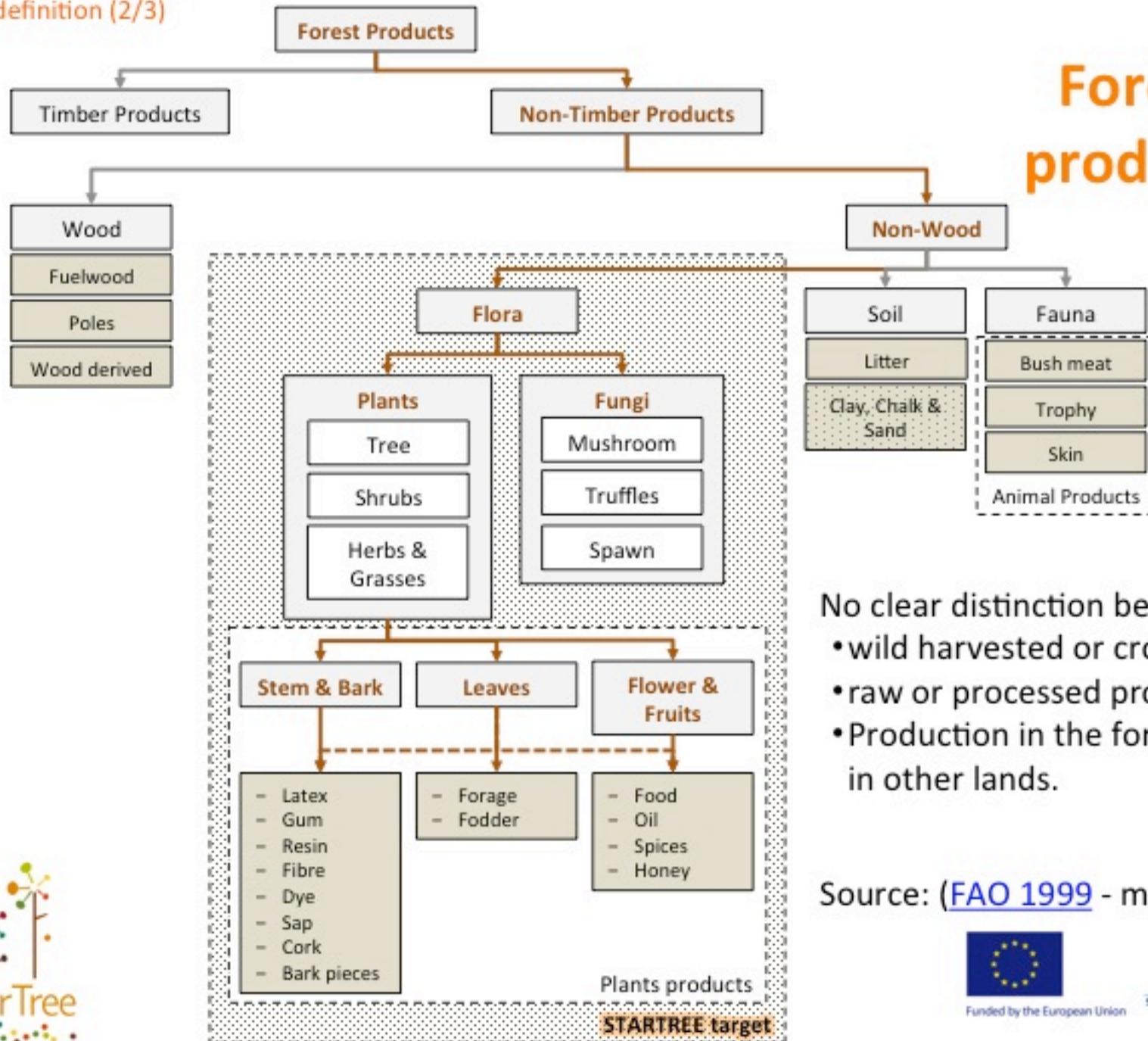
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## NWFP definition

NWFP are “*products of biological origin other than wood derived from forests, other wooded land and trees outside forests*” - (FAO 1999)

NTFP are “*all biological materials other than timber which are extracted from forest for human use*” - (De Beer and McDermott 1989)

## 1. NWFP definition (2/3)



# Forest products

No clear distinction between:

- wild harvested or cropped;
- raw or processed product;
- Production in the forest or in other lands.

Source: ([FAO 1999](#) - mod)

# NWFP definition

The main problems of NWFP statistics are linked to the interpretation of NWFP definition.

- **Source:**
  - *From forest*
  - *Other wooded land*
  - *Trees outside the forest*
- Type **production:**
  - Wild harvest or Cultivation
- Level of **processing:**
  - Raw or processed NWFP

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# NWFP data source

- Primary (*collect ad-hoc*) or secondary (*formal or reported statistics*) data source
- Scale of data source
  - International (*ComTrade, FAOStat, EuroStat, US Bureau, World Bank, etc.*)
  - National/Regional (*national statistical agency, category associations, etc.*)
  - Local/SME (*public or private accountability*)
  - Case study (ad-hoc data collection)
- Production (supply), consumption (demand), trade

# NWFP classification

- Product/commodity classification system (HS, SITC, CN, FAO, WB etc.)
- Aggregation level of the product information
  - By specie
    - by level of processing (raw, processed, end product)
    - by commercial categories (size, fresh, dry, purity, etc.)
    - by origin (wild, cultivated, forest, agriculture, physical or chemical extract)
  - By commodity refinement
- Functional classification
  - ecological, trade, market behaviours, property right, etc.

# NWFP functional classification

i.e. Global Resource Assessment set up a functional classification by use of the NWFP

Plant products/raw material	Code	Animal products/raw material	Code
- Food	f	- Living animals	la
- Raw material for medicine and aromatic products	a	- Hides, skins and trophies	ap
- Raw material for colorants and dyes	c	- Wild honey and beeswax	hb
- Raw material for utensils, handicrafts and construction	r	- Wild meat	gm
- Ornamental plants	p	- Raw material for medicine	rm
- Exudates	e	- Raw material for colorants	nn
- Other plant products	o	- Other edible animal products	nn
		- Other non-edible animal products	nn

Source: ([FAO 2010](#) – modif.)

# Functional classification used in Star-Tree

## Ecological classification

Ecological position	Star-Tree category	NWFP types	Score	HS Codes
Products of the stem, leaves or tree reproductive system	Stem-based Products (tree is cut)	Chlorophyll tree	2	0604.90*
		Fibre	2	4601.91; 4601.29; 4603.94; 4601.99; 4602.29
		Tar-refining	1	3826.00
		Tar	5	3803.00; 3807.00
		Tannins	5	3201.80; 3201.90; 3201.90; 3201.90
	Leaf-based products (branches are removed from the stem)	Sapwood and髓木	2	2906.43; 2905.44; 3824.60
		Essential oils	12	3301.29; 3301.90
		Phytocannabinoids	5	3202.90; 3819.90
		Pigments	5	3304.17
		Flavonoids	15	0604.20*; 0604.90*; 0604.91; 0604.99*
	Extracted from tree (tree is kept alive)	Tops	1	1302.19*
		Natural gums and resins	7	1302.20; 1301.10; 1301.90; 1806.70
		Exudates	9	1301.30; 1805.10; 1805.20; 1805.90; 1806.10; 1806.90
		Bark	14	4501.10; 4503.90; 4502.00; 4503.10; 4503.90; 4504.10; 4504.90
		Tree Resins	2	-
Tree dependent product	Fruit & Flowers	Roots	15	0810.90; 2003.90*; 0811.10; 0807.90; 0802.10; 0802.12; 0802.21; 0812.20; 0802.31; 0802.32; 0802.41; 0802.40; 0802.42; 0802.50; 0802.51; 0802.52; 0802.90; 2005.90*; 2006.10; 2007.90; 2008.10; 0708.81; 0709.89*; 0710.80; 0711.89*; 0712.80; 0712.81; 0712.92; 0712.93; 0712.94; 0712.95; 0712.96; 0712.97; 0712.98; 0712.99; 0713.81; 0713.90*; 0714.80; 0714.90; 0715.81; 0715.90*; 0716.80; 0716.90; 0717.81; 0717.90*; 0718.80; 0718.90; 0719.81; 0719.90*; 0720.80; 0720.90; 0721.81; 0721.90*; 0722.80; 0722.90; 0723.81; 0723.90*; 0724.80; 0724.90; 0725.81; 0725.90*; 0726.80; 0726.90; 0727.81; 0727.90*; 0728.80; 0728.90; 0729.81; 0729.90*; 0730.80; 0730.90; 0731.81; 0731.90*; 0732.80; 0732.90; 0733.81; 0733.90*; 0734.80; 0734.90; 0735.81; 0735.90*; 0736.80; 0736.90; 0737.81; 0737.90*; 0738.80; 0738.90; 0739.81; 0739.90*; 0740.80; 0740.90; 0741.81; 0741.90*; 0742.80; 0742.90; 0743.81; 0743.90*; 0744.80; 0744.90; 0745.81; 0745.90*; 0746.80; 0746.90; 0747.81; 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## Data quality

- **Production** data on NWFP are not usually collected by national statistical agencies (i.e. FAO-FRA)
- **Trade** data are registered daily among WTO countries because every state can apply a tax for the traded commodities (i.e. WCO)
- **Consumption** data are scarce and usually collected for specific reason (i.e. EFSA)

## Data quality on NWFP: where to look?

- NWFP production in Europe (few updates every decade):
  - 1.10 B € in 1995 (UNECE-FAO 2000)
  - 2.76 B € in 2007 (Forest Europe, UNECE, FAO 2011)
  - 4.53 B € in 2005 (FAO-FRA 2010) (re-estimation)
- Trade data are reported annually in formal report at international or country level; problem of commodity classification stiffness and double counting
- NWFP consumption is rarely reported by the national statistical agency; some information can be found by sector report or scientific paper

# Outlines

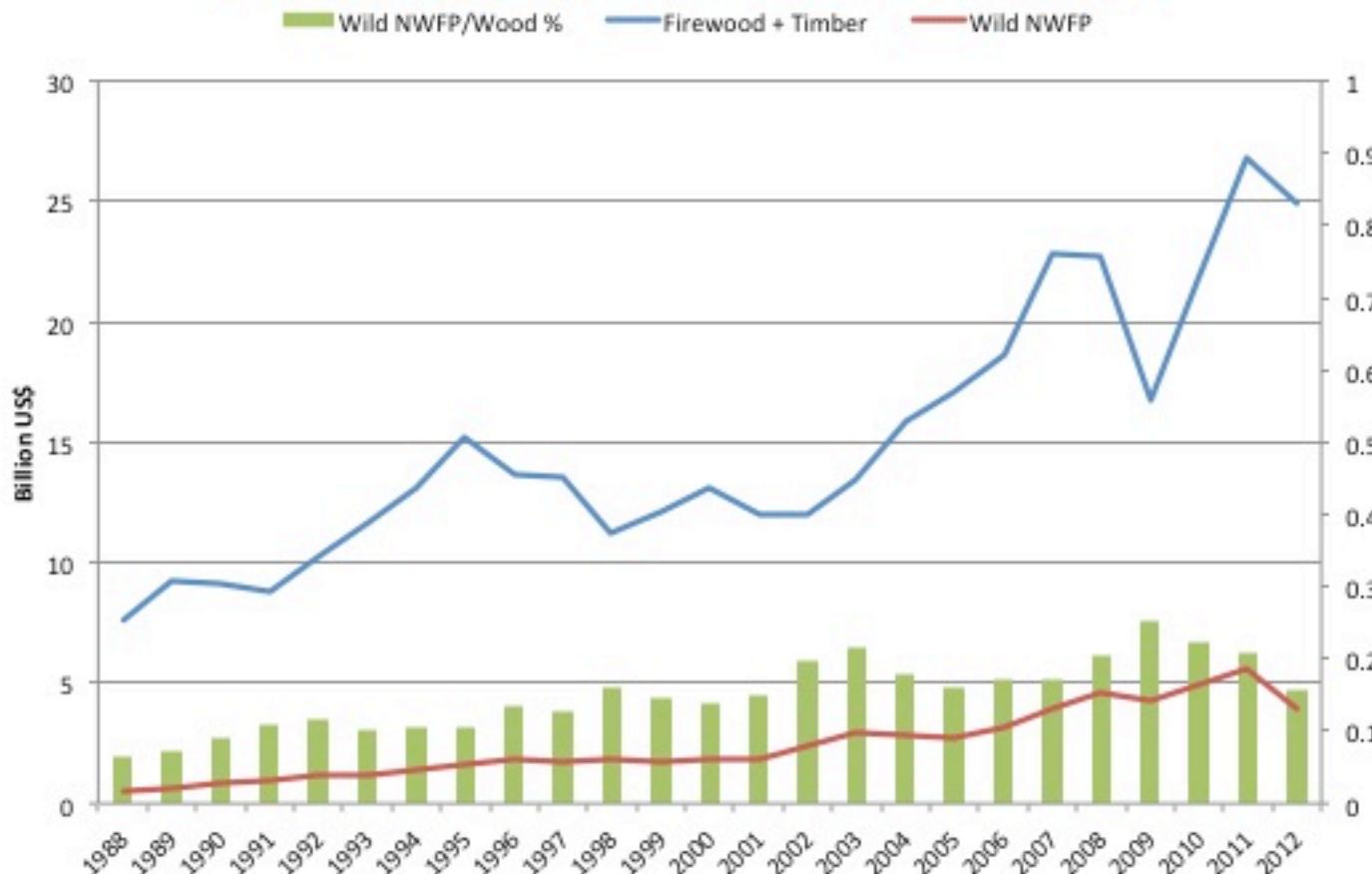
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# Global trade overview for selected NWFP



# Wood Vs NWFP

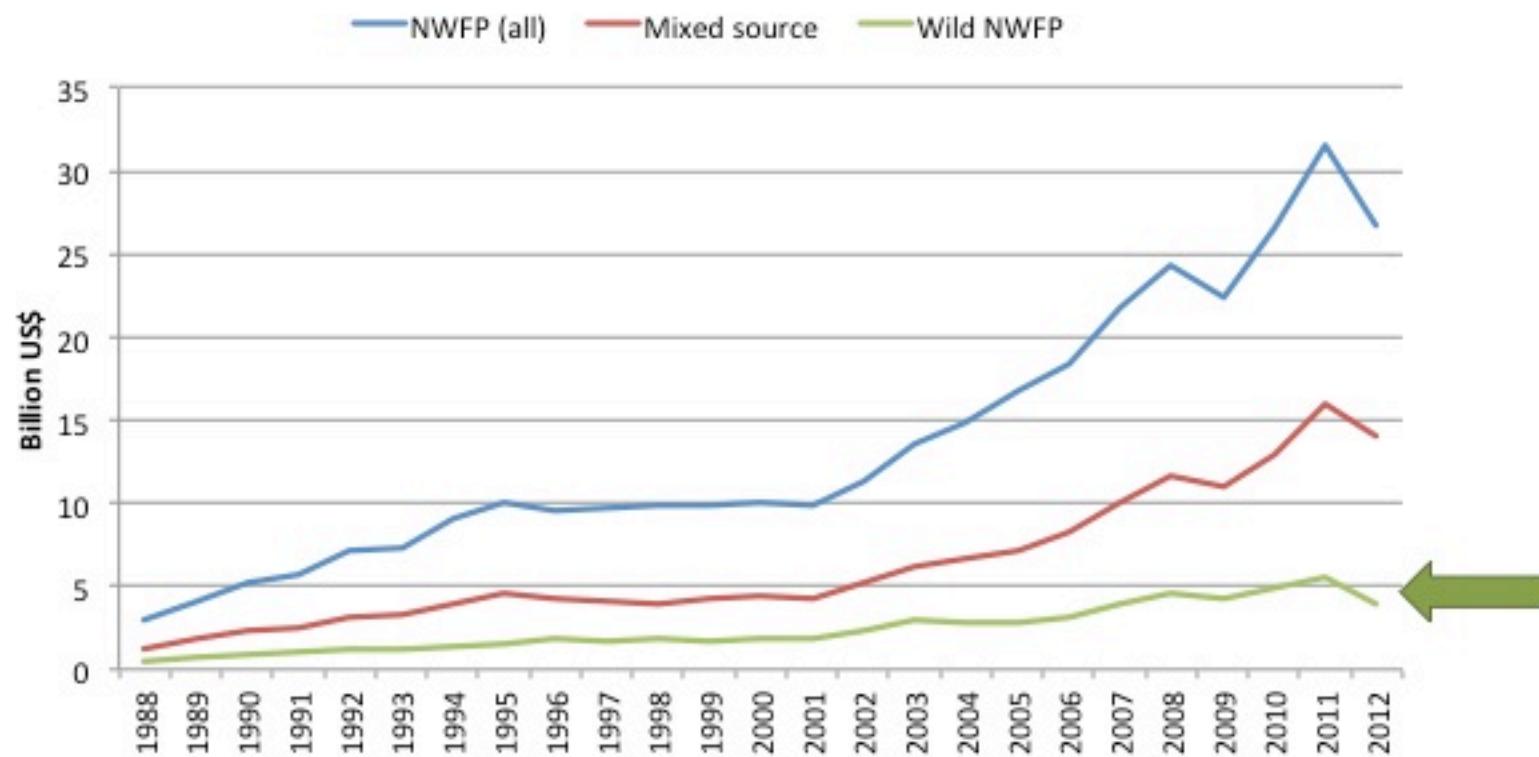
## General trade overview



Wood codes: 4401, 4403

NWFP: only raw material collected in EU forest

# Strategic role of NWFP definition



# A focus to two Finn's NWFP

## Mushrooms



## Berries



NWFP type	Category	Commodity group	HS Code
	Fresh or chilled	Mushroom of genus Agaricus	070951
		*Truffles	070952
		Other mushrooms both wild & cultivated (and truffle from 2007)	070959
	Provisionally preserved	Mushroom of genus Agaricus	071151
		Other mushrooms	071159
		Mushrooms	071230
Wild mushrooms and truffles	Dried	Mushrooms of genus Agaricus	071231
		Mushrooms of genus Auricularia	071232
		Mushrooms of genus Tremella	071233
		Mushrooms of other species	071239
	Prepared or preserved	Mushroom of genus Agaricus	200310
		Truffles	200320
		Other mushrooms both wild & cultivated (and truffle from 2012)	200390
		Strawberries	081010
		Raspberry, blackberry, mulberry and loganberry	081020
	Fresh Berries	Black, white or red currants and gooseberries	081030
		Cranberries, bilberries, similar fruits	081040
		Other fruits	081090
	Frozen Berries	Strawberries, (uncooked steamed or boiled)	081110
		Kiwiberries, mulberries, etc. (uncooked, steam, boil)	081120
		Fruits and nuts (uncooked, steamed, boiled)	081190
	Provisionally preserved berries	Strawberries provisionally preserved	081220
		Fruits and nuts, provisionally preserved	081290
	Dried berries	Fruits	081340
		Mixtures of edible nuts, dried and preserved fruits	081350
		Entire and crushed	090950
	Fennel seeds, juniper berries	Not crushed	090961
		Crushed	090962
	Berry jam	Homogenised jams, jellies, etc.	200710
		Jams, fruit jellies, purées and pastes, except citrus	200799
		Strawberries	200880
		Mixtures of edible parts of plants	200892
	Berry prepared or preserved	Cranberries ( <i>Vaccinium macrocarpon</i> , <i>V. oxycoccus</i> , <i>V. vitis-idaea</i> )	200893
		Mixtures	200897
		Other	200899
	Berry juice	Single fruit juice (not fermented or in spirit)	200980
		Cranberries ( <i>Vaccinium macrocarpon</i> , <i>V. oxycoccus</i> , <i>V. vitis-idaea</i> )	200981
		Other fruits juice	200989
		Mixtures of juices	200990

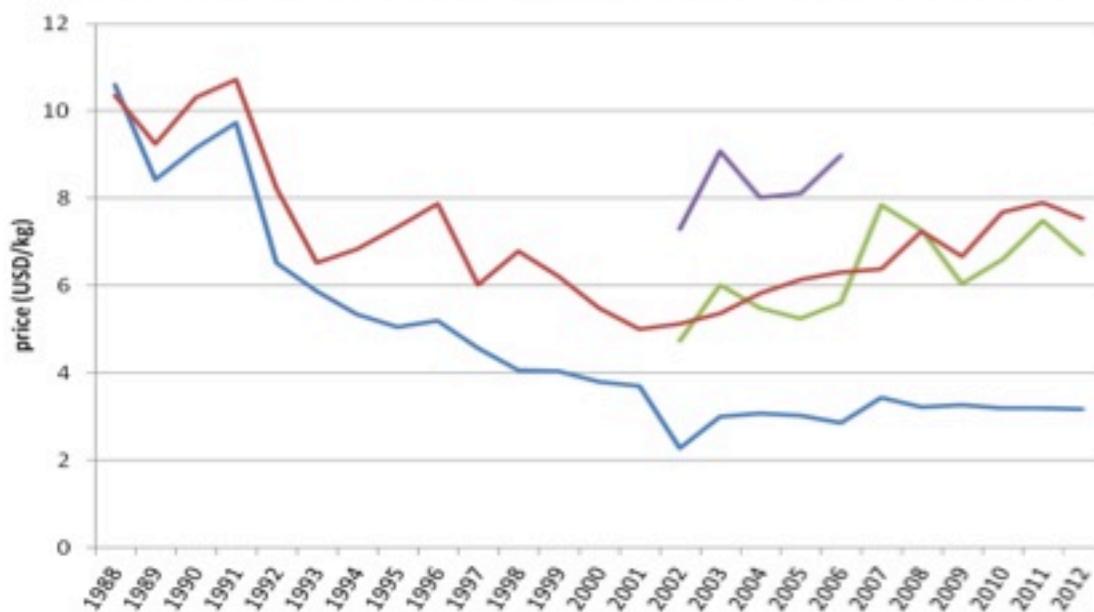
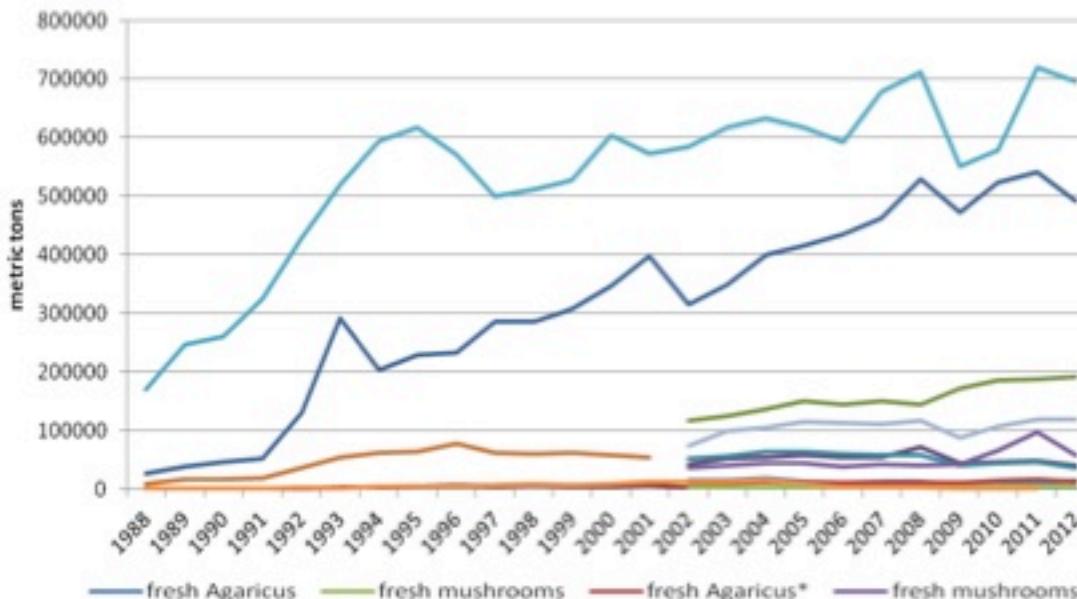
### 3. Trade overview (5/10)

## Wild mushroom: sector overview

Domesticated mushrooms are the predominant part of the market in terms of bulk

Wild mushrooms cover the 26.4% of the total traded volume that worthies the 45.6% of the total value (4.98 B US\$ in 2011)

Boletes prices are approximately 6.15 €/kg at wholesaler level and chantarelles has been stabilized globally close to 5€/kg

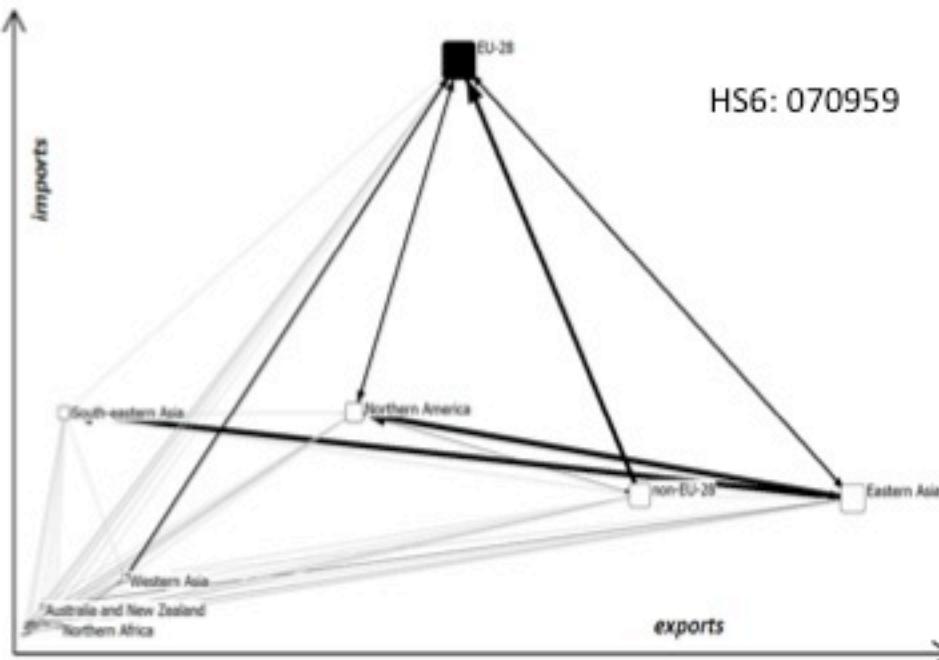


## Wild fresh mushroom: market structure

China is undoubtedly the largest fresh wild mushrooms exporter in the world, both in terms of quantity and economic value; alone, it accounted for the 21.2% of the export value in 2012

Poland and Nederland are the two main gate to EU market

Core global consumers are Japan, Germany, France, Italy and UK



HS6: 070959

Exports (million USD)

	2005	2010	2012
China	139,1	145,1	163,7
Netherlands	48,0	77,5	93,8
Poland	44,5	75,5	69,4
Romania	25,0	49,6	54,4
Russian Fed.	24,3	44,7	37,9

Imports (million USD)

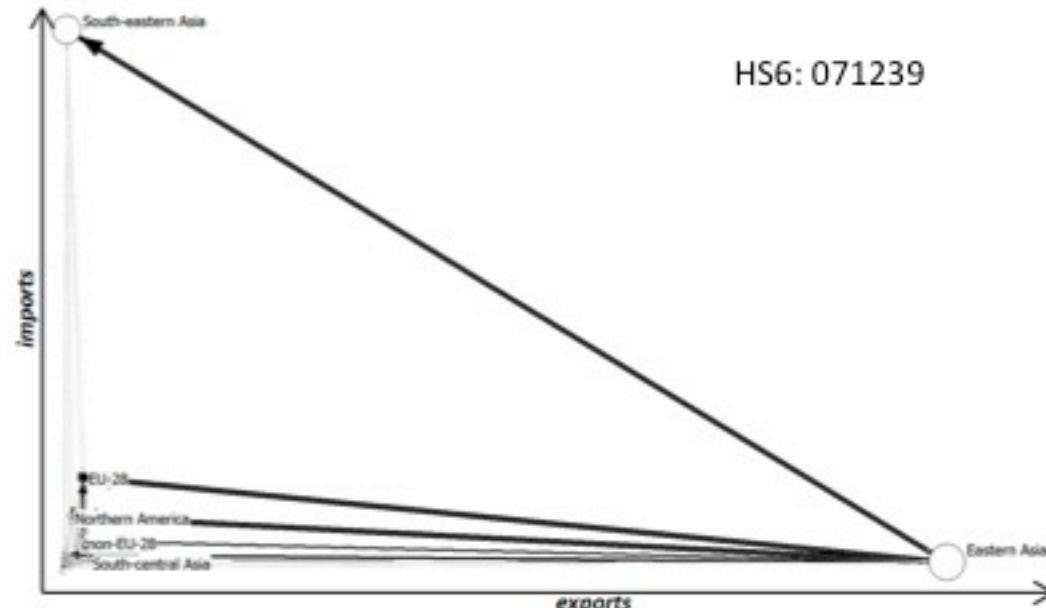
	2005	2010	2012
Japan	152,9	99,1	100,1
Germany	75,4	95,4	97,8
Italy	61,8	83,8	90,9
France	51,7	61,2	51,9
UK	34,5	58,7	51,1

## Wild dry mushroom: market structure

China holds also a monopolistic role in wild mushroom supply!

China reached a peak in 2011 with the 85.1% of total value exported in the international market, accounting for 1.18 billion US\$

Despite common thought, South Eastern Asia represents today the reference market due to the high demand of shiitake (*Lentinus Edodes*) or oyster mushroom (*Pleurotus ostreatus*).



**Exports (million USD)**

2005		2010		2012	
China	231,1	China	751,6	China	585,8
Hong Kong	13,4	Hong Kong	19,4	Hong Kong	27,3
Bulgaria	12,6	Germany	17,3	Pakistan	18,7
Italy	11,8	Italy	15,5	Germany	16,6
Germany	11,5	Chile	11,9	Italy	14,2

**Imports (million USD)**

2005		2010		2012	
Hong Kong	66,2	Viet Nam	210,2	Hong Kong	120,0
Japan	63,5	Hong Kong	129,7	Viet Nam	117,6
Italy	53,9	Japan	103,3	Thailand	77,6
France	28,7	Thailand	65,7	Japan	76,8
Thailand	19,2	Malaysia	54,3	Malaysia	76,5

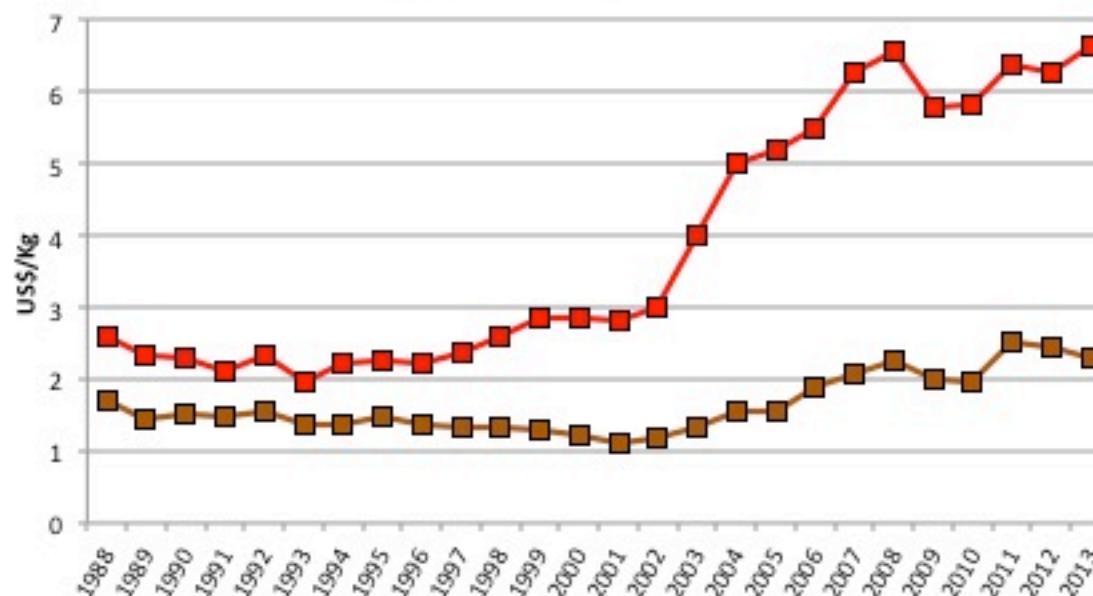
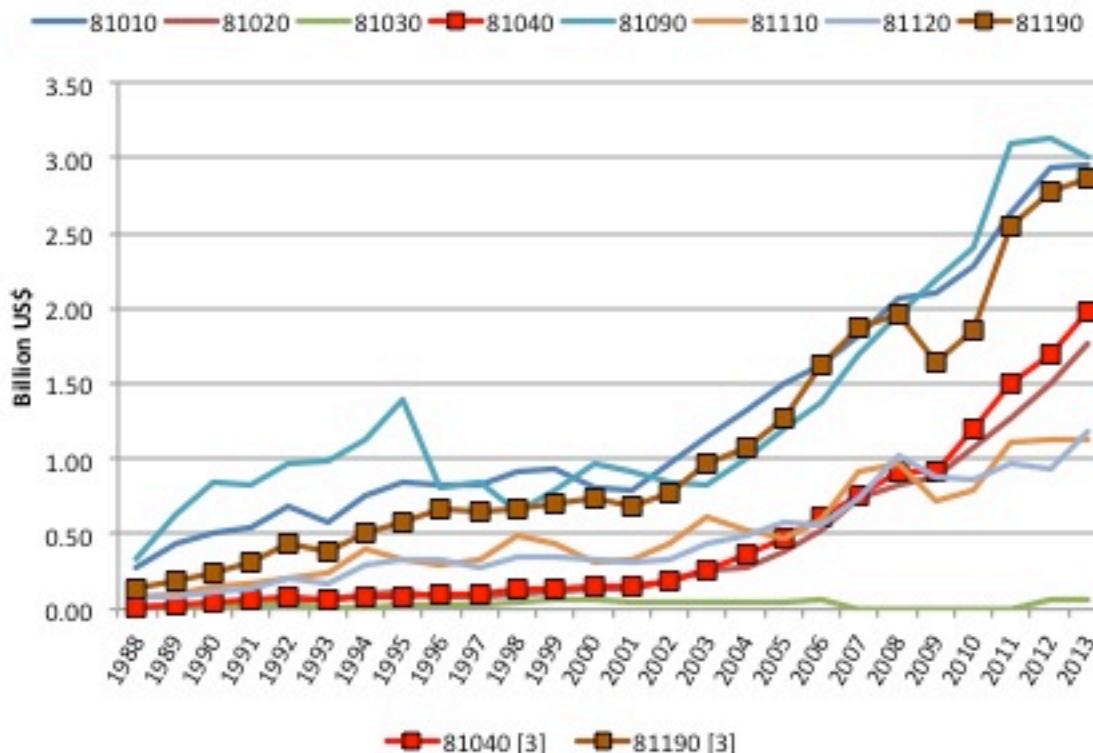
### 3. Trade overview (8/10)

## Wild berries: sector overview

The demand of forest berries is evidently increased in the last 10 year.

Vaccinium species are a consistent part in the berries sector, traded fresh (081040) or frozen (081190).

The recent innovation on production system, allowed to move part of the production out to the forest.



## Wild berries: fresh and frozen

Despite the high increment on the demand, the importers and exporters hold a stable position, with some little change over time.

The organization of the entire supply chain could contribute to a higher stability

Export fresh vaccinium (million US\$)							
	2005		2010		2011		2012
Chile	117.8	Chile	363.4	Chile	475.6	Chile	468.0
USA	89.4	USA	241.1	USA	302.6	USA	321.0
Canada	87.8	Argentina	130.7	Argentina	143.8	Canada	189.4
Argentina	31.1	Canada	115.0	Canada	141.9	Argentina	156.6
Spain	22.7	Spain	74.6	Spain	107.8	Spain	133.1

Import fresh vaccinium (million US\$)							
	2005		2010		2011		2012
USA	191.3	USA	429.8	USA	531.5	USA	570.4
Canada	71.1	Canada	268.3	Canada	336.2	Canada	341.9
UK	63.4	UK	149.3	UK	180.7	UK	202.1
Japan	21.2	Germany	53.0	Netherlands	79.9	Netherlands	96.8
Netherlands	18.3	Netherlands	52.9	Germany	70.3	Germany	88.6

Export frozen vaccinium (million US\$)							
	2005		2010		2011		2012
Canada	191.9	Canada	218.2	Canada	321.5	Canada	377.2
Poland	120.3	Poland	157.8	Poland	197.6	Poland	287.3
USA	78.3	USA	133.4	USA	167.2	USA	199.6
China	68.9	China	110.9	Netherlands	156.9	Netherlands	156.7
Netherlands	57.2	Netherlands	92.1	Chile	137.1	Chile	145.0

Import frozen vaccinium (million US\$)							
	2005		2010		2011		2012
Germany	238.2	Germany	283.4	Germany	368.4	USA	451.7
USA	177.2	USA	243.5	USA	341.2	Germany	367.1
Japan	112.4	France	149.9	Netherlands	193.6	France	199.7
France	97.5	Netherlands	139.2	France	188.2	Netherlands	191.9
Netherlands	90.9	Japan	98.5	Japan	129.5	Canada	169.2

## “Wild” berries? A slow and constant moment from forest to other land. Domestication

Wild harvest has high risk on production in terms of quantity.

The industry continuously asks designed quantity and cheaper products, which the traditional forest harvesting is not able to maintain.

Wild production hardly competes with the cultivation.

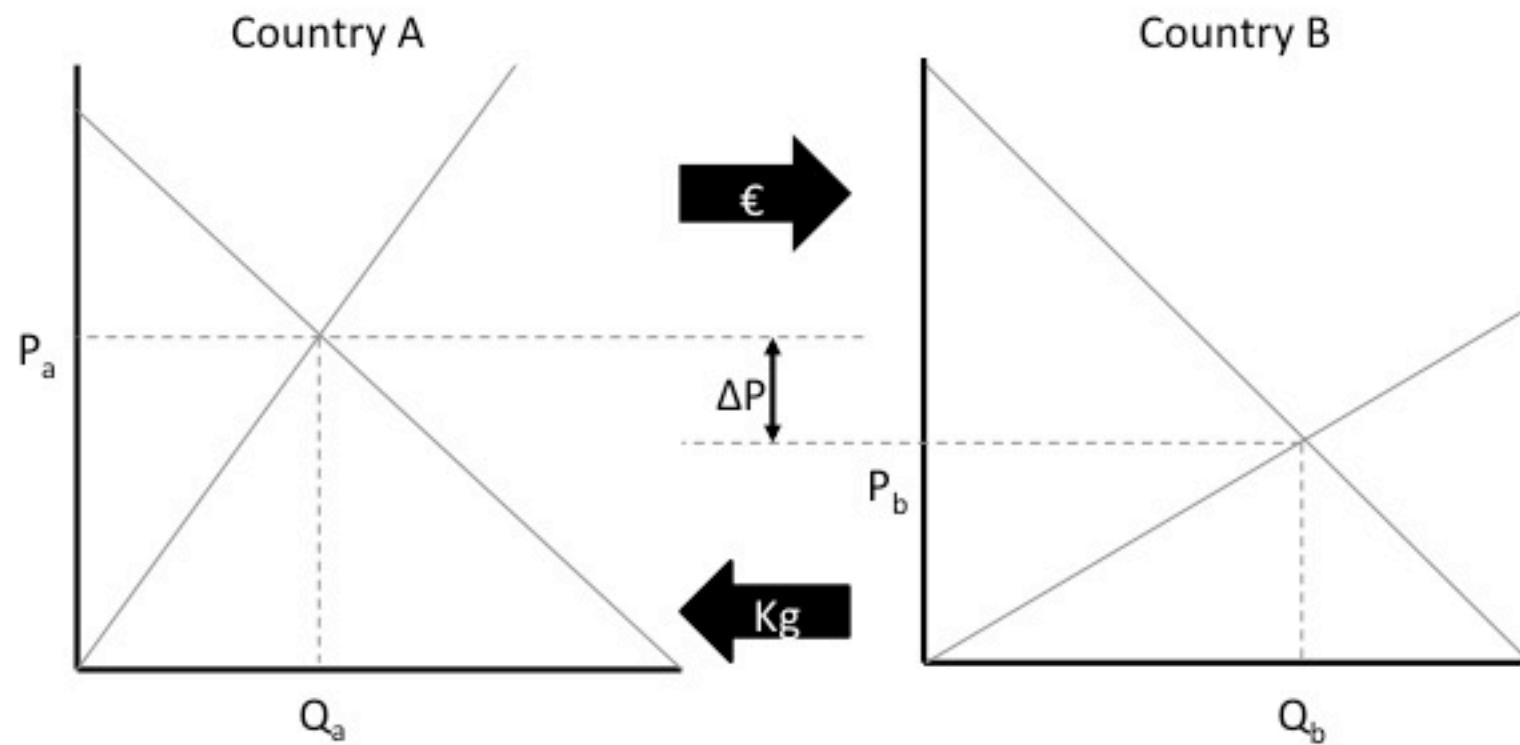


Vaccinium oxycoccus & V. microcarpum production in US

# Outlines

1. NWFP: definition
2. Trade or production: problem of data source
3. Int. trade overview for some key NWFP
4. The role of NWFP **international** trade in the **local** economy
5. Mass VS speciality products: case studies.

# The engine of international trade is the price differences



# Quantity or Quality policy?

- Quantity and quality cannot coexist easily, though a good mixture might be the optimal strategy:
  - Quantity production policy requests large surfaces and few large actors with a deep knowledge of the market (target: lowest price possible)
  - Quality production policy request a well planned marketing strategy plan based on the product differences (conventional vs special products) and customer's culture & awareness

# Quantity or Quality policy?



Product for Mass Market (FIN-IT)

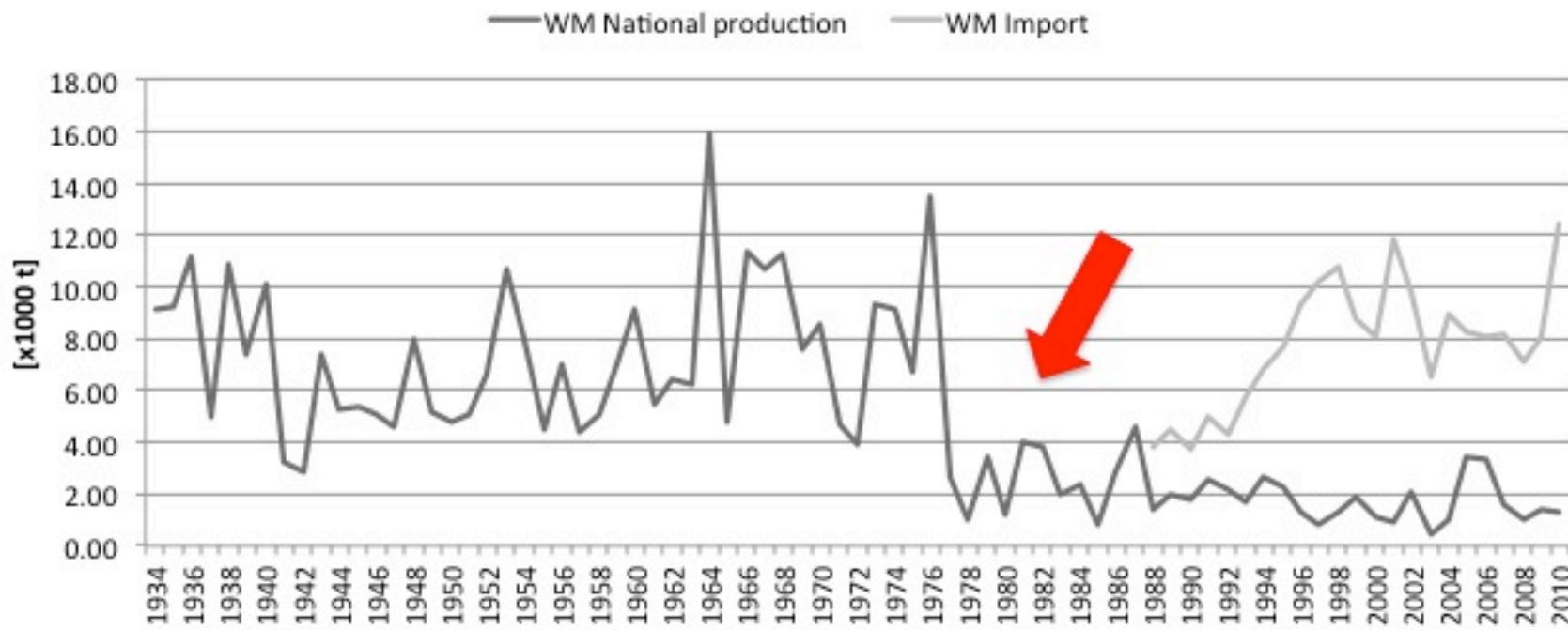


Product for Niche Market (IT-IT)

# Outlines

1. NWFP: definition
2. Trade or production: problem of data source
3. Int. trade overview for some key NWFP
4. The role of NWFP international trade in the local economy
5. Mass VS speciality products: **case studies.**

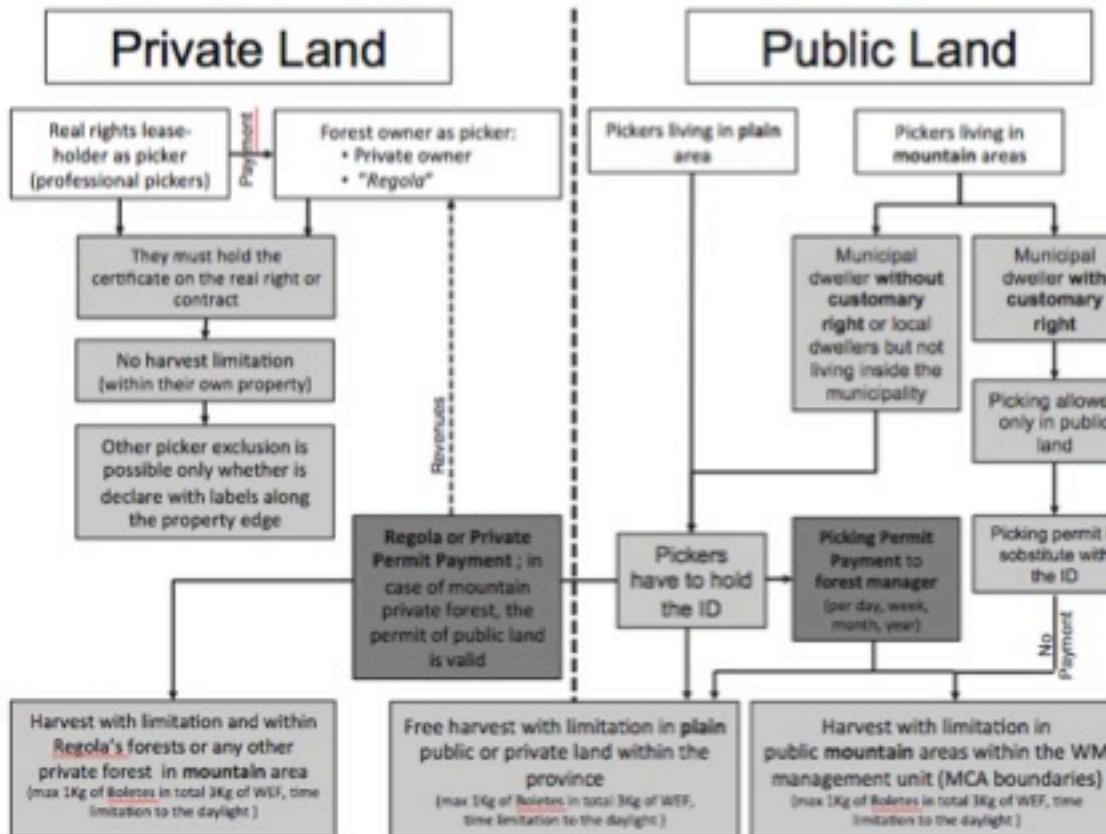
# Wild mushroom Supply Chain a case of transboundary effect of laws



Reduction of trade boundaries in the early '80s

Source: ISTAT (2012), EuroSTAT (2012) modif.

# Wild mushroom Supply Chain



...more over the implementation of a complex legislative system allowed to transfer property rights of wild mushroom ownerships to the forest owner

The consequences was the introduction of payment scheme for recreational wild mushroom picking

The effect with the internal supply was quite dramatic.

# Wild mushroom Supply Chain



Product for Mass Market (FIN-IT)  
pickers price 1<sup>st</sup> cl. 3-6€/Kg  
retail price 1<sup>st</sup> & 2<sup>nd</sup> cl. 11-20€/Kg

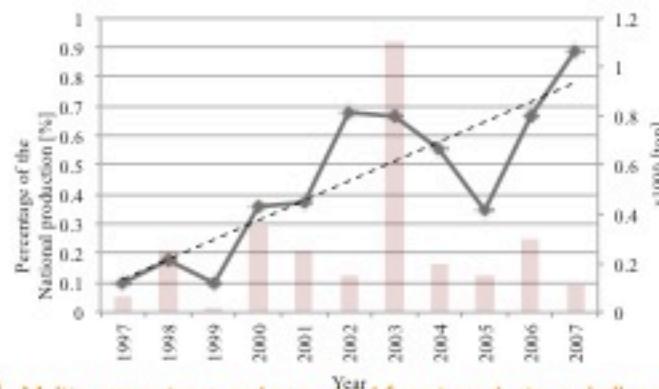


Product for Niche Market (IT-IT)  
picker price 1<sup>st</sup> cl. 5-23 €/kg  
L retail price 1<sup>st</sup> & 2<sup>nd</sup> cl. 9-28 €/kg  
C retail price 1<sup>st</sup> & 2<sup>nd</sup> cl. 20-45 €/kg

# Wild mushroom Supply Chain



- Large collecting area
- Seasonal employment and thousand pickers
- Fair fiscal system
- Vertical integration approach
- Large quantities of products with low marginal utility



Multipurpose trees and non-wood forest products, a challenge and opportunity



- Small collecting area (330 Km<sup>2</sup>)
- Seasonal, permanent employment
- Thousands pickers paying harvesting permits
- Complex legislation and fiscal system
- Horizontal integration approach
- Small quantities of products with low-medium marginal utility



www.star-tree.eu



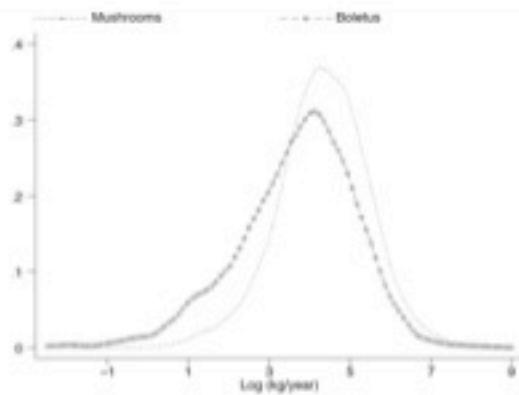
Funded by the European Union



# Wild mushroom Supply Chain



- Source of income complementary in rural area
- Needs of investment in market intelligence and innovation to be competitive in the international market
- High business risks due to seasonal condition but short financial cycle



Occupation	%
Service	19.98
Industry	20.73
Agriculture	4.23
Retaired	33.30
Unemployed	10.78
Other	10.98

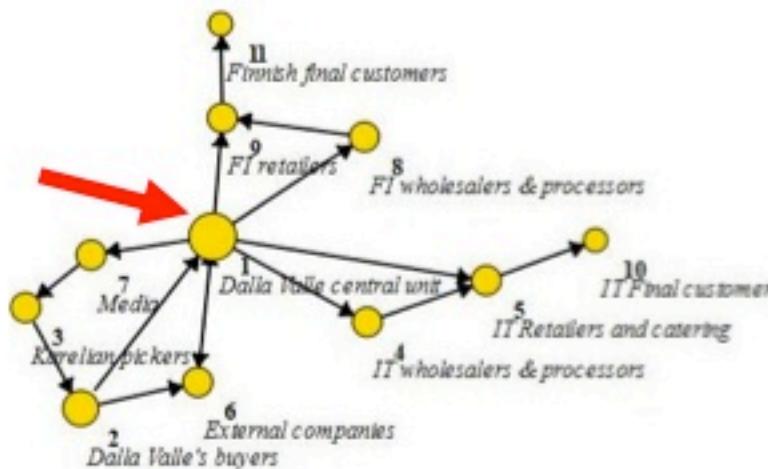


- Source of employment in rural area
- Constant need of touristic flux and investments in marketing
- The income is generated by
  - Permit selling (0.3-0.4 M€)
  - Tourism in loco (>1M€)
  - Mushroom shops & events (>1M€)
- Complex network of SME to enhance the economic resilience



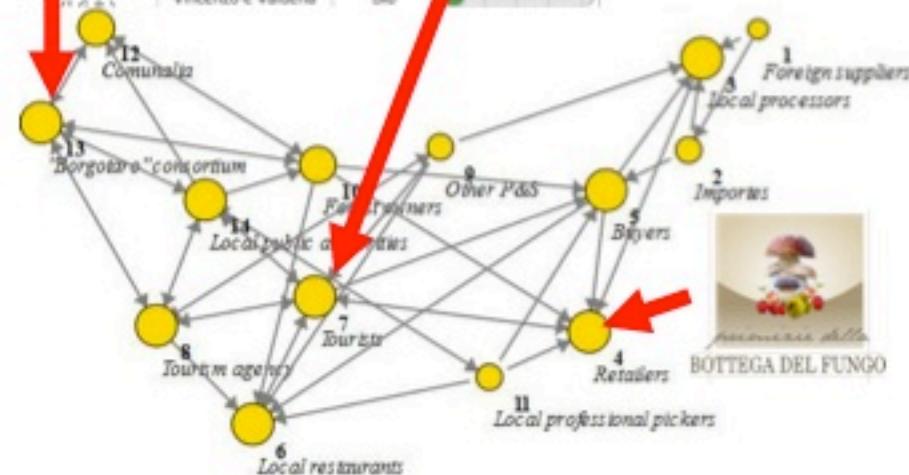
- Strong branding and application of certification schemes
- [www.bottegadelfungo.it](http://www.bottegadelfungo.it)  
[www.fungodiborgotaro.com](http://www.fungodiborgotaro.com)

# Wild mushroom Supply Chain

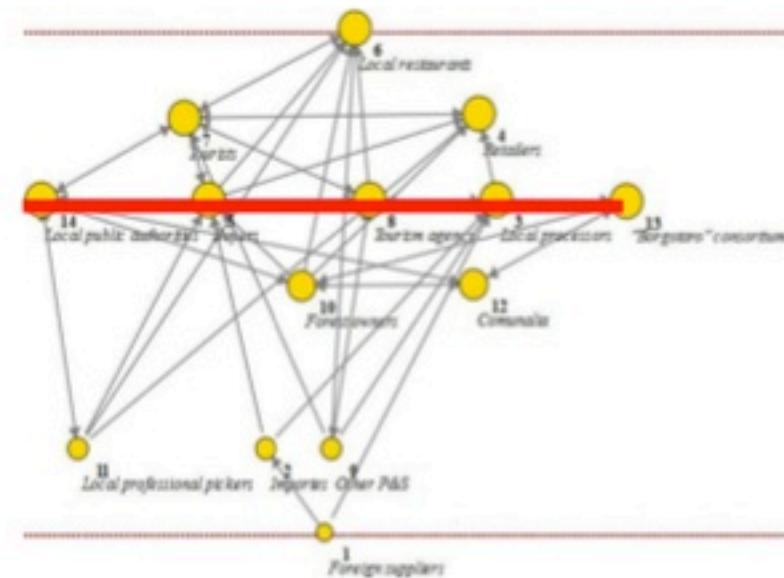
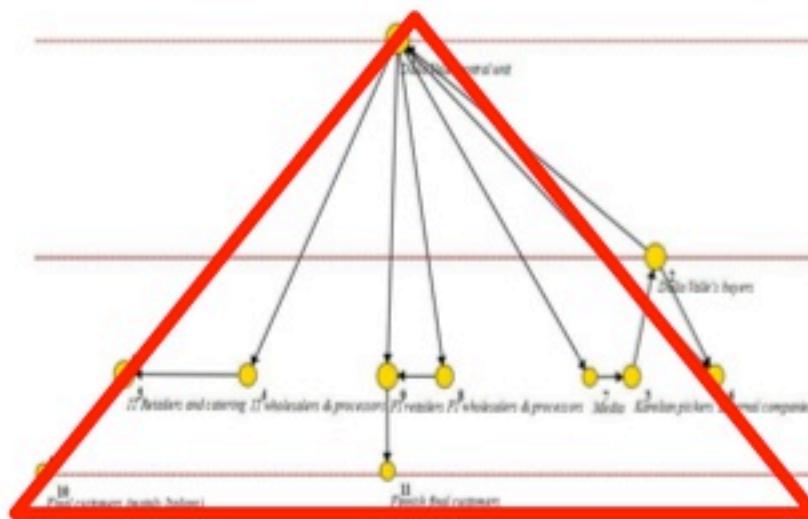


Ultimo aggiornamento: 17-8-2014

COMUNE	ZONA	TESSERINO	CRESCITA
Albareto (I.G.P.) Giovedì riserva chiusa	Comunale di Groppo, Tombeto e Boschetto, zona Monte Gottero	Verde	Clicca sul colore per il prezzo relativo 
Albareto (I.G.P.) Giovedì riserva chiusa	Comunale di Gora e Buzzo, Consorzio La Rocchetta e Consorzio Monte Siseglia, zona Passo dei Due Santi	Verde	
Borgo Val di Taro (I.G.P.)	Comunale di Basilea, Pontolo (zona di Monte Molinaccio)	Blu	
Borgo Val di Taro	Comunale di San Vincenzo e Valdena	Blu	



# Wild mushroom Supply Chain



## Final remarks

- The **analysis** of international trade allows to design better target policies to drug or pull even a small sector.
- The asset of NWFP **property rights** plays a fundamental role in the economy (local and global)
- Considering the **scale** of the production, niche products may be used as **image product** for local economy; where the local production lack on the supply there is always the opportunity to buy product from the international market.
- A strong **marketing** strategy should be planned whenever a certain production step from mass to niche products.
- Investment in **production innovation** may be crucial in the short-mid time, both for mass and niche production



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Multipurpose trees and non-wood forest products, a challenge and opportunity

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