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IUFRO Conference  
**The social and ecological value added of small scale forestry to the bioeconomy**  
 Bolzano/Bozen, Italy – 7-8 October 2020




**Contemporary innovations within the European forest-based bioeconomy: which perspectives for small-scale forestry?**

Laura Secco, with Mauro Masiero and Elena Pisani  
 University of Padova – TESAF Department



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## Outline

1. Current global trends
2. Other emerging trends
3. Forest-based bioeconomy discourses
4. On innovation
5. And... what about SFF?
6. What innovations for/from SFF?
7. What next, in Europe?
8. Final remarks
9. Acknowledgments



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## 1. Current global trends












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 Photo by Veneto in ginocchio: Vale Storm, 2018, Regione del Veneto, Italy  
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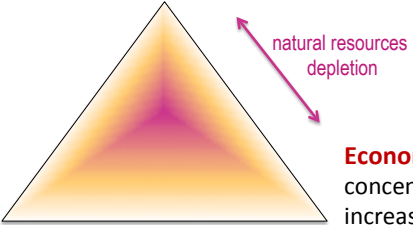
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## 1. Current global trends








**Environment:** climate crises, biodiversity loss, forest degradation and deforestation, water and soil pollution...  
 (e.g. IPCC 2019, ForestEurope 2019, Greenpeace 2020,...)


  
**...in negative!**



**Economy:** power concentration (TNCs), increase of economic inequalities, neo-protectionisms, global commercial wars, ...  
 (e.g. WB 2018, Chomsky 2016, Piketty 2018, Stiglitz 2019)


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## 1. Current global trends

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### Example 1:

**concentration of power, internationalization of companies/corporates**

Country/Corporation	Revenue (US\$, bns)	Country/Corporation	Revenue (US\$, bns)	Country/Corporation	Revenue (US\$, bns)
1 United States	3,251	35 Austria	189	69 Ping An Insurance	110
2 China	2,426	36 Samsung Electronics	177	70 United Arab Emirates	110
3 Germany	1,515	37 Turkey	175	71 Kroger	110
4 Japan	1,439	38 Glencore	170	72 Société Générale	108
5 France	1,253	39 Industrial & Commercial Bank of China	167	73 Amazon.com	107
6 United Kingdom	1,101	40 Daimler			
7 Italy	876	41 Denmark			
8 Brazil	631	42 United-Health Group			
9 Canada	585	43 CVS Health			
10 Walmart	482	44 EXOR Group			
11 Spain	474	45 General Motors			
12 Australia	426	46 Ford Motor			
13 Netherlands	337	47 China Construction			
14 State Grid	330	48 AT&T			
15 China National Petroleum	299	49 Total			
16 Sinopec Group	294	50 Argentina			
17 Korea, South	291	51 Hon Hai Precision Industry	141	85 Gazprom	99
18 Royal Dutch Shell	272	52 General Electric	140	86 China Railway Engineering	99
19 Mexico	269	53 China State Construction Engineering	140	87 Petrosas	97
20 Sweden	251	54 AmerisourceBergen	136	88 Trafigura Group	97
21 Exxon Mobil	246	55 Agricultural Bank of China	133	89 Nippon Telegraph & Telephone	96
22 Volkswagen	237	56 Verizon	132	90 Boeing	96
23 Toyota Motor	237	57 Finland	131	91 China Railway Construction	96
24 India	226	58 Chevron	131	92 Microsoft	94
25 Apple	234	59 E.ON	129	93 Bank of America Corp.	93
26 Belgium	227	60 AXA	129	94 ENI	93
27 BP	226	61 Indonesia	123	95 Nestlé	92
28 Switzerland	222	62 Allianz	123	96 Wells Fargo	90
29 Norway	220	63 Bank of China	122	97 Portugal	90
30 Russia	216	64 Honda Motor	122	98 HSBC Holdings	89
31 Berkshire Hathaway	211	65 Japan Post Holdings	119	99 Home Depot	89
32 Venezuela	203	66 Costco	116	100 Citigroup	88
33 Saudi Arabia	193	67 RNP Paribas	112		
34 Heksson	192	68 Fannie Mae	110		

Of the 100 largest economies in the world, 69 are global corporations in 2015, and only 31 are countries (51 vs. 49 in 2002) (World Bank 2018; Globalpolicy.org, Globaljustice.org)

Source: <https://blogs.worldbank.org/publicsphere/world-s-top-100-economies-31-countries-69-corporations> [Accessed October 2019]

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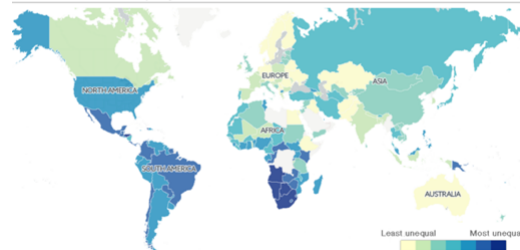
### Example 2: Increasing economic inequalities have proved to have negative environmental consequences

(e.g. Boyce, 2003, 2006, 2007; Balande et al. 2006; Cushing et al. 2015; Drupp et al. 2018)



#### The most unequal regions in the world

GINI index measure of inequality



Sources: GINI Index (World Bank website)

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## 1. Current global trends

**Environment:** climate crises, biodiversity loss, forest degradation and deforestation, water and soil pollution...  
(e.g. IPCC 2019, ForestEurope 2019, Greenpeace 2020,...)

**Society:** increasing poverty, urbanization, digitalisation, terziarisation, migrations, ...  
(e.g. Farcy et al. 2018, Wolfslehner et al. 2020)

**Economy:** power concentration (TNCs), increase of economic inequalities, neo-protectionisms, global commercial wars, ...  
(e.g. WB 2018, Chomsky 2016, Piketty 2018, Stiglitz 2019)

**Institutional:** neo-centralisation processes, remote areas marginalisation, reforms of fiscal and labour regulations, ...

hazards, diseases, health risks, insecurity

natural resources depletion

social movements, neo-populisms, geo-political instability, protests, conflicts

**...in negative!**

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## 2. Other emerging trends

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## 2. Other emerging trends

  
**...in positive!**




**Environment:** forest and land restoration, nature-based solutions  
 (e.g. Maginnings et al. 2012, Hanson et al. 2015, Hamrick et al. 2016, Reinecke et al., 2018)

**Society:** globalisation of information, open access, knowledge co-construction, new attitudes/behaviours,...  
 (e.g. Hirschnitz-Garbers 2018, Schneider et al. 2019, EU DG-R&I 2020, Castro-Arce and Vanclay 2020, Pel et al. 2020)





**Economy:** bioeconomy, circular economy, impact investments, CSR, ...  
 (e.g. EC 2005, Schot and Geels 2008, Bugge et al. 2016, D'Amato et al. 2017, EC 2018, Vivien et al. 2019)

**Institutional:** private-public partnerships, network governance, policy reforms, Agenda 2030 SDGs, ...

transformative social innovation, regeneration of SES, resilience  
 green revolution, sustainability transition  
 transformative visions, power dynamics, citizen-businesses partnerships




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## 2. Other emerging trends

### Example: recent policy reforms in Europe

**1) The EU New Green Deal (December 2019)**  
 - **European Climate Pact** (launched in 2020)









Photo by Daniel Sessler on Unsplash  
 Photo by Josh Bean on Unsplash  
 Photo by Pixabay

- **EU climate-neutral by 2050**
- Concrete actions in 3 areas:
  - buildings
  - mobility
  - tree-planting (nature regeneration and greening of urban areas)




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## 2. Other emerging trends

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### 2) The new EU-wide Biodiversity Strategy (May 2020)

Establish protected areas for at least:

- 30% of land in Europe
- 30% of sea in Europe

With stricter protection of remaining EU primary and old-growth forests legally binding nature restoration targets in 2021.

Restore degraded ecosystems at land and sea across the whole of Europe by:

- Increasing organic farming and biodiversity-rich landscape features on agricultural land
- Halting and reversing the decline of pollinators
- Restoring at least 25 000 km of EU rivers to a free-flowing state
- Reducing the use and risk of pesticides by 50% by 2030
- Planting 3 billion trees by 2030

Unlock 20 billion EUR/year for biodiversity through various sources, including EU funds, national and private funding. Natural capital and biodiversity considerations will be integrated into business practices.

Put the EU in a leading position in the world in addressing the global biodiversity crisis. The Commission will mobilise all tools of external action and international partnerships for an ambitious new UN Global Biodiversity Framework at the Conference of the Parties to the Convention on Biological Diversity in 2021.

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## 3. FBBioeconomy discourses

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### Dominant forest-based bioeconomy discourses

(e.g. Schmidt et al. 2012, Ollikainen 2014, Kleinschmit et al. 2014, Roos and Stendahl 2015, World Bio-Economy Summit 2015, Pülzl et al. 2017, Hausknost et al. 2017, Hetemäki 2017, Lovrić et al. 2019, Hedeler et al. 2019, Mair and Stern 2017, Dietz et al. 2018, Jarre et al. 2019, Lovrić et al. 2020, Asada et al. 2020, Wolfslehner et al. 2020, Toppinen et al. 2020)

**Technology-oriented and industry-driven** (biorefineries, biotechnologies, wooden based constructions, bioenergy, high-tech/high-performance materials, ...)

**Digitalisation** (IT connection, remote control, blockchain, ...)

**(Others: systems (e.g. wood cascading, value-chains), non-technological knowledge)**

**Main drivers:**

- European Technology Platforms (e.g. Toppinen et al. 2020, Lovrić et al. 2020)
- European Research Area (e.g. Birch et al. 2010)
- Forest-based Sector Technology Platform and Strategic R&I Agenda (e.g. Weiss et al. 2017, Secco et al. 2018)

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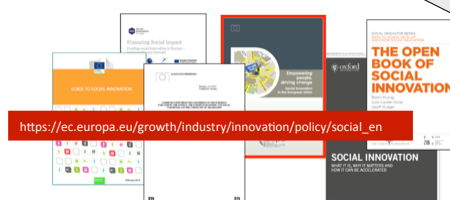
### 3. FBBioeconomy discourses



#### Emerging forest-based bioeconomy discourses and possible future directions

(e.g. McCormick and Kautto 2013, Kleinschmit et al. 2014, Winkel et al. 2017, Martinez de Arano et al. 2018, Secco et al. 2018, Wolfslehner et al. 2020)

- broader range of ecosystem services
- citizen-science, science-stakeholders collaboration
- knowledge co-construction



[https://ec.europa.eu/growth/industry/innovation/policy/social\\_en](https://ec.europa.eu/growth/industry/innovation/policy/social_en)

#### Main drivers/main effects:

- The New EU policies
- Social Capital (e.g. Putnam 1993, Horlings 2012, Marquardt et al. 2012, Pisani et al. 2018, 2020)
- Social Innovation (e.g. Mulgan 2007, Murray 2010, Moulaert et al. 2013, 2017, Haxeltine et al. 2017, Bosworth et al. 2018, Melnykovich et al. 2018, Rogeljia et al. 2018, Ninjik et al. 2019, Ludvig et al. 2019, Gorris-Milsud et al. 2019, Sarkki et al. 2019)
- Transformative Social Innovation (e.g. Haxeltine et al. 2017, Avelino et al. 2017, 2019, Wittmayer et al. 2019)

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### 4. On innovation



#### Technological innovation

Technological innovations comprise **new products and processes** and significant **technological changes** of products and processes.

*The implementation of a **new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations***

(OECD, 2005: 46)



Photo by Romain Tordo on Unsplash

- It derives from the industry- and business-oriented definitions for innovation, typically applied at an enterprise level (e.g. Schumpeter 1934, 1942, Nelson and Winter 1977, Hagedoorn 1996, Ślędzik 2013; e.g. Kubeczko et al. 2006 for the forest sector), interpreted as an outcome of entrepreneurial activities/behaviour (Bruyat and Julien 2001).

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## 4. On innovation



### Social Innovation

Several definitions in literature: another “fuzzy” word - risk of misleading.

*The reconfiguring of social practices, in response to societal challenges, which seeks to enhance outcomes on societal well-being and necessarily includes the engagement of civil society actors*

(Polman et al. 2017 – SIMRA project Deliverable 2.1;



[www.simra-h2020.eu](http://www.simra-h2020.eu)



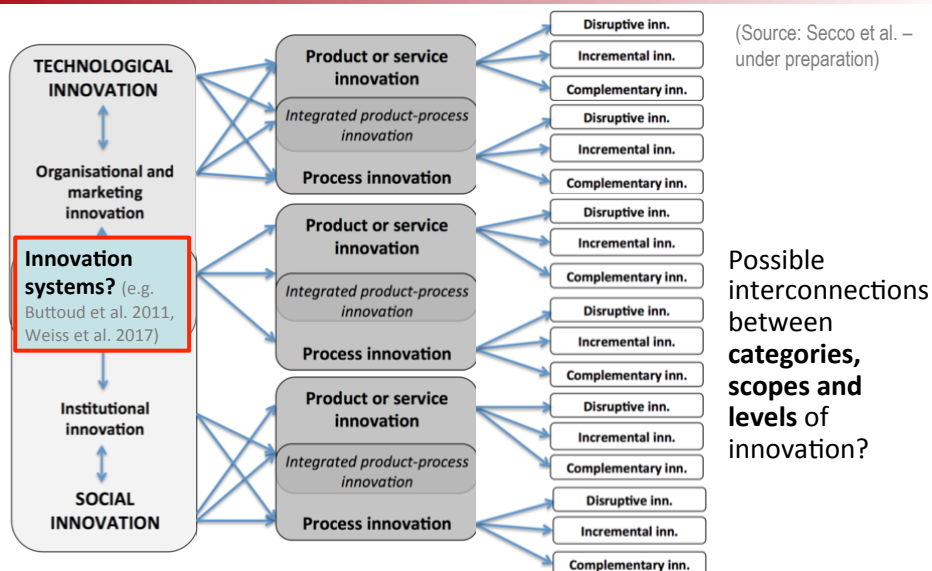
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## 4. On innovation



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## 5. And...what about SSF?



### Guiding questions:

- How do these trends affect SSF?
- What types of innovation SSF need to successfully tackle with these challenges/opportunities?

(Harrison et al. 2002; Small Scale Forestry Journal – various issues/years; Small Scale Forestry IUFRO Group)



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## 5. And...what about SSF?



**Small-scale non-industrial private forest woodlots** (Harrison et al. 2002, Wiersum et al. 2005, Ní Dhubháin 2011, Hatcher et al. 2013, Toscani and Sekot 2017, Rizzo et al. 2019, Snyder et al. 2019, Hujala and Butler 2020, Tiebel et al. 2020)

- Community forestry, farm/family forestry
- **Smallholders represent an important part of forest sector in Europe:** families and individuals own 82% of the European private forest area
- **Private forests are extremely fragmented**
- Typically multiple goals, **most interested in amenity/conservation**
- **Increasing number of non-farmer owners who live in urban areas** and tend not to be economically dependent on their forests
- Often families or individuals **using the land to provide for some share of their livelihood**



Veneto (Italy): average size/ownership  $800\text{m}^2 = 0,08\text{ ha}$  (Gatto, 2012)

(Other info in: Small Scale Forestry Journal, IUFRO Working Unit 3.08.00 Small-scale Forestry, Proceedings and books of abstracts, e.g. Tikkanen et al. 2018)



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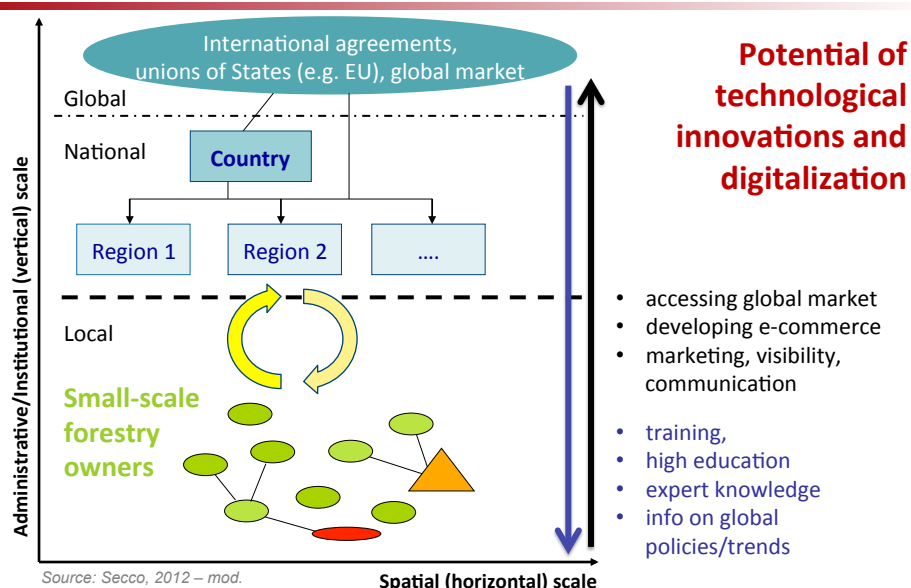
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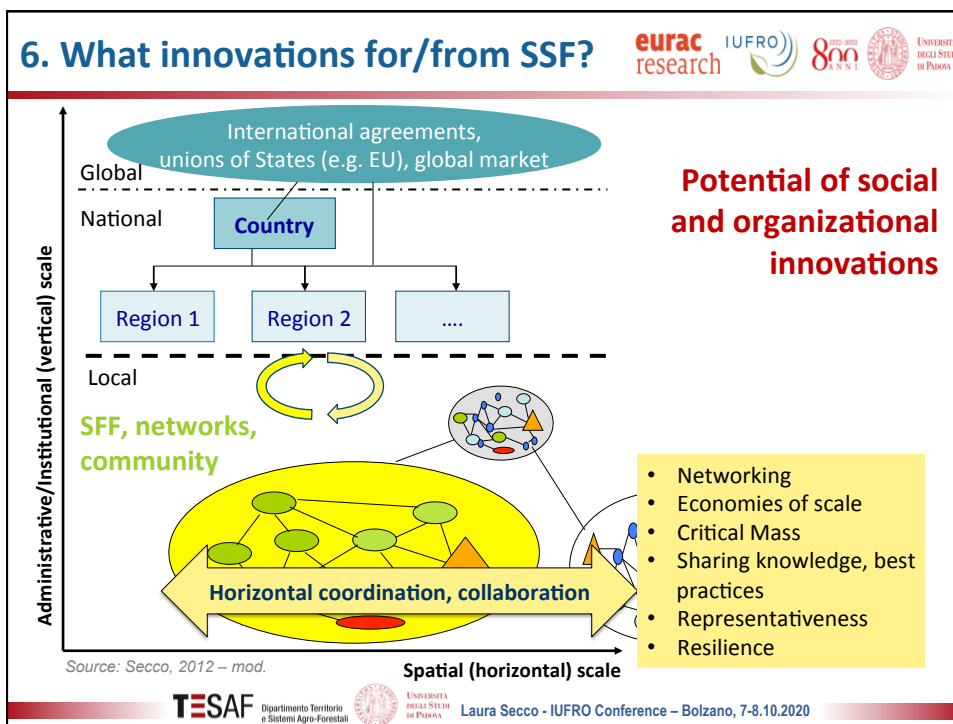
## 5. And... what about SSF?

- **Still partial and unharmonized knowledge on SFF** (e.g. Snyder et al. 2019, Rizzo et al. 2019, Hujala and Butler 2020, Tiebel et al. 2020)
- [...] findings suggest needs and opportunities **to engage small-area forest landowners, but likely in different ways and on different topics** than when dealing with larger-area ownerships (Snyder et al. 2019, Tiebel et al. 2020).
- **Simultaneous advances in technology and social practices appeared pivotal** (Hujala and Butler, 2020).



## 6. What innovations for/from SSF?





## 7. What next, in Europe?

**European Research and Innovation Days**  
Bringing stakeholders together to shape future research and innovation policy. See the programme, check out the speakers and join us online 22-24 September.

Home

**EUROPEAN RESEARCH & INNOVATION DAYS**





22→24 2020  
SEPTEMBER


VIRTUAL EVENT

*"The new European Research Area will use the power of science and innovation to support Europe's recovery and deliver a **green, digital and healthy future**". (EC, 2020)*

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## 7. What next, in Europe?











- Climate and biodiversity crises, geopolitical changes > exacerbated by the COVID crisis
- **Innovation is essential:** access to information, science, "No one left behind", short-term successes (new building materials, wood, ...)
- Public awareness of the biodiversity crises should equal awareness of climate crises.
- **For a safe humanity, we need a safe environment > nature regeneration**
  - (Emphasis on biodiversity, habitats and ecosystems)
  - Precision agriculture (pesticides, water use, healthy soil, ...)
  - **Carbon sinks** (some critics from environmentalists)
  - **Health of forests**, allow them to restore



**EVP Frans Timmermans**  
Executive Vice President  
European Commission

Words/concepts extracted and synthesized from his interview at the Plenary session on "European Green Deal and Just Transition", 22.09.2020: [https://www.youtube.com/watch?v=YNrE\\_iuXJU](https://www.youtube.com/watch?v=YNrE_iuXJU)

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## 7. What next, in Europe?





- Crises as opportunity to innovate
- Co-design
- **5 missions:**
  - **Cancer**
  - **Climate adaptation**
  - **Smart cities**
  - **Quality of water**
  - **Health of soil**
- **Trust** (regions, citizens)
- **Impact-focused research innovation!**
- Concrete projects and instruments
- Young people to be fully engaged
- **Private-public partnerships**
- Research-innovation-education



**Mariya Gabriel**  
European Commissioner for innovation, research, culture, education and youth  
European Commission

Words/concepts extracted and synthesized from her at the Plenary session on "European Green Deal and Just Transition", 22.09.2020: [https://www.youtube.com/watch?v=YNrE\\_iuXJU](https://www.youtube.com/watch?v=YNrE_iuXJU) and in pre-recorded interview to the Financial Times (<https://research-innovation-days-conference.online/hubs/plenary#/2020-09-22>)


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## 7. What next, in Europe?



- **Resilience**, sustainability, circularity, inclusiveness
- **Farmers and foresters not directly mentioned!**  
(Just citizens, entrepreneurs and industry – eventually, “wood industry” and “agro-food industry” indirectly mentioned)
- **Ecosystem services** will further increase their importance
- **Health of forests and forests for health**

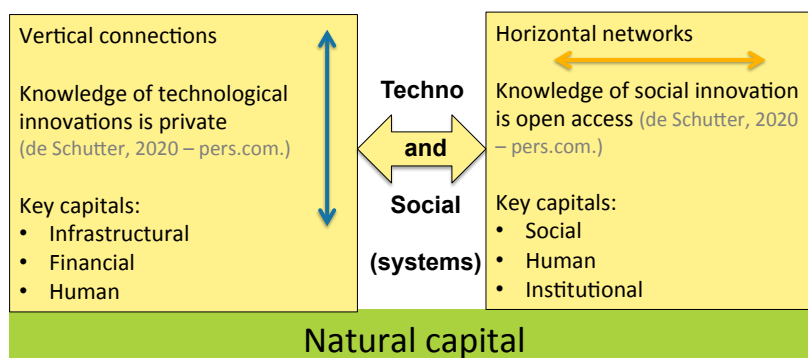
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## 8. Final remarks



What can we do to support SSF in dealing with the contemporary innovation challenges posed by future scenarios?



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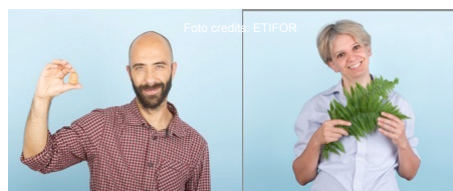
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## 9. Acknowledgments



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



Mauro Masiero

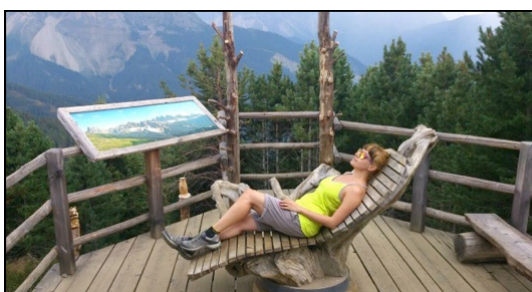
Elena Pisani

- EFIMED
- H2020 SIMRA project

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<http://www.thechilicool.com/>



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# Thank you!

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